

General Product Catalogue



Welding Consumables



Repair & Maintenance and Special Welding Products



Welding & Cutting Machines



Robotic Welding & Automation Systems

www.gedikwelding.com



GEDİK WELDING was established in Turkey in 1963 and is today a global industry leader in the field of welding consumables and equipments. Under its internationally-registered trademarks GeKa and GeKaTec, the company manufactures about 90,000 tons/year of superior quality coated welding electrodes, brazing rods, special repair and maintenance products, as well as gas-shielded arc, submerged arc and flux-cored welding wires. The company also produces its own GeKaMac brand of rectifiers, gas shielded arc and submerged arc welding generators (conventional or inverter types)

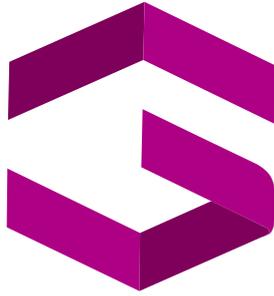
GEDİK WELDING is one of the largest manufacturers in Europe and exports its products to more than 80 countries around the world. Keeping abreast of the largest technological developments in the domain, GEDİK WELDING also generates robotic solutions and welding automation equipment (GeKaRobot) for various industries, both in Turkey and overseas.

For more information, please visit our website ; www.gedikwelding.com

Able and willing to serve all industrial sectors, GEDİK WELDING is fully prepared to explore alternative solutions in order to satisfy its customers. The company is therefore able to supply customized welding products and innovative engineering solutions, tailor-made to respond to the diverse needs of its clientele.

Continuous efforts are also undertaken to expand and improve its wide of range of multi-sector products and services, relying on its own in-house know-how and technology. The company's R&D efforts are managed by expert teams at its modern laboratory facilities in Istanbul, where cutting-edge, durable, relevant and economical solutions and products are constantly being generated.

GEDİK WELDING also contributes to the advancement of welding science and technology via R&D projects carried out in collaboration with İSTANBUL GEDİK UNIVERSITY. Further, the non-profit organisation, Gedik Educational Foundation (GEV), conducts various internationally-recognised welding education, training and certification programmes.



Product Categories

-  Welding Electrodes
-  Gas Shielded Arc Welding Wires
-  Flux Cored Arc Welding Wires
-  Submerged Arc Welding Wires & Fluxes
-  Repair & Maintenance Products
-  Brazing Rods & Fluxes
-  Welding & Cutting Machines

Our Registered Trademarks



Welding Consumables



Repair & Maintenance and Special Welding Products



Welding & Cutting Machines



Robotic Welding & Automation Systems

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LASER B 50	E 42 5 B 42 H5	E 7018-1 H4	19
LASER B 55	E 46 5 B 42 H5	E 7018-1 H4	20
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TEMPO B 63	E 50 3 B 42 H5	E 8018-G H4	26
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ELNİKEL	E C Ni-CI 1	E Ni-CI	97
ELNİKEL-HD	E C Ni-CI 1	E Ni-CI	98
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ELHARD 350	E Fe 1	E 1-UM-350	106
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ELHARD 410 R	E Fe 7	E 5-UM-400	108
ELHARD 500	E Z Fe 1	E 1-UM-50	109
ELHARD 600	E Fe 8	E 6-UM-60	110
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ELHARD 14 Mn	E Z Fe 9	E FeMn-A	116
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SG Ni 2	G2 Ni 2	ER 80 S-Ni2	143
SG NiMo 1	G 62 6 C1/M21 Mn3Ni1Mo	ER 100 S-G	144
ER 100 SG	G/W Mn3Ni1CrMo	ER 100S-G	145
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ELOX SG 318 Si	G 19 12 3 Nb Si	~ER 318	160
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ELOX SG 347 Si	G 19 9 Nb Si	ER 347 Si	162
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ELOX SG 410	G / W 13	ER 410	164
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ELOX SG 2594	W 25 9 4 N L	ER 2594	167
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AISI 5	S Al 4043 (AISI5)	ER 4043	168
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AlMg 3	S Al 5754 (AlMg3)	---	170
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Aluminium Alloyed Gas Shilded Welding Rods (TIG)			GeKa®
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ELCOR R 91	T 62 4 Mn1.5Ni P C 1	E 91 T1 - K2CJ	200
ELCOR R 91 SC	T 62 4 Mn1.5Ni P C 1 H5/T 62 3 Mn1.5Ni P M 1 H5	E 91 T1 - K2C, K2M H4	201
ELCOR R 110	T 69 4 Mn 2.5 Ni P C 1	E 111 T1-GC	202
ELCOR R 100 SC	T 69 4 Mn2.5Ni P C 1 H5/T 69 3 Mn2.5Ni P M 1 H5	E 111 T1-GC, GM H4	203
ELCOR M Ni2 SC	T 55 6 Mn2 Ni M M 1 H5	E 80 C-Ni2 H4	204
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ELCOR M Mo	T 46 A Mo M M 1	E 81 T1-A1 M	210
ELCOR R Mo SC	T 46 2 Mo R C 2 H5	E 81 T1-A1C H4	211
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Product Name	TS / EN	AWS	Page
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Welding Electrodes



Rutile Electrode



ELIT

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 42 0 RR 12
EN ISO 2560-A	: E 42 0 RR 12
AWS A5.1	: E 6013

C	Si	Mn
0.07	0.3	0.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/0°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	510-610	min. 47 J	min. 22

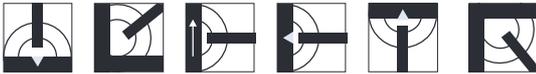
Typical Base Material Grades :

* S 235JR, S275JR, S235J2G3-S355J2G3, P235 GH, P265 GH, P255NH, P235T1-P355T1, P235T2-P355T2, P235G1TH, P255G1TH, L210-L360NB, S235JRS1-S235J2S1, S235JRS2-S235J2S2

Features and Applications :

- * The mostly-used type among the rutile electrodes.
- * Electrode coating of high thickness.
- * Spatter and fume formation in low amounts.
- * Good welding beads.
- * Easy striking.

Welding Positions :



Current Type :

D.C.(-)

A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300620	2.00 x 300	5/64 x 12"	45 - 80	1050
300622	2.50 x 350	3/32 x 14"	60 - 110	2000
300623	3.20 x 350	1/8 x 14"	100 - 140	3250
300625	4.00 x 350	5/32 x 14"	140 - 180	4800
300627	4.00 x 450	5/32 x 18"	140 - 180	6200
300628	5.00 x 350	3/16 x 14"	170 - 240	7430
300629	5.00 x 450	3/16 x 18"	170 - 240	9680

Approvals :

TSE, CE, TL, GL-DNV, BV, ABS, LR, NK, RINA, CWB, TÜV, DB, GOST-R, SEPRO

Standards :

TS EN ISO 2560-A	:	E 42 0 RR 12
EN ISO 2560-A	:	E 42 0 RR 12
AWS A5.1	:	E 6013

**Chemical Composition of Weld Metal-
% (Typical) :**

C	Si	Mn
0.08	0.4	0.5

Mechanical Properties :

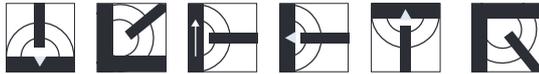
Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/0°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	510-610	min. 47 J	min. 22

Typical Base Material Grades :

* S 235JR, S275JR, S235J2G3-S355J2G3, P235 GH, P265 GH, P255NH, P235T1-P355T1, P235T2-P355T2, P235G1TH, P255G1TH, L210-L360NB, S235JRS1-S235J2S1, S235JRS2-S235J2S2

Features and Applications :

- * Resistance to high current
- * Soft and stable welding
- * Spatter and fume formations in low amounts
- * Formation of self-removable slags

Welding Positions :

Current Type :

D.C.(-)
A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300645	2.50 x 350	3/32 x 14"	60 - 110	2120
300646	3.20 x 350	1/8 x 14"	90 - 150	3520
300648	4.00 x 350	5/32 x 14"	130 - 200	5210
300649	4.00 x 450	5/32 x 18"	130 - 200	6680
300650	5.00 x 350	3/16 x 14"	170 - 250	8090
300651	5.00 x 450	3/16 x 18"	170 - 250	10410

Approvals :

TSE, CE, TL, GN-DNV, BV, ABS, LR, GOST-R, SEPRO

Standards :

TS EN ISO 2560-A	:	E 42 0 RC 11
EN ISO 2560-A	:	E 42 0 RC 11
AWS A5.1	:	E 6013

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn
0.07	0.3	0.4

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/0°C)	Elongation (L _c =5d ₀)(%)
min. 420	510-610	min. 47 J	min. 22

Typical Base Material Grades :

* S 235JR, S275JR, S235J2G3-S355J2G3, P235 GH, P265 GH, P255NH, P235T1-P355T1, P235T2-P355T2, P235G1TH, P255G1TH, L210-L360NB, S235JRS1-S235J2S1, S235JRS2-S235J2S2

Features and Applications :

- * Electrode coating of medium-thickness
- * Electrode coating of flexible type, providing electrode bendability
- * Usability in welding of materials at hardly-reachable places
- * Suitability for welding at vertical-down welding position

Welding Positions :



Current Type :

D.C.(-)

A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300637	2.50 x 350	3/32 x 14"	60 - 110	1760
300638	3,20 x 350	1/8 x 14"	90 - 140	2920
300639	4.00 x 350	5/32 x 14"	130 - 200	4290
300640	4.00 x 450	5/32 x 18"	130 - 200	5510
300641	5.00 x 350	3/16 x 14"	170 - 240	6955
300642	5.00 x 450	3/16 x 18"	170 - 250	8800

Approvals :

TSE, CE, TL, LR, TÜV, DB, GOST-R, SEPRO

Rutile Electrode



EGE

Standards :

TS EN ISO 2560-A	:	E 38 0 RC 12
EN ISO 2560-A	:	E 38 0 RC 12
AWS A5.1	:	E 6013

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn
0.08	0.4	0.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/0°C)	Elongation (L ₀ =5d ₀)(%)
min. 380	470-550	min. 47 J	min. 22

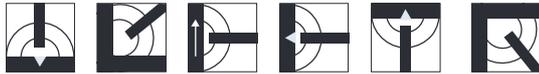
Typical Base Material Grades :

* S 235JR,S275JR, S235J2G3-S355J2G3, P235 GH, P265 GH, P255NH, P235T1-P355T1,P235T2-P355T2,
P235G1TH, P255G1TH, S235JRS1-S235J2S1, S235JRS2-S235J2S2

Features and Applications :

- * Easily striking
- * Suitability to spot welding
- * Suitability for use in iron

Welding Positions :



Current Type :

- D.C.(-)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300617	2.50 x 350	3/32 x 14"	60 - 110	1991
300618	3.20 x 350	1/8 x 14"	90 - 140	3160
300619	4.00 x 350	5/32 x 14"	130 - 180	4700

Approvals :

TSE, CE, GOST-R, SEPRO

Standards :

TS EN ISO 2560-A	:	E 38 2 RB 12
EN ISO 2560-A	:	E 38 2 RB 12
AWS A5.1	:	-E 6013

**Chemical Composition of Weld Metal-
% (Typical) :**

C	Si	Mn
0,08	0,2	0,5

Mechanical Properties :

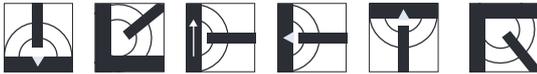
Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-20°C)	Elongation (L _c =5d ₀)(%)
min. 380	470-570	min. 47 J	min. 24

Typical Base Material Grades :

* S 235JR, S275JR, S235J2G3-S355J2G3, P235 GH, P265 GH, P255NH, P235T1-P355T1, P235T2-P355T2, P235G1TH, P255G1TH, L210-L360NB, S235JRS1-S235J2S1, S235JRS2-S235J2S2

Features and Applications :

- * Electrode of rutile-basic character
- * Electrode coating with high thickness
- * Suitability for welding of pressure pipes
- * Smooth welding bead without under cuts

Welding Positions :

Current Type :

- D.C.(-)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300630	2,50 x 350	3/32 x 14"	60-110	1930
300631	3,20 x 350	1/8 x 14"	90-140	3315
300632	4,00 x 350	5/32 x 14"	110-200	4730
300633	4,00 x 450	5/32 x 18"	110-200	6075

Approvals :

TSE, CE, GOST-R, SEPRO

Rutile Electrode



STEP

Standards :

TS EN ISO 2560-A	:	E 42 0 RC 11
EN ISO 2560-A	:	E 42 0 RC 11
AWS A5.1	:	E 6012

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn
0,06	0,35	0,45

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/0°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	510-610	min. 47 J	min. 22

Typical Base Material Grades :

* S 235JR, S275JR, S235J2G3-S355J2G3, P235 GH, P265 GH, P255NH, P235T1 - P355T1, P235T2-P355T2, P235G1TH, P255G1TH, L210-L360NB, S235JRS1-S235J2S1, S235JRS2-S235J2S2

Features and Applications :

- * Electrode coating with medium-thickness
- * Electrode coating of flexible type, providing electrode bendability
- * Usability in welding of materials at hardly-reachable places
- * Suitability for welding at vertical down position

Welding Positions :



Current Type :

- D.C. (-)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300652	2.50 x 350	3/32 x 14"	60 - 110	1730
300653	3.20 x 350	1/8 x 14"	90 - 140	2900
300654	4.00 x 350	5/32 x 14"	130 - 180	4275

Approvals :

TSE, CE, GOST-R, SEPRO

Rutile Electrode



INTER

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	:	E 38 0 RC 11
EN ISO 2560-A	:	E 38 0 RC 11
AWS A5.1	:	E 6013

C	Si	Mn
0.06	0.3	0.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/0°C)	Elongation (L ₀ =5d ₀)(%)
min. 390	470-590	min. 47 J	min. 22

Typical Base Material Grades :

* S 235JR, S275JR, S235J2G3-S355J2G3, P235 GH, P265 GH, P255NH, P235T1-P355T1, P235T2-P355T2, P235G1TH, P255G1TH, L210-L360NB, S235JRS1-S235J2S1, S235JRS2-S235J2S2

Features and Applications :

- * Electrode coating of flexible type, providing electrode bendability
- * Suitability for welding at vertical-down position
- * Deep penetration

Welding Positions :



Current Type :

- D.C.(-)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300634	2,50 x 350	3/32 x 14"	60 - 110	1850
300635	3,20 x 350	1/8 x 14"	90 - 140	2940
302304	4,00 x 350	5/32 x 14"	110 - 180	4250
303895	4,00 x 450	5/32 x 18"	110 - 200	5460

Approvals :

TSE, CE, GOST-R, SEPRO

Rutile Electrode



ELIT ARMCO

Standards :

TS EN ISO 2560-A : E 35 A RR 12
EN ISO 2560-A : E 35 A RR 12

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn
0.05	max. 0.2	0.3

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 355	440-560	min. 47 J	min. 22

Features and Applications :

- * Soft and stable welding
- * Spatter formation in low amounts
- * Formation of easily-removable slags
- * Suitability for use in welding of Armco Iron and mild steels with very low carbon and silicon contents
- * Applicability in welding of galvanizing tanks made of Armco Iron

Welding Positions :



Current Type :

- D.C. (-)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
	mm	inch		
300681	3.20 x 350	1/8 x 14"	110 - 140	3558
300682	4.00 x 350	5/32 x 14"	140 - 180	5910
300683	5.00 x 350	3/16 x 14"	180 - 220	8120

Approvals :

TSE, CE, GOST-R, SEPRO, RCB

Rutile Electrode



ELIT R 110

Standards :

TS EN ISO 2560-A	: E 42 0 RR 33
EN ISO 2560-A	: E 42 0 RR 33
AWS A5.1	: E 7014

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn
0.07	0.4	0.6

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/0°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	520-600	min. 47 J	min. 22

Typical Base Material Grades :

* S 235JR, S275JR, S235J2G3-S355J2G3, P235 GH, P265 GH, P255NH, S235JRS1-S235J2S1, S235JRS2-S235J2S2

Features and Applications :

- * Usability in welding at all positions
- * Resistance to high current
- * Soft and stable welding
- * Spatter formation in low amounts
- * Welding efficiency of about 110%

Welding Positions :



Current Type :

D.C.(-)

A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300680	3.20 x 350	1/8 x 14"	120 - 160	3558
304119	4.00 x 350	5/32 x 14"	150 - 220	5910
302691	5.00 x 450	3/16 x 18"	180 - 280	11500

Approvals :

TSE, CE, GOST-R, SEPRO, RCB

Rutile Electrode



CEM

Standards :

TS EN ISO 2560-A	:	E 42 0 RR 53
EN ISO 2560-A	:	E 42 0 RR 53
AWS A5.1	:	E 7024

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn
0.07	0.4	0.7

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/0°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	510-610	min. 47 J	min. 22

Typical Base Material Grades :

* S 235JR, S275JR, S235J2G3-S355J2G3, P235 GH, P265 GH, P295 GH S235JRS1-S235J2S1, S235JRS2-S235J2S2,

Features and Applications :

- * Resistance to high current
- * High welding efficiency (about 160%)
- * Cost-saving in groove welding and in flat fillet welding

Welding Positions :



Current Type :

- D.C.(-)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300692	3.20 x 350	1/8 x 14"	120 - 180	4710
300693	4.00 x 450	5/32 x 18"	160 - 240	9830
300694	5.00 x 450	3/16 x 18"	200 - 320	14950

Approvals :

TSE, ABS, RS, RINA, NK, BV, CE, DNV-GL, GOST-R, SEPRO, RCB

Cellulosic Electrode



LINK 6010

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	:	E 38 3 C 21
EN ISO 2560-A	:	E 38 3 C 21
AWS A5.1	:	E 6010

C	Si	Mn
0.12	0.2	0.6

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L ₀ =5d ₀)(%)
min. 380	470-540	min. 47 J	min. 22

Typical Base Material Grades :

* S235JR, S275JR, S235J2G3, S275J2G3, S355J2G3, P235GH, P265GH, P235T1-P355T1, P235T2-P355T2, L210-L360NB, L290MB-L360MB, S235JRS1-S235J2S2, P235G1TH, P255G1TH, X42-X56, for root pass X60-X80.

Features and Applications :

- * Suitability for use in welding large-diameter pipelines for crude oil, natural gas, and water as well as in root-pass welding or surfacing of ships, tanks, boilers, and steel constructions
- * Usability in sour gas - involving applications (acc. HIC Test NACE TM-0284)
- * Deep penetration obtained in welding at all positions
- * Most suitability for welding at vertical down position

Welding Positions :



Current Type :

- D.C. (+)
- D.C. (-) for root pass

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
300660	2.50 x 350 / 3/32 x 14"	40 - 80	1650
300661	3.20 x 350 / 1/8 x 14"	65 - 125	2646
300662	4.00 x 350 / 5/32 x 14"	90 - 175	3980
300663	5.00 x 350 / 3/16 x 14"	140 - 220	6080

Approvals :

TSE, DNV-GL, TÜV, DB, CE, NACE, GOST-R, SEPRO

Standards :

TS EN ISO 2560-A	: E 42 2 Mo C 25
EN ISO 2560-A	: E 42 2 Mo C 25
AWS A5.5	: E 7010 - G

**Chemical Composition of Weld Metal-
% (Typical) :**

C	Si	Mn	Mo
0.10	0.15	0.4	0.3

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-20°C)	Elongation (L _o =5d _o)(%)
min. 420	510-590	min. 47 J	min. 22

Typical Base Material Grades :

* S235JR, S275JR, S235J2G3, S275J2G3, S355J2G3, P235GH, P265GH, P355T1, P235T2-P355T2, L210-L415NB, L290MB-L415MB, S235JRS1-S235J4S2, P235G1TH, P255G1TH, X42-X65
for root pass : up to X70(L485MB)

Features and Applications :

- * Suitable for use in welding large-diameter pipelines made of high-strength steels as well as in all positions root-pass welding or surfacing of boilers and steel constructions
- * Deep penetration, especially (obtained) at vertical-down position

Welding Positions :

Current Type :

D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300670	2.50 x 350	3/32 x 14"	40 - 80	1700
300671	3.20 x 350	1/8 x 14"	65 - 125	2735
300672	4.00 x 350	5/32 x 14"	90 - 175	3990
300673	5.00 x 350	3/16 x 14"	140 - 220	6135

Approvals :

TSE, CE, GOST-R, SEPRO

Standards :

TS EN ISO 2560-A	: E 42 3 C 25
EN ISO 2560-A	: E 42 3 C 25
AWS A5.5	: E 7010 - P1

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn
0.15	0.2	1.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	500-640	min. 47 J	min. 22

Typical Base Material Grades :

* S235JR, S275JR, S235J2G3, S275J2G3, S355J2G3, P235GH, P265GH, P355T1, P235T2-P355T2, L210-L415NB, L290MB-L415MB, S235JRS1-S235J4S, P235G1TH, P255G1TH, X42-X60

Features and Applications :

* Suitability for use in welding large-diameter high-strength steel pipelines and especially use in hot, filler and cap passes. (For root-pass welding, GeKa electrode LINK 6010 is recommended.)

Welding Positions :



Current Type :

D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
301158	2.50 x 350	3/32 x 14"	40 - 80	1700
300674	3.20 x 350	1/8 x 14"	65 - 125	2735
300675	4.00 x 350	5/32 x 14"	90 - 175	3990
301159	5.00 x 350	3/16 x 14"	140 - 220	6135

Approvals :

TSE, CE, GOST-R, SEPRO

Cellulosic Electrode



LINK 8010 - G

Standards :

TS EN ISO 2560-A	: E Z 46 3 Mo C 25
EN ISO 2560-A	: E Z 46 3 Mo C 25
AWS A5.5	: E 8010 - G

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Ni	Mo
0.14	0.2	0.9	0.2	0.15

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L ₀ =5d ₀)(%)
min. 460	550-650	min. 47 J	min. 20

Typical Base Material Grades :

* L290NB-L415NB, L290MB-L415MB, -L485MB, S235JRS1-S235J4S, X42-X70

Features and Applications :

- * Suitability for use in all-positions of welding high-strength low alloyed steel pipelines joining.
- * Suitability for use in welding all positions, particularly vertical down position
- * Usability in sour gas - involving applications (acc. HIC Test NACE TM-0284)
- * For root-pass welding, GeKa LINK 6010 is recommended

Welding Positions :



Current Type :

D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300676	2.50 x 350	3/32 x 14"	40 - 80	1635
305368	3.20 x 350	1/8 x 14"	65 - 125	2640
305360	4.00 x 350	5/32 x 14"	90 - 175	4000
305361	5.00 x 350	3/16 x 14"	140 - 220	6340

Approvals :

TSE, CE, GOST-R, NACE, SEPRO

Standards :

TS EN ISO 2560-A	: E 46 3 1 Ni C 25
EN ISO 2560-A	: E 46 3 1 Ni C 25
AWS A5.5	: E 8010 - P1

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Ni
0.14	0.2	0.9	0.6

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L ₀ =5d ₀)(%)
min. 460	550-650	min. 47 J	min. 20

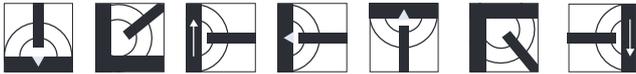
Typical Base Material Grades :

* L290NB-L415NB, L290MB-L415MB, -L485MB, S235JRS1-S235J4S, X42-X70

Features and Applications :

- * Suitability for use in all-positions of welding high-strength low alloyed steel pipelines joining.
- * Suitability for use in welding all positions, particularly vertical down position.
- * Can be used in sour gas applications.
- * For root-pass welding, GeKa LINK 6010 is recommended.

Welding Positions :



Current Type :

D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
304904	2.50 x 350 / 3/32 x 14"	40 - 80	1635
300677	3.20 x 350 / 1/8 x 14"	65 - 125	2640
300678	4.00 x 350 / 5/32 x 14"	90 - 175	4000
300679	5.00 x 350 / 3/16 x 14"	140 - 220	6340

Approvals :

BV, DNV-GL, CE, TSE, GOST-R, SEPRO

Low Hydrogen Electrode



LASER B 43

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 38 4 B 42 H5
EN ISO 2560-A	: E 38 4 B 42 H5
AWS A5.1	: E 7016-1 H4

C	Si	Mn
0.06	0.5	0.7

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-50°C)	Elongation (L ₀ =5d ₀)(%)
min. 400	490-600	min. 47 J	min. 24

Typical Base Material Grades :

- * S235JR-E295, S235J2G3-S355J2G3, C22, C35, P235T1-P355T1, P235T2-P355T2, L210-L320, L290MB-L320MB, P235G1TH, P255G1TH, P235GH,P265GH, P295GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S355N, P255NH-P355NH, S255NL-S355NL,GE200-GE240
- * API 5L : A, B, X42, X46, X52, X56

Features and Applications :

- * Suitability for use in welding at all positions except for vertical down position
- * Weld metal recovery of about 110%
- * Weld deposits with very low hydrogen content
- * High-quality and ductile, crack-resistant weld metals, mostly forming rigid weldments with beads of large cross-sections
- * D.C. (-) is recommended for the root pass
- * Requirement of re-drying for minimum 2 hours at the temperatures between 300°C and 350°C

Welding Positions :



Current Type :

D.C. (-) for root pass / D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300388	2.50 x 350	3/32 x 14"	80 - 110	2215
300389	3.20 x 350	1/8 x 14"	100 - 140	3545
300390	4.00 x 450	5/32 x 18"	130 - 190	6565
300391	5.00 x 450	3/16 x 18"	190 - 240	10125

Approvals :

TSE, CE, GOST-R, ABS, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 42 4 B 42 H5
EN ISO 2560-A	: E 42 4 B 42 H5
AWS A5.1	: E 7018-H4

C	Si	Mn
0.07	0.5	1.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-40°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	510-600	min. 47 J	min. 24

Typical Base Material Grades :

* S235JR-E295, E335, S235J2G3-S355J2G3, C22, C35, P235T1-P355T1, P235T2,P355T2, L210-L360, L290MB-L360MB, P235G1TH, P255G1TH, P235GH-P295GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S355N, P255NH-P355NH, S255NL-S355NL, GE200-GE300

* API 5L : A, B, X42, X46, X52, X56, X60

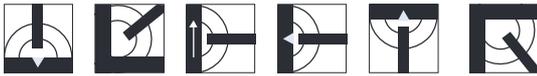
Features and Applications :

* Suitability for use in out-of-position welding except for welding at vertical down position. * Excellent strength and toughness. * Suitability for use in the fields of steel constructions, boiler, container, machine manufacturing and shipbuilding as well as for use in welding low-purity and high-carbon steels

* Suitability for the formation of welding buffer layers when building up high-carbon steels. * Weld deposits with very low hydrogen content. * Weld metal recovery of about 120%

* Requirement of re-drying for minimum 2 hours at the temperatures between 300°C and 350°C

Welding Positions :



Current Type :

D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
300392	2.50 x 350 / 3/32 x 14"	80 - 100	2410
300393	3.20 x 350 / 1/8 x 14"	100 - 140	3790
300395	4.00 x 450 / 5/32 x 18"	130 - 190	6850
300396	5.00 x 450 / 3/16 x 18"	190 - 240	10715

Approvals :

BV, DNV-GL, TL, DB, ABS, LR, RS, RINA, NK, TSE, TÜV, CWB, CE, GOST-R, SEPRO, RCB

Low Hydrogen Electrode



LASER B 47-A

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 42 4 B 32 H5
EN ISO 2560-A	: E 42 4 B 32 H5
AWS A5.1	: E 7016-1 H4

C	Si	Mn
0.07	0.6	1.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	500-610	min. 47 J	min. 24

Typical Base Material Grades :

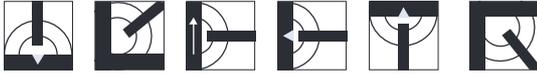
* S235JR-E295, E335, S235J2G3-S355J2G3, C22, C35, P235T1-P355T1, P235T2,P355T2, L210-L360, L290MB-L320MB, P235G1TH, P255G1TH, P235GH-P295GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S355N, GE200-GE300

* API 5L : A, B, X42, X46, X52, X56, X60

Features and Applications :

* Suitability for welding with AC power * Suitability for use in out-of-position welding except for welding at vertical down position * Excellent strength and toughness * Suitability for use in the fields of steel constructions, boiler, container, machine manufacturing, and shipbuilding construction as well as for use in welding low-purity and high-carbon steels * Suitability for the formation of welding buffer layers when building up high-carbon steels * Weld deposits with very low hydrogen content * Weld metal recovery of about 125% * Requirement of re-drying for minimum 2 hours at the temperatures between 300°C and 350°C

Welding Positions :



Current Type :

D.C.(+)

A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300906	2.50 x 350	3/32 x 14"	80 - 100	2290
300910	3.20 x 350	1/8 x 14"	100 - 140	3750
303747	4.00 x 350	5/32 x 14"	130 - 190	5780
300908	4.00 x 450	5/32 x 18"	130 - 190	7232

Approvals :

TSE, ABS, GOST-R, SEPPO

Low Hydrogen Electrode



LASER B 50

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 42 5 B 42 H5
EN ISO 2560-A	: E 42 5 B 42 H5
AWS A5.1	: E 7018 - 1 H4

C	Si	Mn
0,08	0,5	1,1

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-50°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	510-630	min. 47 J	min. 24

Typical Base Material Grades :

* S235JR-E295, E335, S235J2G3-S355J2G3, C22, C35, P235T1-P355T1, P235T2,P355T2, L210-L360, L290MB-L360MB, P235G1TH, P255G1TH, P235GH-P355GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S355N, P255NH-P355NH, S255NL-S355NL, GE200-GE300
* API 5L : A, B, X42, X46, X52, X56, X60

Features and Applications :

* Suitability for use in out-of-position welding except for welding at vertical down position * Excellent strength and toughness *Suitability for use in the fields of steel constructions, boiler, container, machine manufacturing and vertical construction as well as for use in welding low-purity and high-carbon steels *Suitability for the formation of welding buffer layers when building up high-carbon steels * Weld deposits with very low hydrogen content * Weld metal recovery of about 110% *Requirement of re-drying for minimum 2 hours at the temperatures

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300398	2.50 x 350	3/32 x 14"	80 - 100	2220
300399	3.20 x 350	1/8 x 14"	100 - 140	3645
300401	4.00 x 450	5/32 x 18"	130 - 190	6765
300402	5.00 x 450	3/16 x 18"	190 - 240	10220

Approvals :

TSE, ABS, CE, GOST-R, HAKC (3.20 mm), DNV-GL, SEPRO

Low Hydrogen Electrode



LASER B 55

Standards :

TS EN ISO 2560-A	: E 46 5 B 42 H5
EN ISO 2560-A	: E 46 5 B 42 H5
AWS A5.1	: E 7018 - 1 H4

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn
0.08	0.4	1.4

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-50°C)	Elongation (L ₀ =5d ₀)(%)
min. 460	530-650	min. 47 J	min. 24

Typical Base Material Grades :

* S235JR-E295, E335, S235J2G3-S355J2G3, P235T1-P355T1, P235T2,P355T2, L210NB-L415NB, L290MB-L360MB, P235G1TH, P255G1TH, P235GH-P355GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S380N, P255NH-P355NH, S255NL-S460NL1, GE200-GE300
* API 5L : X42, X46, X52, X56, X60, X65

Features and Applications :

- * Suitability for use in out-of-position welding except for welding at vertical down position
- * High ductility at low temperatures down to -50 °C
- * Suitability for use in welding low-purity and high-carbon steels
- * Weld deposits with very low hydrogen content
- * High-quality weld metals with higher strength values
- * Requirement of re-drying for minimum 2 hours at the temperatures between 300 °C and 350 °C

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
300403	2.50 x 350 / 3/32 x 14"	80 - 100	2198
300404	3.20 x 350 / 1/8 x 14"	100 - 140	3570
300405	4.00 x 450 / 5/32 x 18"	130 - 190	6660
300406	5.00 x 450 / 3/16 x 18"	190 - 240	10225

Approvals :

TSE, ABS, CE, GOST-R, SEPRO

Standards :

TS EN ISO 2560-A	: E 46 6 B 42 H5
EN ISO 2560-A	: E 46 6 B 42 H5
AWS A5.1	: E 7018 - 1 H4

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn
0.08	0.4	1.4

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L ₀ =5d ₀)(%)
min. 460	530-650	min. 47 J	min. 24

Typical Base Material Grades :

* S235JR-E295, E335, S235J2G3-S355J2G3, P235T1-P355T1, P235T2, P355T2, L210NB-L415NB, L290MB-L360MB, P235G1TH, P255G1TH, P235GH-P355GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S380N, P255NH-P355NH, S255NL-S460NL1, GE200-GE300
* API 5L : X42, X46, X52, X56, X65

Features and Applications :

- * Suitability for use in welding of high-strength, fine-grained steels
- * High ductility at low temperatures down to -60 °C
- * It is used for joining thick materials safely
- * Weld metal recovery of approx. 120%.
- * Requirement of re-drying for minimum 2 hours at the temperatures between 300 °C and 350

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
305045	2.50 x 350 / 3/32 x 14"	80 - 100	2198
305047	3.20 x 350 / 1/8 x 14"	100 - 140	3570
305048	4.00 x 450 / 5/32 x 18"	130 - 190	6660

Approvals :

TSE, BV, ABS, CE, GOST-R, CWB, SEPRO

Low Hydrogen Electrode



LASER B 60

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 42 4 B 42 H5
EN ISO 2560-A	: E 42 4 B 42 H5
AWS A5.1	: E 7018 H4

C	Si	Mn
0.08	0.6	1.2

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-40°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	520-630	min. 47 J	min. 24

Typical Base Material Grades :

* S235JR-E295, E335, S235J2G3-S355J2G3, C22, C35, P235T1-P355T1, P235T2,P355T2, L210-L360, L290MB-L360MB, P235G1TH, P255G1TH, P235GH-P355GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S355N, P255NH-P355NH, S255NL-S355NL,GE200-GE300
* API 5L : A, B, X42, X46, X52, X56, X60

Features and Applications :

* Suitability for use in out-of-position welding except for welding at vertical down position.* Excellent strength and toughness. * Suitability for use in the fields of steel constructions, boiler, container, machine manufacturing and shipbuilding as well as for use in welding low-purity and high-carbon steels. * The pressure vessels used in the production.* Suitability for the formation of welding buffer layers when building up high-carbon steels. * Weld deposits with very low hydrogen content. * Requirement of re-drying for minimum 2 hours at the temperatures between 300 °C and 350 °C

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300407	2.50 x 350	3/32 x 14"	60 - 90	2340
300408	3.20 x 350	1/8 x 14"	100 - 140	3700
300410	4.00 x 450	5/32 x 18"	150 - 210	6800
300411	5.00 x 450	3/16 x 18"	200 - 260	10220

Approvals :

TSE, CE, GOST-R, SEPRO

Low Hydrogen Electrode



LASER B 160

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 42 3 B 63 H5
EN ISO 2560-A	: E 42 3 B 63 H5
AWS A5.1	: E 7028 H4

C	Si	Mn
0.07	0.6	1.1

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	510-610	min. 47 J	min. 24

Typical Base Material Grades :

* S235JR, S275JR, S235J2G3, S275J2G3, S355J2G3, P235GH, P265GH, P295GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S355N, P255NH-P355NH, GE200-GE300, S255NL-S355NL
* API 5L : X42, X46, X52, X56, X60

Features and Applications :

- * High efficiency of appx. 160% weld metal recovery.
- * Preferred use in fillet and butt welding at horizontal position
- * High rates of deposition. * Deposition in proper length provides cost saving
- * Weld deposits of low hydrogen content
- * Requirement of re-drying for minimum 2 hours at the temperatures between 300 °C and 350

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300699	3.20 x 350	1/8 x 14"	120 - 180	5434
300700	4.00 x 450	5/32 x 18"	160 - 240	9420
300701	5.00 x 450	3/16 x 18"	200 - 330	15990

Approvals :

TSE, CE, GOST-R, SEPRO

Low Alloyed High Strength Electrode



TEMPO B 48

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 42 6 1Ni B32 H5
EN ISO 2560-A	: E 42 6 1Ni B32 H5
AWS A5.5	: E 7018-GH4

C	Si	Mn	Ni
0.06	0.5	1.0	0.8

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L _c =5d ₀)(%)
min. 460	530-640	min. 50 J	min. 22

Typical Base Material Grades :

- * EN 10205: S355J2G3, S355JR, S355JO, S355J2G4, S355K2G3, S355K2G4,
- ASTM A 572 Gr.50, A709Gr.50, A678Gr.50, A633Gr.D
- * API 5L : A, B, X42, X46, X52, X60

Features and Applications :

- * This is AC/DC basic-coated electrode that has a weld metal recovery of 120% which can be used at all welding positions except for the vertical-down position.
- * Usable with short arc in (+) pole for root pass welding with excellent penetration, especially at vertical-up position.
- * Weld deposit with high low temperature toughness
- * Re-drying : 350°C - 400°C / 2h

Welding Positions :



Current Type :

- D.C.(+) D.C.(-)
- AC

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
304014	2.50 x 350 / 3/32 x 14"	60 - 100	2197
303903	3.20 x 350 / 1/8 x 14"	80 - 130	3509
304020	4.00 x 350 / 5/32 x 14"	120 - 180	5210

Approvals :

CE, ABS, TSE, GOST-R, SEPRO

Low Alloyed High Strength Electrode



TEMPO B 60

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 46 6 1 Ni B 42 H5
EN ISO 2560-A	: E 46 6 1 Ni B 42 H5
AWS A5.5	: E 8018 - G H4

C	Si	Mn	Ni
0.07	0.3	1.3	0.9

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V-60°C)	Elongation (L ₀ =5d ₀)(%)
min. 460	580-680	100 J	min. 24

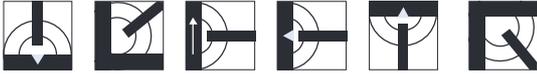
Typical Base Material Grades :

* E295, E335, S355J2G3, L210-L360NB, L210MB-L360MB, P310GH, P355GH, S380N-S460N, P380NH-P460NH, S380NL-S460NL, S255NL1-S420NL1, GE260-GE300
* API 5L : X42, X46, X52, X56, X60, X65

Features and Applications :

* Content with Mn-Ni alloy * High toughness and high resistance to cracking * Suitability for use in welding high-strength, fine-grained structural steels * Suitability for use in welding of materials with service temperatures between -60 °C and +350 °C * Very high values of impact resistance after aging * Convenience of welding at all positions except for vertical down position * Weld deposits with very low contents of hydrogen * Requirement of re-drying for minimum 2 hours at the temperatures between 350 °C and 400 °C

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
300412	2.50 x 350 / 3/32 x 14"	80 - 110	2197
300413	3.20 x 350 / 1/8 x 14"	100 - 140	3509
300414	4.00 x 450 / 5/32 x 18"	130 - 190	6660
300415	5.00 x 450 / 3/16 x 18"	190 - 240	1320

Approvals :

TSE, DNV-GL, CE, GOST-R, SEPRO

Low Alloyed High Strength Electrode



TEMPO B 63

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	:	E 50 3 B 42 H5
EN ISO 2560-A	:	E 50 3 B 42 H5
AWS A5.5	:	E 8018 - G H4

C	Si	Mn
0.06	0.7	1.6

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L ₀ =5d ₀)(%)
min, 500	610-730	min,80 J	min, 22

Typical Base Material Grades :

* S355J2G3,E295-E360, C35-C60, S315N-S500N, P315NH-P500NH, GE240-GE340

Resistance of the rail steels up to 785 N/mm² are used.

* API 52 : X52, X56, X60, X65, X70

Features and Applications :

* Suitability for use in welding carbon and low-alloyed high-strength steels with carbon contents up to 0.6%

* Suitability for use in rail-joint welding

* Ductile and crack-resistant weld metals

* Recovery of weld metals about 115%

* Weldability at all positions except for vertical down positions

* Weld deposits with very low contents of hydrogen

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300416	2.50 x 350	3/32 x 14"	80 - 110	2325
300417	3.20 x 350	1/8 x 14"	100 - 140	3620
300418	4.00 x 450	5/32 x 18"	130 - 190	6710
300419	5.00 x 450	3/16 x 18"	190 - 240	10500

Approvals :

TSE, CE, GOST-R, SEPRO

Low Alloyed High Strength Electrode



TEMPO B 65

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18275-A	: E 55 6 1 NiMo B 42 H5
EN ISO 18275-A	: E 55 6 1 NiMo B 42 H5
AWS A5.5	: E 8018 - G H4

C	Si	Mn	Ni	Mo
0.06	0.3	1.2	0.8	0.35

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L ₀ =5d ₀)(%)
min. 550	630-750	10 	min. 22

Typical Base Material Grades :

* E295-E360, 20MnMoNi5-5, 22NiMoCr4-7, S380N-S500N, S380NH-S500NH, S380NL-S500NL, S380NL1-S500NL1, 15NiCuMoNb5S, 17MnMoV6-4, C35-C60, GS60,
* API 5L: X52, X56, X60, X65, X70

Features and Applications :

* Suitability for use in welding high-strength, fine-grained steels. * Consistent high ductility and crack-resistance at low working temperatures down to -60 °C. * Resistance to aging. * Convenience of welding at all positions except for the vertical down position. * Possibility of applying same heat treatments temperatures at pre- and post-welding as well as at transition stages as those of base metal. * Very low contents of hydrogen
* Requirement of re-drying for minimum 2 hours at the temperatures between 350 °C and 400 °C

Welding Positions :



Current Type :

D.C.(+) / D.C. (-) for root pass

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
300420	2.50 x 350 / 3/32 x 14"	80 - 110	2100
300421	3.20 x 350 / 1/8 x 14"	100 - 140	3610
300422	4.00 x 450 / 5/32 x 18"	130 - 190	6800
300423	5.00 x 450 / 3/16 x 18"	190 - 240	9915

Approvals :

CE, GOST-R, ABS, SEPRO

Low Alloyed High Strength Electrode



TEMPO B 70 M

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18275-A	: E 55 6 Z(1NiMo) B 42 H5
EN ISO 18275-A	: E 55 6 Z(1NiMo) B 42 H5
AWS A5.5	: E 9018 - MH4

C	Si	Mn	Ni	Mo
0.05	0.3	1.1	1.4	0.35

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 550	620-780	80 J	min. 24	AW

Typical Base Material Grades :

- * S380N-S500N, S355NH-S460NH, S380NL-500NL
- * Fine grained, high strength steels and steel castings
- * API 5L : X52, X56, X60, X65, X70

Features and Applications :

- * High resistance to cracking.
- * Low amounts of Hydrogen (4 ml / 100 g).
- * Operability at temperatures between - 60 °C and + 350 °C. * Low content of moisture absorbed during long-term storage.
- * Requirement of re-drying for minimum 2 hours at the temperatures between 350 °C and 400 °C.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
305544	2.50 x 350	3/32 x 14"	80 - 110	2220
305118	3.20 x 350	1/8 x 14"	100 - 140	3640
305120	4.00 x 450	5/32 x 18"	130 - 190	6790
305545	5.00 x 450	3/16 x 18"	190 - 240	10130

Approvals :

CE, GOST-R, SEPRO

Low Alloyed High Strength Electrode



TEMPO B 70 S

Standards :

TS EN ISO 18275-A	: E 55 62NiMo BT 42 H5
EN ISO 18275-A	: E 55 62NiMo BT 42 H5
AWS A5.5	: E 9018 -G H4

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Ni	Mo
0.07	0.2	0.6	2.4	0.4

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 550	620-780	90 J	min. 20	600 °C / 1h / 300 °C (hava)

Typical Base Material Grades :

- * S380N-S500N, S355NH-S460NH, S380NL-500NL
- * Fine grained, high alloyed steels and steel castings
- * API 5L: X52, X56, X60, X65, X70

Features and Applications :

- * Suitability for use in welding of high-strength, fine-grained steels.
- * High ductility and high resistance to cracking obtained in Welding fine-grained steels
- * Suitability for use in welding of materials with service temperatures between -60 °C and +350 °C.
- * Requirement of re-drying for minimum 2 hours at the temperatures between 350 °C and 400 °C.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
305426	2.50 x 350	3/32 x 14"	80 - 110	2220
304794	3.20 x 350	1/8 x 14"	100 - 140	3640
304795	4.00 x 450	5/32 x 18"	130 - 190	6790
304937	5.00 x 450	3/16 x 18"	190 - 240	10130

Approvals :

CE, GOST-R, ABS, SEPRO

Low Alloyed High Strength Electrode



TEMPO B 70 Mo

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18275-A	: E 55 5 MnMo B 42 H5
EN ISO 18275-A	: E 55 5 MnMo B 42 H5
AWS A5.5	: -E 9018 - D1 H4

C	Si	Mn	Mo
0.075	0.40	1.60	0.45

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-50°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 550	610-780	min. 47 J	min. 20	620 °C / 2h / 300 °C (air)

Typical Base Material Grades :

- * E295-E360, P355GH, 17MnMoV6-4, 15NiCuMoNb5S, S380N-S500N, P380NH-S500NH, GE300-GE340, G22Mo4
- * API 5L: X52, X56, X60, X65, X70

Features and Applications :

- * Suitability for use in welding high-strength, fine-grained constructional steels and high-temperature steels
- * Use in welding rail steels with strength values up to 785 N/mm²
- * Content including MnMo alloy
- * Resistance to cracking as well as to aging, high toughness
- * Requirement of re-drying for minimum 2 hours at the temperatures between 350 - 400 °C

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
301117	2.50 x 350	3/32 x 14"	80 - 110	2220
301110	3.20 x 350	1/8 x 14"	100 - 140	3640
301111	4.00 x 450	5/32 x 18"	130 - 190	6790
301113	5.00 x 450	3/16 x 18"	190 - 240	10130

Approvals :

CE, GOST-R, SEPRO

Low Alloyed High Strength Electrode



TEMPO B 75

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18275-A	: EZ 62 6 1 NiMo B 42 H5
EN ISO 18275-A	: EZ 62 6 1 NiMo B 42 H5
AWS A5.5	: E 10018 - GH4

C	Si	Mn	Cr	Mo	Ni
0.05	0.5	1.3	0.3	0.5	1.3

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min, 630	720-850	120 J	min, 20	580 °C / 2h / 300 °C (air)

Typical Base Material Grades :

- * The yield strength of 620 N/mm² up to the quenched and tempered fine grain steels
- * The tensile strength of the 780 N/mm² heat treating steels

Features and Applications :

- * Content of Mn-Mo-Ni alloy * High ductility and high resistance to cracking obtained in welding high-strength, quenched and tempered, fine-grained structural steels. * Suitability for use in welding of materials with service temperatures between -60 °C and +400 °C. * Very high values of impact resistance after aging
- * Convenience of welding at all positions except for the vertical down position. * Possibility of applying same heat treatment temperatures at pre- and post-welding as well as at transition stages as those of base metal
- * Weld deposits with very low contents of hydrogen
- * Requirement of re-drying for minimum 2 hours at the temperatures between 350°C and 400°C.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
300428	2.50 x 350 / 3/32 x 14"	80 - 110	2280
300429	3.20 x 350 / 1/8 x 14"	100 - 140	3630
300430	4.00 x 450 / 5/32 x 18"	130 - 190	6880
300431	5.00 x 450 / 3/16 x 18"	190 - 240	10230

Approvals :

CE, GOST-R, SEPRO

Low Alloyed High Strength Electrode



TEMPO B 85 M

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18275-A : E 69 5 Mn 2 NiCrMo B 4 2 H5
EN ISO 18275-A : E 69 5 Mn 2 NiCrMo B 4 2 H5
AWS A5.5 : E 11018 - MH4

C	Si	Cr	Mo	Ni	Mn
0.05	0.2	0.35	0.45	2.2	1.6

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-50°C)	Elongation (L _o =5d _o)(%)
min. 700	min. 760	min. 47 J	min. 20

Typical Base Material Grades :

- * S620QL-S690QL, S690QL1, HY100
- * API 5L : X60, X65, X70, X80

Features and Applications :

- * Basic-type -coated and Ni-Cr-Mo -alloyed electrode character
- * Applicability in welding of casting steels and high-strength fine-grained steels
- * Weld metals with high resistance to cracking
- * Low amounts of hydrogen (4 ml per 100 g of weld metal)
- * Low amounts of moisture absorbed during long-term storage
- * Requirement of re-drying for minimum 2 hours at the temperatures between 350°C and 400°C.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
303733	2.50 x 350 / 3/32 x 14"	80 - 110	2250
303739	3.20 x 350 / 1/8 x 14"	100 - 140	3640
303745	4.00 x 450 / 5/32 x 18"	130 - 190	6730
303746	5.00 x 450 / 3/16 x 18"	190 - 240	10520

Approvals :

ABS, CE, GOST-R, SEPRO

Low Alloyed High Strength Electrode



TEMPO B 90

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18275-A	: E 69 5 Mn 2 NiCrMo B 42 H5
EN ISO 18275-A	: E 69 5 Mn 2 NiCrMo B 42 H5
AWS A5.5	: E 12018 - G H4

C	Si	Cr	Mo	Ni	Mn
0.06	0.4	0.9	0.5	2.5	1.6

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-50°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 740	830-950	min. 28 J	min. 17	650 °C / 2h / 300 °C (air)

Typical Base Material Grades :

- * HY 100, S690QL, S690QU, N-AXTRA 70
- * API 5L : X60, X65, X70, X80

Features and Applications :

- * Suitability for use in welding fine-grained steels, cementation steels, tempered steels, cast steels etc.
- * Suitability for use of applications requiring a minimum tensile strength value of 830 N/mm²
- * Requirement of re-drying for minimum 2 hours at the temperatures between of 350-400 °C

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302737	3.20 x 350	1/8 x 14"	90 - 140	3509
301203	4.00 x 450	5/32 x 18"	130 - 190	6740
302738	5.00 x 450	3/16 x 18"	170 - 240	10525

Approvals :

CE, GOST-R, SEPRO

Low Alloyed High Strength Electrode



TEMPO Ni Cu

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 42 3 Z (NiCrCu) B 42 H5
EN ISO 2560-A	: E 42 3 Z (NiCrCu) B 42 H5
AWS A5.5	: E 7018-G / 7018-W1(mod.)H4

C	Si	Cr	Ni	Cu	Mn
0.06	0.5	0.3	0.4	0.4	1.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	510-630	60 J	min. 25

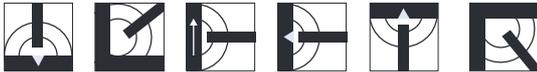
Typical Base Material Grades :

* S235JR, S235JRW, S325J2W, S355J2G1W, S355JRW, S355J2G 3 Cu, COR-TEN A

Features and Applications :

- * Content of Ni-Cu-Cr alloy
- * Suitability for use in welding structural steels exposed to weathering, such as COR-TEN.
- * High mechanical properties with excellent crack resistance
- * Convenience of welding at all positions except for vertical down position
- * Weld deposits with very low contents of hydrogen
- * Requirement of re-drying for minimum 2 hours at the temperatures between of 350 - 400 °C

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
300448	2.50 x 350 / 3/32 x 14"	80 - 110	2340
300449	3.20 x 350 / 1/8 x 14"	130 - 150	3480
300450	4.00 x 450 / 5/32 x 18"	150 - 190	6685
300451	5.00 x 450 / 3/16 x 18"	200 - 250	10115

Approvals :

TSE, CE, GOST-R, SEPRO

Low Alloyed High Strength Electrode



TEMPO B W2

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 46 6 Z (NiCrCu) B 42 H5
EN ISO 2560-A	: E 46 6 Z (NiCrCu) B 42 H5
AWS A5.5	: E 8018 W2 H4

C	Si	Cr	Ni	Cu	Mn
0.06	0.45	0.5	0.5	0.4	0.7

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L ₀ =5d ₀)(%)
min. 460	550-680	min. 47 J	min. 20

Typical Base Material Grades :

* S235JR, S235JRW, S325J2W, S355J2G1W, S355JRW, S355J2G 3 Cu, Patinax 37, 9CrNiCuP3-2-4
S255-S460, COR-TEN A,B,C

Features and Applications :

- * Content of Ni-Cu-Cr alloy
- * Suitability for use in welding structural steels exposed to weathering, especially for COR-TEN B Type steels.
- * High mechanical properties with excellent crack resistance
- * Convenience of welding at all positions except for vertical down position
- * Weld deposits with very low contents of hydrogen
- * Requirement of re-drying for minimum 2 hours at the temperatures between 350°C and 400°C.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
305694	2.50 x 350 / 3/32 x 14"	80 - 110	2340
305695	3.20 x 350 / 1/8 x 14"	130 - 150	3480
305696	4.00 x 450 / 5/32 x 18"	150 - 190	6685

Approvals :

CE, GOST-R, SEPRO

Low Alloyed High Strength Electrode



TEMPO B 1

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 46 6 1 Ni B 42 H5
EN ISO 2560-A	: E 46 6 1 Ni B 42 H5
AWS A5.5	: E 8018 - C3 H4

C	Si	Mn	Mo	Ni
0.07	0.3	1.0	0.15	1.0

Mechanical Properties : _____

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L ₀ =5d ₀)(%)
min. 480	580-700	min. 47 J	min. 24

Typical Base Material Grades : _____

* 11MnNi53, 13MnNi63, TTSi35N, TTSi35V, TTSi41, TTSi45, S255N-S500N, S255NL-S500NL

Features and Applications : _____

- * Suitability for use in welding low-alloyed steels resistant to lower service temperatures
- * Serviceability of weld metals at temperatures down to -60 °C
- * Weld metal recovery of approx. 120%
- * Requirement of re-drying for minimum 2 hours at the temperatures between 350°C and 400°C.

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300437	2.50 x 350	3/32 x 14"	70 - 100	2150
300438	3.20 x 350	1/8 x 14"	110 - 140	3610
304021	4.00 x 350	5/32 x 14"	140 - 180	5280
300439	4.00 x 450	5/32 x 18"	140 - 190	6800
306249	5.00 x 450	3/16 x 18"	190 - 240	10125

Approvals : _____

TSE, CE, GOST-R, SEPRO

Low Alloyed High Strength Electrode



TEMPO B 2

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 46 6 2 Ni B 42 H5
EN ISO 2560-A	: E 46 6 2 Ni B 42 H5
AWS A5.5	: E 8018 - C1 H4

C	Si	Mn	Ni
0.05	0.3	0.8	2.4

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-80°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 460	550-690	min. 47 J	min. 24	605 °C / 2h / 300 °C (air)

Typical Base Material Grades :

* 12Ni14, 14Ni6, 13MnNi6-3, G12Ni14, S255N-S460N, S255NH-S460NH, S255NL-S460NL, S255NL1-S460NL1, TTS135/N/V, TTS145N/V

Features and Applications :

- * Suitability for use in welding fine-grained, Ni-alloyed and carbon steels as well as cryogenic steels. * High ductility and crack resistance in weld deposits. * Serviceability of weld metals at temperatures down to -80 °C
- * Weld metal recovery of approx. 120%. * Convenience of welding at all positions except for vertical down position
- * Possibility of applying same heat treatment temperatures at pre- and post-welding as well as at transition stages as those of base metal. * Weld deposits with very low contents of hydrogen
- * Requirement of re-drying for minimum 2 hours at the temperatures between 350°C and 400°C

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
300440	2.50 x 350 / 3/32 x 14"	70 - 100	2175
300441	3.20 x 350 / 1/8 x 14"	110 - 140	3700
300442	4.00 x 450 / 5/32 x 18"	140 - 180	6440
300443	5.00 x 450 / 3/16 x 18"	190 - 230	10125

Approvals :

TSE, CE, GOST-R, HAKC (3.20 mm), SEPRO

Low Alloyed High Strength Electrode



TEMPO B 3

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 2560-A	: E 46 6 3 Ni B 42 H5
EN ISO 2560-A	: E 46 6 3 Ni B 42 H5
AWS A5.5	: E 8018 - C2 H4

C	Si	Mn	Ni
0.05	0.3	0.7	3.2

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-100°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 460	550-700	min. 47 J	min. 24	605 °C / 2h / 300 °C (air)

Typical Base Material Grades :

* Cold-tough steels: 10 Ni14, 16Ni16, S 255NL1-S500NL1, S275NL2-P460NL2

Features and Applications :

- * Suitability for use in welding Ni-alloyed construction steels for cryogenic applications
- * High ductility and crack resistance in weld deposits
- * Serviceability of weld metals at temperatures down to -110 °C
- * Weld metal recovery of approx. 120%
- * Convenience of welding at all positions except for vertical down position
- * Weld deposits with very low contents of hydrogen
- * Requirement of re-drying for minimum 2 hours at the temperatures between 350°C and 400°C

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300444	2.50 x 350	3/32 x 14"	70 - 100	2220
300445	3.20 x 450	1/8 x 14"	110 - 140	3650
300446	4.00 x 450	5/32 x 18"	140 - 180	6600
300447	5.00 x 450	3/16 x 18"	190 - 230	8250

Approvals :

TSE, CE, GOST-R, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3580-A	:	E Mo R 12
EN ISO 3580-A	:	E Mo R 12

C	Si	Mn	Mo
0.07	0.4	0.6	0.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 420	530-670	min. 47 J	min. 22	620 °C / 2h / 300 °C (air)

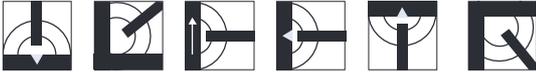
Typical Base Material Grades :

* S355J2G3, E295, P255G1TH, L320- L415NB, 16Mo3, L290MB -L415MB, 16Mo3, S255N, P295GH, P355GH,
P255-P355N, P255NH-P355NH

Features and Applications :

- * Welding of heat-resistant Mo-alloyed, fine-grained or unalloyed steels used for construction of boilers and pipes.
- * Weld metal is resistant to working temperatures up to +550 °C.

Welding Positions :



Current Type :

D.C.(-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
300727	2.50 x 350 / 3/32 x 14"	80 - 110	2080
300728	3.20 x 350 / 1/8 x 14"	110 - 140	3310
300729	4.00 x 350 / 5/32 x 14"	140 - 190	4900
300730	5.00 x 350 / 3/16 x 18"	190 - 240	7540

Approvals :

CE, GOST-R, SEPRO

Heat Resisting Electrode



OPUS MOB

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3580-A	:	E Mo B 42 H5
EN ISO 3580-A	:	E Mo B 42 H5
AWS A5.5	:	E 7018-A1 H4

C	Si	Mn	Mo
0,07	0,4	0,9	0,5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-50°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 460	530-680	min. 47 J	min. 20	620 °C / 2h / 300 °C (air)

Typical Base Material Grades :

* S355J2G3, E295, E335, P255G1TH, 16Mo3, L320-L415NB, L290MB-L415MB, S255N-S460N, P295GH, P355GH, 15NiCuMoNb5S, 20MnMoNi4-5, 17MnMoV6-4, S255NH-S460NH, S255NL-S460NL, GE240-GE300, GS22Mo4

Features and Applications :

- * Basic-coated stick electrode.
- * Welding of heat-resisting, Mo-alloyed, thin-walled and unalloyed steels used for construction of boilers and pipes.
- * Weld metal is resistant to working temperatures from -50 °C to +550 °C.

Re-drying : 350-400 °C min. 2 h.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g / 100 pcs
300721	2,50 x 350	3/32 x 14"	80 - 110	2270
300722	3,20 x 350	1/8 x 14"	100 - 140	3510
300724	4,00 x 450	5/32 x 18"	140 - 190	6660
300726	5,00 x 450	3/16 x 18"	190 - 240	10160

Approvals :

DB, TÜV, CE, GOST-R, SEPRO

Standards :

TS EN ISO 3580-A	:	E Cr Mo 1 R 12
EN ISO 3580-A	:	E Cr Mo 1 R 12
AWS A5.5	:	E 8013-G

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Mo	Cr
0.06	0.4	0.6	0.5	1.1

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L _c =5d ₀)(%)	Heat Treatment
min. 490	590-740	min. 47 J	min. 20	690 °C / 2h / 300 °C (air)

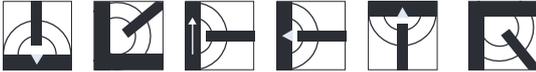
Typical Base Material Grades :

* 13CrMo4-5, 15CrMo5, 16CrMoV4, S355NH

Features and Applications :

- * Welding of steam production plant equipments, steam pipes and similar kinds of heat-resistant joints, all of which are made of Cr-Mo alloy steels.
- * Electrode coating of rutile character.
- * Resistance of weld metal to operating temperatures of values up to 570 °C.

Welding Positions :



Current Type :

- D.C.(-)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300731	2.50 x 350	3/32 x 14"	80 - 110	2150
300732	3.20 x 350	1/8 x 14"	110 - 140	3350
300733	4.00 x 350	5/32 x 14"	140 - 190	4760

Approvals :

CE, GOST-R, SEPRO

Heat Resisting Electrode



OPUS CM

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3580-A	: E Cr Mo 1 B 42 H5
EN ISO 3580-A	: E Cr Mo 1 B 42 H5
AWS A5.5	: E 8018-B2 H4

C	Si	Mn	Mo	Cr
0.07	0,5	0,8	0,5	1,1

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L _c =5d ₀)(%)	Heat Treatment
min. 480	580-740	min. 47 J	min. 20	690 °C / 2h / 300 °C (air)

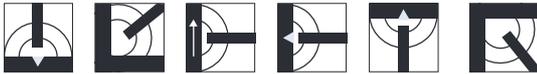
Typical Base Material Grades :

* 13CrMo4-5, 15CrMo5, 16CrMoV4, G17CrMo5-5, GS22Mo4, G22CrMo5-4, A193 Gr.B7, A335 Gr.P11,

Features and Applications :

- * Steam boilers and steam pipes made of Cr-Mo-alloyed heat-resistant steels.
- * Cementation steels, nitrided steels.
- * Electrode coating of basic character.
- * Requirement of re-drying for 2 hours at the temperatures between of 350-400 °C.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300716	2.50 x 350	3/32 x 14"	80 - 110	2300
300717	3.20 x 350	1/8 x 14"	100 - 140	3580
300719	4.00 x 450	5/32 x 18"	140 - 190	6790
300720	5.00 x 450	3/16 x 18"	190 - 240	10020

Approvals :

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3580-A	: E Cr Mo 1 B 42 H5
EN ISO 3580-A	: E Cr Mo 1 B 42 H5
AWS A5.5	: E 8015-B2 H4

C	Si	Mn	Mo	Cr
0.07	0.5	0.8	0.5	1.1

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30 °C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 480	580-740	min. 47 J	min. 20	690 °C / 2h / 300 °C (air)

Typical Base Material Grades :

* 13CrMo4-5, 15CrMo5, 16CrMoV4, G17CrMo5-5, GS22Mo4, G22CrMo5-4, A193 Gr.B7, A335 Gr.P11,

Features and Applications :

- * Welding of steam boilers and steam pipes made of Cr-Mo alloyed heat resistant steels, cementation steels, nitrided steels.
- * Resistance of weld metal to operating temperatures of values up to 570 °C.
- * Weld metal recovery of approx. 125%.
- * It can be used in position welding with lower heat input
- * Usable with short arc in (-) pole for root pass welding with excellent penetration.
- * Requirement of re-drying for minimum 2 hours at the temperature of 350-400 °C.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
305833	2.50 x 350	3/32 x 14"	80 - 110	2300
305595	3.20 x 350	1/8 x 14"	100 - 140	3580
305413	4.00 x 450	5/32 x 18"	140 - 190	6790

Approvals :

CE, GOST-R, SEPRO

Heat Resisting Electrode



OPUS CML

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3580-A	: E Cr Mo 1 L B 42 H5
EN ISO 3580-A	: E Cr Mo 1 L B 42 H5
AWS A5.5	: E 7018 - B2 L H4

C	Si	Mn	Mo	Cr
<0.05	0.6	0.8	0.5	1.1

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 460	550-700	min. 47 J	min. 20

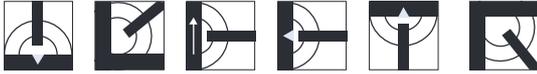
Typical Base Material Grades :

13CrMo4-5, 15CrMo5, 16CrMoV4, G17CrMo5-5, GS-22Mo4, GS-22 CrMo5-4, A 193 Gr B7, A335 Gr P11, P12

Features and Applications :

- * Applicability in welding heat-resisting, low-alloyed steels.
- * Suitability to use against corrosion in sour crude, and against stress corrosion in petrochemical industry.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302729	2.50 x 350	3/32 x 14"	80 - 110	2220
302730	3.20 x 350	1/8 x 14"	110 - 140	3520
302731	4.00 x 450	5/32 x 18"	140 - 190	6790
302732	5.00 x 450	3/16 x 18"	190 - 240	10020

Approvals :

CE, GOST-R, SEPRO

Heat Resisting Electrode



OPUS CMV

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3580-A	:	E Mo V B 42 H5
EN ISO 3580-A	:	E Mo V B 42 H5
AWS A5.5	:	E 9018-G H4

C	Si	Mn	Mo	Cr	V
0.06	0.3	1.2	1.0	0.45	0.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 530	610-710	min. 47 J	min. 18	710 °C / 2h / 300 °C (air)

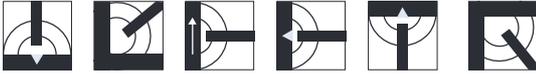
Typical Base Material Grades :

* 14MoV6-3, 24CrMoV5-5, 21CrMoV5-7, 21CrMoV5-11, G17CrMoV5-11

Features and Applications :

- * V-alloyed steels such as 14 MoV6 - 3.
- * Electrode coating of basic character.
- * Serviceability at temperatures up to 580 °C.
- * Pre-heating and interpass temperatures : 200 - 300 °C
- * Re-drying : 350-400 °C min. 2h.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
301056	2.50 x 350	3/12 x 10"	65 - 90	2265
301057	3.20 x 350	1/8 x 14"	90 - 130	3550
301058	4.00 x 350	5/32 x 14"	140 - 180	5160

Approvals :

CE, GOST-R, SEPRO

Heat Resisting Electrode



OPUS 2 CM

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3580-A	: E Cr Mo 2 B 42 H5
EN ISO 3580-A	: E Cr Mo 2 B 42 H5
AWS A5.5	: E 9018-B3 H4

C	Si	Mn	Mo	Cr
0.07	0.4	0.8	1.0	2.2

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 530	620-800	min. 47 J	min. 22	720 °C / 2h / 300 °C (air)

Typical Base Material Grades :

* 10CrMo9-10, 10CrSiMoV7, G-18CrMo9-10, A335 Gr. P22

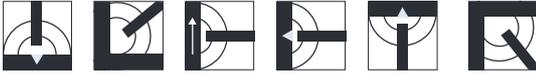
Features and Applications :

* Welding of steam boilers, steam pipes made of Cr-Mo-alloyed steels, nitrided steels, not-heat treated cementation steels.

* Resistance of weld metal to working temperatures up to 600 °C.

* Requirement of re-drying at temperatures between of 350-400 °C for at least 2 hours.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300706	2.50 x 350	3/32 x 14"	80 - 110	2280
300707	3.20 x 350	1/8 x 14"	100 - 140	3490
300708	4.00 x 450	5/32 x 18"	130 - 180	6860
300709	5.00 x 450	3/16 x 18"	190 - 240	10010

Approvals :

CE, GOST-R, SEPRO

Heat Resisting Electrode



OPUS 2 CM-15

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3580-A	: E Cr Mo 2 B 42 H5
EN ISO 3580-A	: E Cr Mo 2 B 42 H5
AWS A5.5	: E 9015-B3 H4

C	Si	Mn	Mo	Cr
0.07	0.5	0.8	1.0	2.2

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 530	620-800	min. 47 J	min. 20	720 °C / 2h / 300 °C (air)

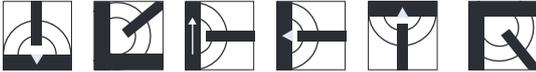
Typical Base Material Grades :

* 10CrMo9-10, 10CrMo5MoV7, G-18CrMo9-10, A335 Gr. P22

Features and Applications :

- * Welding of steam boilers, steam pipes made of Cr-Mo-alloyed steels, nitrided steels, not-heat treated cementation steels.
- * Resistance of weld metal to working temperatures up to 600 °C.
- * Requirement of re-drying at temperatures between of 350-400 °C for at least 2 hours.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
305819	2.50 x 350	3/32 x 14"	80 - 110	2280
305820	3.20 x 350	1/8 x 14"	100 - 140	3490
305821	4.00 x 450	5/32 x 18"	130 - 180	6860

Approvals :

CE, GOST-R, SEPRO

Heat Resisting Electrode



OPUS 2 CML

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3580-A	: E Cr Mo 2 L B 42 H5
EN ISO 3580-A	: E Cr Mo 2 L B 42 H5
AWS A5.5	: E 8018-B3 L H4

C	Si	Mn	Mo	Cr
0.04	0.6	0.6	1.1	2.2

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 530	min. 730	min. 47 J	min. 18	690 °C / 1h / 300 °C (air)

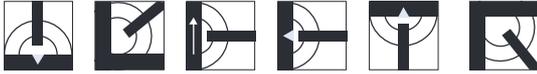
Typical Base Material Grades :

* 2% Cr - 1% Mo Steels, A335 Gr. P22

Features and Applications :

- * Applicability in welding of heat-resisting steels containing 2% Cr - 1% Mn and similar alloys
- * Electrode with basic-type coating
- * Formation of more ductile and less hard weld metal due to low carbon content
- * Serviceability at temperatures of values up to 600 °C (max.)
- * Recommended pre-heating and post-heat treatment during welding processes
- * Requirement of re-drying at temperatures between of 350-400 °C for at least 2 hours

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
301155	2.50 x 350 / 3/32 x 14"	80 - 110	2200
301156	3.20 x 350 / 1/8 x 14"	100 - 140	3680
301157	4.00 x 450 / 5/32 x 18"	130 - 180	6680

Approvals :

CE, GOST-R, SEPRO

Heat Resisting Electrode



OPUS 5 CM

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3580-A :	E Cr Mo 5 B 42 H5
EN ISO 3580-A :	E Cr Mo 5 B 42 H5
AWS A5.5 (A5.4) :	E 8018-B6 (E 502-15) H4

C	Si	Mn	Mo	Cr
0.06	0.4	0.8	0.5	5.2

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 460	590-740	min. 47 J	min. 19	740 °C / 2h / 300 °C (air)

Typical Base Material Grades :

* X12CrMo5, GX12CrMo5

Features and Applications :

- * High-heat-resistant steels
- * In petro chemical industry and on pressured-hydrogen tanks
- * Serviceability of weld metal at working temperature up to 650 °C
- * Requirement of re-drying for at least 2 hours at temperatures between of 350-400 °C

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
300710	2.50 x 350 / 3/32 x 14"	65 - 90	2265
300711	3.20 x 350 / 1/8 x 14"	110 - 130	3580
300712	4.00 x 450 / 5/32 x 18"	140 - 180	6675
300713	5.00 x 450 / 3/16 x 18"	190 - 240	9935

Approvals :

CE, GOST-R, SEPRO

Heat Resisting Electrode



OPUS 9 CM

Standards :

TS EN ISO 3580-A	: E CrMo9 B 4 2 H5
EN ISO 3580-A	: E CrMo9 B 4 2 H5
AWS A5.5	: E 8018-B8 H4
AWS A5.4	: E 505-15

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Mo	Cr
0.07	0.4	0.7	1.0	9.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 600	720-760	80 J	21	760 °C / 2h / 300 °C (air)

Typical Base Material Grades :

* X12CrMo9-1, X7CrMo9-1, GX12CrMo10.

Features and Applications :

- * Welding of boilers, pressure vessel steels, pipe steels and cast steels.
- * Electrode coating of basic character.
- * Electrode content of 9 Chromium 1 Molybdenum.
- * Serviceability at temperatures of values up to 650 °C.
- * Re-drying : 350-400 °C min. 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300714	2.50 x 350	3/32 x 14"	60 - 90	2200
300715	3.20 x 350	1/8 x 14"	90 - 130	3450
301161	4.00 x 350	5/32 x 14"	120 - 160	6685

Approvals :

CE, GOST-R, SEPRO

Heat Resisting Electrode



OPUS 9 CM-15

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3580-A :	E Cr Mo 5 B 42 H5
EN ISO 3580-A :	E Cr Mo 5 B 42 H5
AWS A5.5 (A5.4) :	E 8018-B6

C	Si	Mn	Mo	Cr
0.07	0.40	0.80	1.0	9.0

Mechanical Properties :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
740 °C / 1h / 300 °C (air)	min. 460	min. 600	min. 47 J	min. 19

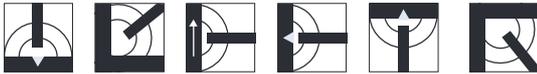
Typical Base Material Grades :

X12CrMo9-1, X7CrMo9-1, A335 Gr. P9

Features and Applications :

- * Heat resistance and low hydrogen electrode with basic-type coating.
- * Resistance of weld metal to working temperatures up to 650 °C.
- * Welding of pressurized boiler steels, pipe steel and steel castings.
- * Requirement of re-drying at temperatures between 350-400 °C for at least 2 hours.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306335	3.20 x 350	1/8 x 14"	90 - 130	3600
306336	4.00 x 350	5/32 x 14"	120 - 160	5550

Approvals :

CE, GOST-R, SEPRO

Heat Resisting Electrode



OPUS 9 CMV

Standards :

TS EN ISO 3580-A	: E CrMo91 B 42 H5
EN ISO 3580-A	: E CrMo91 B 42 H5
AWS A5.5	: E 9018-B9 H4

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Mo	Ni	V	Nb	N
0.09	0.2	0.5	9.0	1.0	0.6	0.2	0.04	+

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 530	min. 620	min. 47 J	17	760°C/2h/300°C air

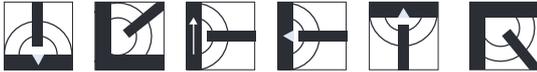
Typical Base Material Grades :

* X10CrMoVNb 9-1, A213 Gr. T91, A 335 Gr. P91 (T91), A 139Gr.T91, % 9-12 Cr type martensitic stainless steels.

Features and Applications :

- * High-alloyed low-hydrogen electrode with basic-type coating.
- * Resistance to heat and creep, high resistance to creeping and high toughness values under long-term stress.
- * Weld metal's resistance to high temperatures up to 620 °C.
- * Pre-heating and inter-pass welding temperature : 200 - 300 °C, Re-drying conditions : 350-400 °C, 2 h.

Welding Positions :



Current Type :

D.C.(+) / D.C.(-) for root pass

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302476	2.50 x 350	3/32 x 14"	80 - 110	2300
302478	3.20 x 350	1/8 x 14"	110 - 140	3580
302484	4.00 x 350	5/32 x 14"	140 - 190	5180

Approvals :

CE, GOST-R, SEPRO

Standards :

TS EN ISO 3580-A	: E CrMo91 B 42 H5
EN ISO 3580-A	: E CrMo91 B 42 H5
AWS A5.5	: E 9018-B9 H4

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Mo	Ni	V	Nb	N
0.09	0.3	0.5	9.0	1.0	1.0	0.2	0.04	+

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 530	min. 620	min. 47 J	min. 17	760°C/2h/300°C air

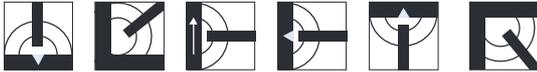
Typical Base Material Grades :

* X10CrMoVNb 9-1, A213 Gr. T91, A 335 Gr. P91 (T91), A 139Gr.T91, % 9-12 Cr type martensitic stainless steels.

Features and Applications :

- * High-alloyed low-hydrogen electrode with basic-type coating.
- * Resistance to heat and creep, high resistance to creeping and high toughness values under long-term stress.
- * Weld metal's resistance to high temperatures up to 620 °C.
- * Pre-heating and inter-pass welding temperature : 200 - 300 °C, Re-drying conditions : 350-400 °C, 2 h.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306106	2.50 x 350	3/32 x 14"	80 - 110	2300
306107	3.20 x 350	1/8 x 14"	110 - 140	3580
306108	4.00 x 350	5/32 x 14"	140 - 190	5180

Approvals :

CE, SEPRO

Heat Resisting Electrode



OPUS P92

Standards :

AWS A5.5 : E 9018-B9 (mod.)

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Ni	Cr	Mo	W
0.08	0.25	0.65	0.75	8.50	0.50	1.80

Mechanical Properties :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
760°C / 4h / 300°C hava	min. 550	min. 650	min. 47 J	min. 19

Typical Base Material Grades :

T/P92, 9%Cr1.7%W0.5Mo, creep resisting martensitic steels; ASTM: A 213 Gr T92, A 335 Gr P92, A 387 Gr 92

Features and Applications :

- * Recommended for welding of heat resistant steels T/P92 which are used for steam tubing, turbine casings and power generating casts.
- * Provides creep strength and toughness at elevated temperatures with additional alloying elements.
- * Weld metal is resistant to temperatures up to +650 °C.
- * Bruscato factor of X<15.
- * Preheat and interpass temperature 200-300 °C.
- * Re-drying: 350-400 °C / 2 h.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306338	3.20 x 350	1/8 x 14"	110 - 140	3800

Approvals :

SEPRO

Standards :

TS EN ISO 3581 - A	:	E 18 8 Mn B 22
EN ISO 3581 - A	:	E 18 8 Mn B 22
AWS A5.4	:	~E 307-15

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Ni	Cr
0.1	0.7	6.0	8.6	18.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 390	580-750	min. 80 J	min. 35

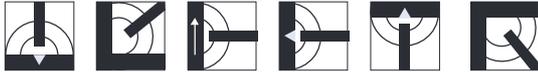
Typical Base Material Grades :

DIN :	X 6 Cr 13	X 15 Cr 13	AISI :	405
	X 6 Cr Al 13	X 22 CrNi 17		410
	X 10 Cr 13	X 5 CrNi 13 4		420
	X 8 Cr 17	X 8 CrTi 17		430
	X 20 Cr 13	G-X 20 Cr 14		430 Ti
	X 10 Cr Al 7	G-X 8 CrNi 13		431
	X 10 Cr A 13	G-X 30 CrSi 6		440
				502

Features and Applications :

* Highly resistant steels, alloyed / unalloyed steels, armour steels, hard manganese steels, nonmagnetic steels, steels with 14% Mn hard-to-weld steels. * Joint welding of different metals with each other.
* Resistance of weld metal to corrosion, wear, thermal shocks and working temperatures between -100 °C and +500 °C. * Requirement of re-drying for at least 2 hours at temperatures between 150 °C and 200 °C.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300528	2.50 x 250	3/32 x 10"	60-80	1260
300529	3.20 x 350	1/8 x 14"	80-100	2880
300530	4.00 x 350	5/32 x 14"	110-140	4215

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 307

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 18 8 Mn R 32
EN ISO 3581 - A	:	E 18 8 Mn R 32
AWS A5.4	:	-E 307-16

C	Si	Mn	Ni	Cr
0.11	1.0	4.5	8.5	19.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 390	600-770	min. 47 J	min. 30

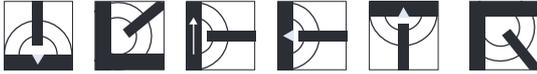
Typical Base Material Grades :

DIN :	X 7 Cr 13	X 15 Cr 13	AISI :	405
	X 7 Cr Al 13	X 22 CrNi 17		410
	X 10 Cr 13	X 5 CrNi 13 4		420
	X 8 Cr 17	X 8 CrTi 17		430
	X 20 Cr 13	G-X 20 Cr 14		430 Ti
	X 10 Cr Al 13	G-X 8 CrNi 13		431
	X 10 Cr Al 7	G-X 30 CrSi 6		440
				502

Features and Applications :

* High resistant steels, alloyed / unalloyed steels, heat-resistant steels, Cr-stainless steels, steels including 14%Mn, hard-to-weld steels. * Joint welding and filler welding of difference metal with each other. * Electrode coating of rutile character. * Austenitic weld metal with resistance to thermal shocks. * Maintenance of toughness at temperatures down to -100 °C. * Requirement of re-drying for at least 2 hours at the temperature 300-350 °C.

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
300556	2.50 x 250 / 3/32 x 10"	60 - 80	1375
300557	3.20 x 350 / 1/8 x 14"	80 - 110	3195
300558	4.00 x 350 / 5/32 x 14"	110 - 140	4745

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 307 L

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	: E 18 9 MnMo B 22
EN ISO 3581 - A	: E 18 9 MnMo B 22
AWS A5.4	: E 307-15

C	Si	Mn	Ni	Mo	Cr
0.08	0.6	4.0	9.5	1.0	19.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 390	590-740	min. 78 J	min. 35

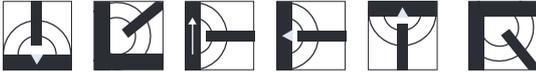
Typical Base Material Grades :

DIN :	X 20 Cr 13	AISI :	403	440
	X 8 Cr 17		405	501
	X 22 CrNi 17		410	502
	X 5 CrNi 17		420	
	G-X 20 Cr 14		430	

Features and Applications :

- * Especially developed for welding of steel armor.
- * Therefore this product using for hot work tool steels.
- * The welding of steels that are difficult to resource availability.
- * Stainless - Chromium, Chromium - Nickel steels and high strength steels welding.
- * Requirement of re-drying of electrodes 2 hours at 150 - 200 °C in case of exposure of the electrode to humidity

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302703	3.20 x 350	1/8 x 14"	80-110	3580
302704	4.00 x 350	5/32 x 14"	110-140	4800

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX RS 307

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	: E Z 18 9 MnMo R 53
EN ISO 3581 - A	: E Z 18 9 MnMo R 53
AWS A5.4	: -E 307-26

C	Si	Mn	Ni	Mo	Cr
0.07	0.9	5.6	8.5	0.75	19.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 400	590-700	min. 47 J	min. 35

Typical Base Material Grades :

DIN :	X 6 Cr 13	X 15 Cr 13	AISI :	405
	X 6 Cr Al 13	X 22 CrNi 17		410
	X 10 Cr 13	X 5 CrNi 13 4		420
	X 8 Cr 17	X 8 CrTi 17		430
	X 20 Cr 13	G-X 20 Cr 14		430 Ti
	X 10 Cr Al 7	G-X 8 CrNi 13		431
	X 10 Cr A 13	G-X 30 CrSi 6		440
				502

Features and Applications :

* Welding of high resistant alloyed / unalloyed steels, heat-resistant steels / stainless steels, steels with 14% Mn, for welding problematic steels. * Joint and filler welding of different metals. * Rutile coated electrode, weld metal is austenitic, resistant to thermal shocks, keeps its toughness down to -100 ° C. re-drying : 300 °C / min. 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
303783	3.20 x 350	1/8 x 14"	110 - 150	4900
303784	4.00 x 350	5/32 x 14"	140 - 180	8000

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 308 L

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 19 9 LR 32
EN ISO 3581 - A	:	E 19 9 LR 32
AWS A5.4	:	E 308 L - 16

C	Si	Mn	Ni	Cr
0.03	0.8	0.9	10.5	20.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L _o =5d _o)(%)
min. 355	520-660	min. 47 J	min. 35

Typical Base Material Grades :

* X2CrNi 19 11, X5CrNi 18 10, X6CrNiTi 18 10, X6CrNiNb 18 10, X2CrNiN 18 10, X10CrNiNb 18 10, X12CrNi 18 8, 304 L, 304, 304 LN, 321, 347, 302

Features and Applications :

* Rutile-coated low-carbon electrode for use in chemical, petrochemical and food industries where similar steel types, including higher carbon grades as well as ferritic 13% -Cr steels are welded. Resistant to corrosion and cracks. Working temperatures up to +350°C
Re-drying : 300-350 °C / min. 2 h

Welding Positions :



Current Type :

D.C.(+)
A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300596	2.50 x 250	3/32 x 10"	50 - 90	1510
300597	3.20 x 300	1/8 x 12"	80 - 120	2880
300598	3.20 x 350	1/8 x 14"	80 - 120	3496
300599	4.00 x 350	5/32 x 14"	110 - 160	5103

Approvals :

TSE, BV, CE, ABS, GOST-R, CWB, SEPRO

Stainless Steel Electrode



ELOX R 308 L-17

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 19 9 LR 32
EN ISO 3581 - A	:	E 19 9 LR 32
AWS A5.4	:	E 308 L - 17

C	Si	Mn	Ni	Cr
0.03	0.8	0.9	10.5	20.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 355	520-660	min. 47 J	min. 35

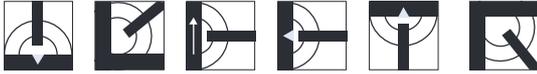
Typical Base Material Grades :

* X2CrNi 19 11, X5CrNi 18 10, X6CrNiTi 18 10, X6CrNiNb 18 10, X2CrNi 18 10, X10CrNiNb 18 10, X12CrNi 18 8, 304 L, 304, 304 LN, 321, 347, 302

Features and Applications :

- * Rutile-coated low-carbon electrode for use in chemical, petrochemical and food industries where similar steel types, including higher carbon grades as well as ferritic 13% - Cr steels are welded.
- * Resistant to corrosion and cracks.
- * Working temperatures up to + 300 - 350 °C.
- * Requirement of re-drying for minimum 2 hours at the temperatures 300-350 °C.

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306255	2.50x250	3/32 x 10"	50 - 90	1500
306256	3.20x350	1/8 x 14"	80 - 120	3510
306257	4.00x350	5/32 x 14"	110 - 160	4935

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 308 H

Standards :

TS EN ISO 3581 - A	:	E 19 9 H R 32
EN ISO 3581 - A	:	E 19 9 H R 32
AWS A5.4	:	E 308 H - 16

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Ni	Cr
0.07	0.7	0.8	10.4	19.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 355	550-650	min. 47 J	min. 35

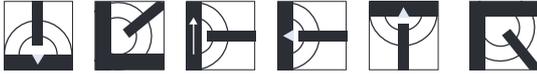
Typical Base Material Grades :

X6CrNi18-11, X12CrNiTi18-9, X6CrNiNb18-10

Features and Applications :

- * Electrode with rutile coating on alloyed core-wire
- * Applicability in welding Cr-Ni -alloyed austenitic high-temperature steels
- * Usability in welding at all positions except for vertical downward position
- * Applicability in joint-welding and surfacing of heat-resisting similar-type steels and steel castings
- * Serviceability at temperatures of values up to 700 °C
- * Resistance to fracture and corrosion
- * Creep resistance at high temperatures being higher than that of the electrode GeKa ELOX R 308

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302670	2.50 x 250	3/32 x 10"	50 - 80	1510
302672	3.20 x 350	1/8 x 14"	80 - 110	3496
305584	4.00 x 350	5/32 x 14"	110 - 140	5103

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 308 L

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 19 9 LB 22
EN ISO 3581 - A	:	E 19 9 LB 22
AWS A5.4	:	E 308 L - 15

C	Si	Mn	Ni	Cr
0.02	0.45	1.2	10.3	19.7

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 370	520-660	90 J	min. 40

Typical Base Material Grades :

* X2CrNi 19 11, X5CrNi 18 10, X6CrNiTi 18 10, X6CrNiNb 18 10, X10CrNiNb 18 10, X2CrNiN 18 10, X12CrNi 18 8, 304L, 304, 304 LN, 321, 347, 302, 320 B 8 C ve D

Features and Applications :

- * Low carbon alloyed core wire austenitic electrode with basic coating for use in all industries where similar steel types, including higher carbon grades as well as ferritic 13% -Cr steels are welded.
- * High ductility of the weld metal, therefore preferably used for welding heavy sections.
- * Very good out-of-position weldability.
- * Good low-temperature ductility down to -196°C.
- * Resistant to intergranular corrosion up to 350°C.
- * Weld metal does not require preheating or postweld heat treatment.
- * Re-drying : 150-200°C / min. 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300904	2.50 x 250	3/32 x 10"	50-80	1510
300532	3.20 x 350	1/8 x 14"	80-110	3330
302460	4.00 x 350	5/32 x 14"	110-140	4760

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 308 H

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 19 9 HB 22
EN ISO 3581 - A	:	E 19 9 HB 22
AWS A5.4	:	E 308 H - 15

C	Si	Mn	Ni	Cr
0.05	0.60	1.40	10.5	19.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 350	min. 550	min. 47 J	min. 30

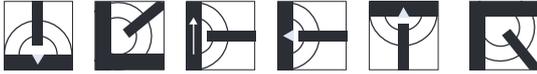
Typical Base Material Grades :

* 301, 302, 304, 304H, 305, 321

Features and Applications :

- * A basic coating electrodes are used for welding type 304H and similar applications where creep strength is required.
- * Electrodes are the same as E308, except for carbon content that has been restricted in the range of 0.04 to 0.08.
- * It provides higher tensile and creep strength has at elevated temperatures.
- * Weld metal ferrite content is normally targeted for 5 FN to minimize effect of sigma embrittlement in high-temperature service.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
305629	2.50 x 250	3/32 x 10"	60 - 90	1500
305630	3.20 x 350	1/8 x 14"	100 - 130	3300
305631	4.00 x 350	5/32 x 14"	100 - 160	4750

Approvals :

CE, SEPRO

Stainless Steel Electrode



ELOX R 308L Mo

Standards :

TS EN ISO 3581 - B	:	ES308LMo-16
EN ISO 3581 - B	:	ES308LMo-16
AWS A5.4	:	E 308 L Mo-16

Chemical Composition of Weld Metal-
% (Typical) :

C	Cr	Ni	Mo
0.03	20.0	9.50	2.50

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 450	540-700	60	min. 35

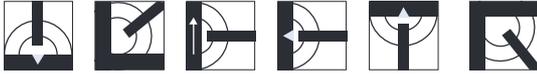
Typical Base Material Grades :

* ASTM A351-Gr. CF3M steel casting.

Features and Applications :

- * A rutile electrode for welding of dissimilar steels.
- * The general purpose electrode for repair welding.
- * It has easy slag removal and smooth appearance in filled welding.

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306114	3.20 x 350	1/8 x 14"	80 - 120	3510

Approvals :

CE, SEPRO

Stainless Steel Electrode



ELOX RS 308

Standards :

TS EN ISO 3581 - A	:	E 19 9 R 53
EN ISO 3581 - A	:	E 19 9 R 53
AWS A5.4	:	E 308-26

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Ni	Cr
0.07	0.8	1.0	9.0	18.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 410	570-710	min.55 J	min. 30

Typical Base Material Grades :

* X2CrNi 19 11, X5CrNi 19 11, X5CrNi 18 8, X12CrNi 17 7, X12CrNi 18 8, G-X10 CrNi 18 8, G-X12CrNi 18 8,
AISI : 304 L, 304, 302, 301, 308

Features and Applications :

- * Applicability in joint- and surface-welding operations of 18/8 Cr-Ni steels, high-strength tempered steels, stainless steels and carbon steels.
- * Welding efficiency of approximately 150%.
- * Resistance to high current.
- * Requirement of re-drying at 300-350 °C for 2 hours.

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300609	2.50 x 350	3/32 x 14"	80-120	2820
300610	3.20 x 350	1/8 x 14"	110-160	5714
300611	4.00 x 350	3/16 x 14"	150-190	7680

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 309 L

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 23 12 LR 32
EN ISO 3581 - A	:	E 23 12 LR 32
AWS A5.4	:	E 309L - 16

C	Si	Mn	Ni	Cr
0.03	0.8	0.8	12.6	23.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 440	540-720	min.47 J	min. 30

Typical Base Material Grades :

- * High-strength unalloyed and heat-treatable steels, ferritic Cr and austenitic CrNi steels, austenitic Mn steels.
- * Unalloyed tempered steels, tool steels, hard manganese steels, ferritic chromium steels, austenitic nickel-chromium steels, hard-to-weld steels.

Features and Applications :

- * Similar-type austenitic stainless steels, dissimilar metals , buffer layers on mild and low-alloy steels prior to build up or overlaying with any stainless electrodes, joining of corrosion resistant stainless steel with mild or low alloy steels, clad steels. * Good crack resistance with hard to weld steels.
- * The weld metal is content to high ferrite %.
- * Re-drying : 300 °C / min. 2 h.

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
304428	2.00 x 250	5/64 x 10 ¹¹	50-85	940
300600	2.50 x 250	3/32 x 10 ¹¹	60-90	1516
300601	3.20 x 350	1/8 x 14 ¹¹	80-120	3560
300602	4.00 x 350	5/32 x 14 ¹¹	100-160	5050

Approvals :

TSE, CE, BV, ABS, GOST-R, SEPRO, RCB

Stainless Steel Electrode



ELOX R 309 H

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3580-A :	ES 309-16
EN ISO 3580-A :	ES 309-16
AWS A5.5 (A5.4) :	E 309 H-16

C	Si	Mn	Ni	Cr
0.06	0.80	0.80	12.0	23.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 440	550-720	min.47 J	min. 30

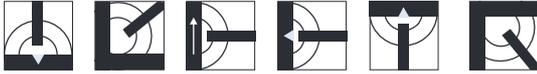
Typical Base Material Grades :

Alloyed and unalloyed steels, AISI 309 Type Steel, Tool Steels, Austenitic CR-Ni and Mn steels

Features and Applications :

- * Electrode with rutile coating on alloyed core-wire.
- * Applicability in welding similar/dissimilar type austenitic stainless steels, high-strength unalloyed and heat-treatable steels, ferritic Cr and austenitic CrNi steels, austenitic Mn steels.
- * It provides higher tensile and creep strength at elevated temperatures according to ELOX R 309 L.
- * Usability in welding at all positions except for vertical downward position.

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306329	2.50 x 250	3/32 x 10"	50-85	1550
306330	3.20 x 300	1/8 x 12"	60-90	2950
306331	3.20 x 350	1/8 x 14"	80-120	3600
306332	4.00 x 350	5/32 x 14"	100-160	5100

Approvals :

SEPRO

Stainless Steel Electrode



ELOX R 309 L-17

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581-A	:	E 23 12 LR 32
EN ISO 3581-A	:	E 23 12 LR 32
AWS A5.4	:	E 309L - 17

C	Si	Mn	Ni	Cr
0,03	0,8	0,8	12,6	23,0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 440	540-720	min.47 J	min. 30

Typical Base Material Grades :

- * High-strength unalloyed and heat-treatable steels, ferritic Cr and austenitic CrNi steels, austenitic Mn steels
- * Unalloyed tempered steels, tool steels, hard manganese steels, hard-to-weld steels

Features and Applications :

- * Rutile-coated low-carbon electrode for use in high-strength unalloyed and heat treatable steels, ferritic Cr and austenitic CrNi steels, austenitic Mn steels.
- * Similar-type austenitic stainless steels, dissimilar metals, buffer layers on mild and low-alloyed steels prior to build up or overlaying with any stainless electrodes, joining of corrosion resistant stainless steel with mild or low alloy steels, clad steels.
- * Good crack resistance wity hard-to-weld steels.
- * The weld metal is content to high ferrite %.
- * Requirement of re-drying for minimum 2 hours at the temperatures 300 °C.

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306258	2.50 x 250	3/32 x 10 ³³	60-90	1516
306259	3.20 x 350	1/8 x 14 ³³	80-120	3560
306260	4.00 x 350	5/32 x 14 ³³	100-160	5050

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 309 MoL

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581-A	: E 23 12 2 LR 32
EN ISO 3581-A	: E 23 12 2 LR 32
AWS A5.4	: E 309 L Mo-16

C	Si	Mn	Mo	Ni	Cr
<0.03	0.7	0.8	2.8	13.0	23.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
530	700	min. 55 J	35

Typical Base Material Grades :

* High strength unalloyed and alloyed steels, heat resistant steels, ferritic and austenitic steels

Features and Applications :

- * Welding of higher strength unalloyed and alloyed steels
- * Welding of heat resistant steels
- * Welding of high temperature pressure vessels, similar type of ferritic and austenitic steels
- * Welding of corrosion and heat resistant steels, build-up or overlaying, buffer layers applications
- * Weld metal contains higher amount of ferrite and has higher resistance to cracking
- * Re-drying at 300°C - 350 °C for 2 hours

Welding Positions :



Current Type :

D.C.(+) / AC

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300836	2.50 x 250	3/32 x 10 ¹³	60 - 90	5	1600
300604	3.20 x 350	1/8 x 14 ¹³	80 - 120	5	3640
300605	4.00 x 350	5/32 x 14 ¹³	100 - 160	5	5050

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 309 MoL-17

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 23 12 2 LR 32
EN ISO 3581 - A	:	E 23 12 2 LR 32
AWS A5.4	:	E 309 L Mo-17

C	Si	Mn	Ni	Cr	Mo
< 0.03	0.7	0.8	13.0	23.0	2.8

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 490	620-750	min.47 J	min. 30

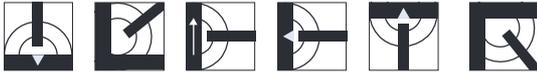
Typical Base Material Grades :

* Uses in high strength unalloyed and heat-treatable steels, ferritic / austenitic steels, austenitic Mn steels.

Features and Applications :

- * Similar type austenitic stainless steels, dissimilar metals, buffer layers on mild and low-alloy steels prior to build up or overlaying with any stainless steels electrode.
- * Joining of corrosion-resistant stainless steel with mild or low-alloy steels, clad steels.
- * The weld metal is content to high ferrite %.
- * Good cracking resistance with problematic steels.
- * Re-drying : 300 °C / min. 2 h

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g /100 pcs
306261	2.50 x 250 / 3/32 x 10"	60-90	1600
306263	3.20 x 350 / 1/8 x 14"	80-120	3640
306264	4.00 x 350 / 5/32 x 14"	100-160	5050

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 309

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 22 12 B 22
EN ISO 3581 - A	:	E 22 12 B 22
AWS A5.4	:	E 309 - 15

C	Si	Mn	Ni	Cr
0.085	0.9	1.8	12.5	22.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 360	550-650	min.47 J	min. 25

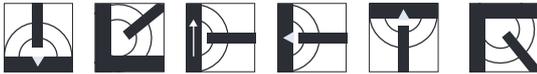
Typical Base Material Grades :

* X 15 CrNiSi 20 12 X 10 CrAl 7, X 10 CrAl 13 X 10 CrAl 18, G-X 40 CrNiSi 22, 9 G-X 40 CrSi 17, G-X 30 CrSi 6 305 , A297HF

Features and Applications :

- * Basic-coated alloyed core wire electrode for welding analogous, heat resistant rolled, forged and cast steels as well as heat resistant ferritic CrSiAl steels.
- * For weld joints exposed to reducing, sulphurous gases, the final layer has to be deposited by means of this electrode.
- * In annealing plants, hardening plants, steam boiler construction, the crude oil industry and the ceramics industry.
- * Scaling resistant up to 1000°C.
- * Preheating and interpass temperatures for ferritic steels 200-300°C.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
301017	2.50 x 250	3/32 x 10"	60 - 80	1500
300905	3.20 x 350	1/8 x 14"	80 - 110	3250
302462	4.00 x 350	5/32 x 14"	110 - 140	4730

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 310

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 25 20 R 32
EN ISO 3581 - A	:	E 25 20 R 32
AWS A5.4	:	~E 310-16

C	Si	Mn	Ni	Cr
0.12	0.9	2.5	20.0	26.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 355	560-690	min.47 J	min. 25

Typical Base Material Grades :

- * Furnace, boilers, pipes made of Cr-Ni and Cr-Si-Al-alloyed steels.
- * X15CrNiSi 25-20, X15CrNiSi 25-21, X15CrNiSi 20-12, G-X40CrNi25, GX40CrNiSi229, X10CrAl, X10CrAl24, GX40CrSi1, 305, 310, 304

Features and Applications :

- * Weld metal is resistant to working temperatures up to +1200 °C.
- * Used with alternative current also.
- * Re-drying : 300°C / min. 2 h

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300561	2.50 x 250	3/32 x 10"	50-80	1480
300562	3.20 x 300	1/8 x 12"	80-110	2860
300563	3.20 x 350	1/8 x 14"	80-110	3460
300564	4.00 x 350	5/32 x 14"	110-140	5140

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 310 Mo

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - B	:	ES310Mo-16
EN ISO 3581 - B	:	ES310Mo-16
AWS A5.4	:	E310 Mo-16

C	Cr	Ni	Mo
0.08	25.0	21.0	2.80

Mechanical Properties :

Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)
min. 550	min. 30

Typical Base Material Grades :

* For austenitic steels, Cr-Mo Steels, coated stainless steels and type 316, 316L and 317 clad steels.

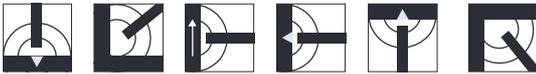
Features and Applications :

* Rutile-basic coated electrode is used for austenitic steels, Cr-Mo steels, coated stainless steels and type 316, 316L and 317 clad steels.

* The addition of Mo is improved high temperature creep properties.

* The weld deposit is full austenitic and corrosion resistant.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306265	3.20 x 350	1/8 x 14"	80 - 110	3510
306266	4.00 x 350	5/32 x 14"	110 - 140	5140

Approvals :

CE, SEPRO

Stainless Steel Electrode



ELOX B 310

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 25 20 B 22
EN ISO 3581 - A	:	E 25 20 B 22
AWS A5.4	:	~E 310-15

C	Si	Mn	Ni	Cr
0.12	0.9	3.0	20.5	25.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 355	560-690	100 J	min. 25

Typical Base Material Grades :

* X15CrNiSi 25 20, X12CrNi 25 21, X15CrNiSi 20 12, G-X 15CrNi 25 20, G-X 40CrNi 2521, G-X40CrNiSi 22 9, X10CrAl 18, X10CrAl 24, G-X40CrSi 17, 305, 310, 314.

Features and Applications :

- * Austenitic CrNi steels, ferritic CrNiAl alloyed steels, heat-resisting rolled, forged and cast steels used in ceramic, petrochemical industries and furnace, boilers, chimney applications.
- * Weld metal is resistant to working temperature - 196 up to +1200°C
- * Re-drying : 150-200 °C / min. 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300533	2.50 x 250	3/32 x 10"	50-80	1340
300534	3.20 x 300	1/8 x 12"	80-110	2550
300535	3.20 x 350	1/8 x 14"	80-110	2920
300536	4.00 x 350	5/32 x 14"	110-140	4230

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 312

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 29 9 R 12
EN ISO 3581 - A	:	E 29 9 R 12
AWS A5.4	:	~E 312-16

C	Si	Mn	Ni	Cr
0.12	1.0	0.8	10.5	30.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 490	700-830	min.24 J	min. 20

Typical Base Material Grades :

DIN :	X 7 Cr 13	G-X 7 Cr 13	AISI :	403
	X 7 Cr Al 13	G-X 20 Cr 14		405
	X 10 Cr Al 13	G-X 10 Cr Mo 13		410
	X 8 Cr 17	G-X 8 Cr Ni 13		420
	X 20 Cr 13			430
	X 15 Cr 13			430 Ti
	X 22 Cr Ni 17			431
	X 15 Cr Ni 13 4			446
	X 8 Cr Ti 17			

Features and Applications :

* Alloyed-unalloyed high-resistant steels, Cr and Mn steels, joint welding of tool steels and different steels and repair welding of sprockets and wheelshaft. * Weld metal is resistant to corrossions, cracks and rust.

* Re-drying : 300 °C / min. 2 h

Welding Positions :



Current Type :

D.C.(+)

A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300566	2.50 x 250	3/32 x 10"	60-80	1328
300567	3.20 x 300	1/8 x 12"	80-110	2670
300568	3.20 x 350	1/8 x 14"	80-110	2960
300569	4.00 x 350	5/32 x 14"	110-160	4770

Approvals :

TSE, CE, ABS, BV, GOST-R, SEPRO, RCB

Stainless Steel Electrode



ELOX R 316 L

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 19 12 3 LR 32
EN ISO 3581 - A	:	E 19 12 3 LR 32
AWS A5.4	:	E 316 L-16

C	Si	Mn	Mo	Ni	Cr
0,03	0,8	0,9	2,6	11,5	19,0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 355	540-670	min.47 J	min. 30

Typical Base Material Grades :

* X10CrNiMoNb 18 12, X2CrNiMo 18 14 3, X5CrNiMo 17 13 3, X2CrNiMo 17 13 2, X2CrNiMoN 17 12 2, X5CrNiMo 17 12 2, X5CrNiMoTi 17 12 2, X6CrNiMoNb 17 12 2, X2CrNiMoN 17 13 3, 316 Cb.316. 316L. 316 Ti.

Features and Applications :

- * Tanks, pipes and equipments made of Cr-Ni-Mo low-carbon steels which are used in food, textile, chemical and paint industries.
- * Weld metal is resistant to acid, corrosion.
- * Serviceability at temperatures up to 400 °C.
- * Re-drying : 300 °C / min. 2 h

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
304429	2,00 x 250	5/64 x 10"	40-70	1000
300588	2,50 x 250	3/32 x 10"	50-90	1500
300590	3,20 x 350	1/8 x 14"	80-120	3500
300591	4,00 x 350	5/32 x 14"	110-160	5135

Approvals :

TSE, BV, CE, ABS, GOST-R, SEPPO, RCB

Stainless Steel Electrode



ELOX R 316 L-17

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 19 12 3 LR 32
EN ISO 3581 - A	:	E 19 12 3 LR 32
AWS A5.4	:	E 316 L-17

C	Si	Mn	Mo	Ni	Cr
0.03	0.8	0.9	2.6	11.5	19.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L _o =5d _o)(%)
min. 355	540-670	min.47 J	min. 30

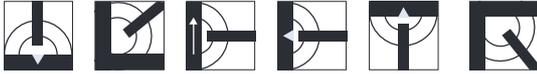
Typical Base Material Grades :

* X10CrNiMoNb 18 12, X2CrNiMo 18 14 3, X5CrNiMo 17 13 3, X2CrNiMo 17 13 2, X2CrNiMoN 17 12 2, X5CrNiMo 17 12 2, X5CrNiMoTi 17 12 2, X6CrNiMoNb 17 12 2, X2CrNiMoN 17 13 3, 316 Cb.316. 316L. 316 Ti.

Features and Applications :

- * Rutile-coated low-carbon electrode for use in tanks, pipes and equipments made of Cr-Ni-Mo low-carbon steels which are used in food, textile, chemical and paint industries.
- * Weld metal is resistant to acid, corrosion.
- * Serviceability at temperatures up to 400 °C.
- * Requirement of re-drying for minimum 2 hours at the temperatures 300 °C

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306267	2.50 x 250	3/32 x 10 ¹¹	50-90	1500
306268	3.20 x 350	1/8 x 14 ¹¹	80-120	3500
306269	4.00 x 350	5/32 x 14 ¹¹	110-160	5135

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 316 L

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 19 12 3 LB 22
EN ISO 3581 - A	:	E 19 12 3 LB 22
AWS A5.4	:	E 316 L-15

C	Si	Mn	Mo	Ni	Cr
0.03	0.45	1.35	2.75	11.5	18.9

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 360	550-700	min.55 J	min. 35

Typical Base Material Grades :

* X10CrNiMoNb 18 12, X2CrNiMo 18 14 3, X5CrNiMo 17 13 3, X2CrNiMo 17 13 2, X2CrNiMoN 17 12 2, X5NiMo 17 12 2, X5CrNiMoTi 17 12 2, X6CrNiMoNb 17 12 2, X2CrNiMoN 17 13 3, 316 L, 316, 316 Cb, 316 Ti

Features and Applications :

* Low-carbon alloyed-core wire austenitic electrode with basic coating for use in all industries where analogous steels, including higher carbon grades and ferritic 13% Cr types, are welded. High ductility of weld metal, therefore preferably used for welding of heavy sections. Very good out-of-position weldability. Good low-temperature ductility down to -196°C. Resistance to intergranular corrosion up to 400°C. * No requirement of preheating or postweld heat treatment of weld metal.

* Re-drying : 150 - 200°C / 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300538	2.50 x 250	3/32 x 10"	60-80	1440
300539	3.20 x 350	1/8 x 14"	80-110	3520
302456	4.00 x 350	5/32 x 14"	110-140	4570

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX RS 316

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 19 12 2 R 53
EN ISO 3581 - A	:	E 19 12 2 R 53
AWS A5.4	:	E 316 - 26

C	Si	Mn	Mo	Ni	Cr
0.07	0.9	1.0	2.7	11.0	18.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 410	640-740	min.55 J	min. 30

Typical Base Material Grades :

* X5CrNiMo 17 13 3, X10CrNiMo 18 10, X6 CrNiMoTi 17 12 2, X5CrNiMo 17 12 2, G-X10CrNiMo 18 10, 316, 316 Ti, 317.

Features and Applications :

- * Used for welding of Cr-Ni-Mo alloyed steels, joint of stainless steel to carbon steels and used for surfacing of stainless steel on carbon steels.
- * The efficiency of weld metal is approx. 150%.
- * It is synthetic electrode and is resistant to high current.
- * Re-drying : 300-350°C / min. 2 h

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300613	2.50 x 350	3/32 x 14"	90 - 120	3310
300614	3.20 x 350	1/8 x 14"	110 - 160	5480
300615	4.00 x 350	5/32 x 14"	150 - 190	8080
300616	5.00 x 350	3/16 x 14"	180 - 220	11400

Approvals :

TSE, CE, SEPRO

Stainless Steel Electrode



ELOX R 317 L

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	: E Z 19 13 4 LR 12
EN ISO 3581 - A	: E Z 19 13 4 LR 12
AWS A5.4	: E 317 L - 16

C	Si	Mn	Mo	Ni	Cr
<0.04	0.80	0.9	3.2	12.5	18.7

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 400	570-700	min.47 J	min. 30

Typical Base Material Grades :

* X2 CrNiMoN 17 13 3, X2CrNiMoN 17 13 5, X2CrNiMoN 18 18 3, X2CrNiMoN 18 13, X4CrNiMoN 19 16 5, X4CrNiMoN 22 15, X2CrNiMo 18 14 3, X2CrNiMo 18 16 4, X10CrNiMoTi 18 12, 316 L, 316 Cb, 317, S 31726

Features and Applications :

- * Reduces the possibility of intergranular carbide precipitation, providing increase in resistance to intergranular corrosion without use of stabilizers such as niobium or titanium.
- * Rutile-basic coated alloyed-core wire electrode for corrosion-resistant CrNi steels of increased Mo-contents.
- * Re-drying : 300 - 350°C / min. 2 h

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302266	2.50 x 250	3/32 x 10"	50-90	1570
302267	3.20 x 350	1/8 x 14"	80-120	3470
302255	4.00 x 350	5/32 x 14"	110-160	5100

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 318

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	: E 19 12 3 Nb R 32
EN ISO 3581 - A	: E 19 12 3 Nb R 32
AWS A5.4	: ~E 318 - 16

C	Si	Mn	Mo	Ni	Cr	Nb
0.04	0.8	0.8	2.8	11.0	19.4	+

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 390	580-750	min.47 J	min. 30

Typical Base Material Grades :

* X6CrNiMoTi 17 12 2, X6CrNiMoNb 17 12 2, X5CrNiMo 17 13 2, G-X5CrNiMo 18 10, X10CrNiMoNb 18 12, X5CrNiMo 17 13 3, G-X10CrNiMo 18 10, G-X10CrNiNb 18 10, 316 Ti, 316 Cb, 316 L

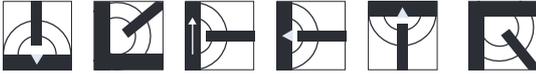
Features and Applications :

* Used for the welding of tanks and pipes made of Cr-Ni-Mo-alloyed, stabilized steels which are used in food, chemical textile and paint industries.

* The weld metal stabilized by Nb is resistant to temperatures up to +400°C.

* Re-drying : 250 - 300°C / min. 2 h

Welding Positions :



Current Type :

D.C.(+)

A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (Inch)		Welding Current (A)	Weight g /100 pcs
300574	2.00 x 250	5/64 x 10"	40-60	1000
300575	2.50 x 250	3/32 x 10"	50-90	1440
300576	3.20 x 300	1/8 x 12"	80-120	3040
300577	3.20 x 350	1/8 x 14"	80-120	3530
300578	4.00 x 350	5/32 x 14"	110-160	5240

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 318

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	: E 19 12 3 Nb B 22
EN ISO 3581 - A	: E 19 12 3 Nb B 22
AWS A5.4	: E 318 - 15

C	Si	Mn	Mo	Ni	Cr	Nb
0.04	0.45	1.45	2.75	11.5	20.0	+

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 390	590-730	min.55 J	min. 30

Typical Base Material Grades :

* X6CrNiMoTi 17 12 2, X6CrNiMoNb 17 12 2, X5CrNiMo 17 13 2,G-X5CrNiMo 18 10, X10CrNiMoNb 18 12,
X5CrNiMo 17 13 3,G-X10CrNiMo 18 10, G-X10CrNiNb 18 10, 316, 316 Ti, 316Cb, 316 L

Features and Applications :

*Stabilized alloyed-core wire austenitic electrode with basic coating.Intended for use in all industries where analogous steels,including ferritic 13% chromium steels,are welded.Weld metal has high ductility,therefore preferably used for heavy sections.Very good out-of-position weldability.Resistant to intergranular corrosion up to 400°C.The weld metal does not require preheating or postweld heat treatment.

* Re-drying : 150 - 200°C / 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
	mm	inch		
302720	2.50 x 250	3/32 x 10"	60 - 80	1450
302721	3.20 x 350	1/8 x 14"	80 - 110	3500
302722	4.00 x 350	5/32 x 14"	110 - 150	4600

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 327

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 25 4 B 22
EN ISO 3581 - A	:	E 25 4 B 22

C	Si	Mn	Ni	Cr
0.12	0.4	1.3	5.0	25.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 500	650-780	min.30 J	min. 15

Typical Base Material Grades :

* X20CrNiSi 25 4, G-X40CrNiSi 27 4, X10 CrAl 7, X10CrAl 13, X10CrAl 18, X10CrAl 24, G-X30CrSi 6, G-X40CrSi 17, 327.

Features and Applications :

* Used for the fabrication of furnace, boilers, etc. that made of heat resistant steels (CrNi and CrNiAl alloyed steels). * For furnace requiring elevated resistance to reducing and oxidizing sulphurous gases as well as for final passes of weld joints in heat-resistant CrSiAl-steels.

* Scaling resistance up to 1100 °C.

* Re-drying : 150 - 200 °C / min. 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302712	2.50 x 250	3/32 x 10"	50-80	1350
302713	3.20 x 350	1/8 x 14"	80-105	3000
302714	4.00 x 350	5/32 x 14"	100-130	4720

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 347

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 19 9 Nb R 32
EN ISO 3581 - A	:	E 19 9 Nb R 32
AWS A5.4	:	E 347 - 16

C	Si	Mn	Ni	Cr	Nb
0.04	0.8	0.9	10.0	19.8	+

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 390	570-740	min.47 J	min. 35

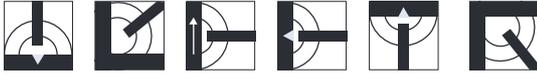
Typical Base Material Grades :

* X6CrNiNb 18 10, X6CrNiTi 18 10, G-X5CrNiNb 18 9, X5CrNi 18 10, X12CrNiTi 18 9, G-X10CrNi 18 8, X10CrNiNb 18 10, X2CrNi 19 11, 347, 321, 304, 304 LN

Features and Applications :

- * Used for the welding of tanks and pipes in which milk and beer is kept.
- * Also used for the welding of acid, gas, steam and water armatures.
- * Resistant to acid and corrosion, stabilized by Nb. Weld metal can resist to temperatures up to +400°C.
- * Re-drying : 300 - 350 °C / min. 2 h

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300582	2.00 x 250	5/64 x 10"	40-60	940
300583	2.50 x 250	3/32 x 10"	50-90	1500
300584	3.20 x 300	1/8 x 12"	80-120	3000
300585	3.20 x 350	1/8 x 14"	80-120	3410
300586	4.00 x 350	5/32 x 14"	110-160	5150

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 347

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 19 9 Nb B 22
EN ISO 3581 - A	:	E 19 9 Nb B 22
AWS A5.4	:	E 347 - 15

C	Si	Mn	Ni	Cr	Nb
0,04	0,45	1,4	10,2	19,8	0,4

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 400	600-740	min.55 J	min. 30

Typical Base Material Grades :

* X6CrNiNb 18 10, X6CrNiTi 18 10, X5CrNiNb 18 10, X5CrNi 18 10, X2CrNiN 18 10, X2CrNi 19 11,
G-X5CrNiNb 19 10, G-X10 CrNi 18 8, 347, 321, 304, 304L, 304LN, 302, A296 CF 8 C, A 157 C9, A 320 B 8 C and D.

Features and Applications :

- * Stabilized alloyed-core wire austenitic electrode with basic coating for use in all industries where similar steel types as well as ferritic 13% chromium steels are welded.
- * High ductility of the weld metal, therefore preferable for welding heavy sections.
- * Very good out-of-position weldability Good low-temperature-ductility down to -196 °C.
- * Resistant to intergranular corrosion up to 400 °C.
- * Weld metal does not require preheating or postweld heat treatment.
- * Re-drying : 150-200 °C / 2h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300551	2.50 x 250	3/32 x 10"	60-80	1400
300552	3.20 x 350	1/8 x 14"	80-120	3150
302711	4.00 x 350	5/32 x 14"	100-150	5103

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 385

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A : E Z 20 25 5 Cu L NR 32
EN ISO 3581 - A : E Z 20 25 5 Cu L NR 32
AWS A5.4 : E 385 - 16

C	Si	Mn	Mo	Ni	Cr	Cu
<0.03	0.75	1.0	4.5	25.0	20.0	1.50

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 400	550-700	min.47 J	min. 30

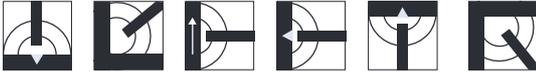
Typical Base Material Grades :

* X5 NiCrMoCuNb20 18, X5 NiCrMoCuTi 20 18, X2 NiCrMoCu 25 20 5, X5 NiCrMoCuNb 22 18, G-X7 CrNiMoCuNb 18 18, G-X7 NiCrMoCuNb 25 20 317L, 904L

Features and Applications :

- * Resistant to intercrystalline corrosion / wet corrosion up to 350°C.
- * High corrosion resistance similar to that of matching steels / cast steel grades, above all in reducing environments.
- * For joining and surfacing work on matching austenitic CrNiMoCu steels/cast steel grades.
- * For joining these types of steels with unalloyed / low alloy steels / cast steel grades.
- * Re-drying : 300 °C / min. 2 h

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302715	2.50 x 250	3/32 x 10"	50 - 90	1570
302269	3.20 x 350	1/8 x 14"	80 - 120	3470
302716	4.00 x 350	5/32 x 14"	110 - 160	5200

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 385

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	: E Z 20 25 5 Cu L B 22
EN ISO 3581 - A	: E Z 20 25 5 Cu L B 22
AWS A5.4	: E 385 - 15

C	Si	Mn	Mo	Ni	Cr	Cu	Nb
<0.025	0.40	2.20	3.5	25.0	22.0	2.20	0.35

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)
min. 380	600-700	80 J	min. 35

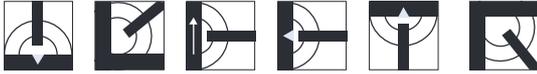
Typical Base Material Grades :

* X5NiCrMoCuNb 20 18, X5NiCrMoCuTi 20 18, X2NiCrMoCu 25 20 5, X5NiCrMoCuNb 22 18, G-X7 NiCrMoCuNb 25 20, G-X7 CrNiMoCuNb 18 18, 307, 307L, 904L

Features and Applications :

- * Basic coated alloyed-core wire special electrode for corrosion-resistant high-molybdenum CrNi steels.
- * Recommended for highly corrosive environments.
- * Apart from its markedly good chemical resistance to stress corrosion cracking and crevice corrosion, the weld metal features high resistance to pitting.
- * Particularly recommended for steels containing up to 5% molybdenum.
- * Re-drying : 300°C / 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)	Welding Current (A)	Weight g / 100 pcs
302717	2.50 x 250 / 3/32 x 10"	50-90	1573
304438	3.20 x 350 / 1/8 x 14"	80-120	3563
302719	4.00 x 350 / 5/32 x 14"	110-150	4570

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 410

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 13 B 22
EN ISO 3581 - A	:	E 13 B 22
AWS A5.4	:	E 410 - 15

C	Si	Mn	Cr
0.07	0.7	0.8	13.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)	
			as welded	750°C/2h/furnace
min. 450	650-800	min. 15	~350	200

Typical Base Material Grades :

* X6Cr 13, X6CrAl 13, X15Cr 13, X10Cr 13, G-X10Cr 13

Features and Applications :

* 13% Cr used in the joining and surfacing welding of martensitic and martensitic-ferritic steels with 13% Cr and steel casts. (This electrode is also strong at filling in the surfaces of gas, water and steam armatures).

* Annealing at 750°C for 2 hours, cooling down to room temperature in the furnace.

* Re-drying: 150-200°C/min.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302692	2.50 x 250	3/32 x 10"	50-90	1400
300547	3.20 x 350	1/8 x 14"	80-120	3360
302693	4.00 x 350	5/32 x 14"	110-160	4500

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 410 Ni Mo

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 13 4 B 42
EN ISO 3581 - A	:	E 13 4 B 42
AWS A5.4	:	E 410 Ni Mo - 15

C	Si	Mn	Mo	Ni	Cr
0.04	0.20	0.45	0.50	4.2	12.3

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
min. 500	min. 760	min.47 J	min. 15	~360

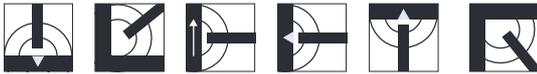
Typical Base Material Grades :

X5CrNi 13 4, G-X5CrNi 13 4, X6Cr13, G-X5CrNi 13 6

Features and Applications :

- * Electrode with rutile coating on alloyed core-wire
- * Applicability in welding Cr-Ni –alloyed austenitic high-temperature steels.
- * Usability in welding at all positions except for vertical downward position.
- * Applicability in joint-welding and surfacing of heat-resisting similar-type steels and steel castings.
- * Serviceability at temperatures of values up to 700 °C
- * Resistance to fracture and corrosion.
- * Creep resistance at high temperatures being higher than that of the electrode ELOX R 308 L
- * Re-drying: 300-350°C / 2h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302694	2.50 x 250	3/32 x 10"	50 - 90	1400
302695	3.20 x 350	1/8 x 14"	90 - 110	3080
302696	4.00 x 350	5/32 x 14"	110 - 160	4600

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX BS 410 Ni Mo

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 13 4 B 62
EN ISO 3581 - A	:	E 13 4 B 62
AWS A5.4	:	E 410 NiMo - 25

C	Si	Mn	Mo	Ni	Cr
0.05	0.3	0.5	0.5	4.5	11.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
min. 600	800-980	min.47 J	min. 15	~270

Typical Base Material Grades :

* X5CrNi 13 4, G-X5CrNi 13 4, X6Cr 13, G-X5CrNi 13 6

Features and Applications :

*Basic coated electrode for welding similar corrosion-resistant, martensitic and martensitic-ferritic rolled, forged and cast steels. * Used in the construction of hydroturbines, compressors and steam power plants. * Resistant to corrosion caused by water, steam and sea water atmosphere. * Excellent slag removability and smooth bead appearance. * Metal recovery approx. 130% Out-of-position weldability. * Preheating and interpass temperatures of thick-walled components 100-160 °C. Tempering temperature 580-620 °C. * Re-drying : 300 °C / min. 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302697	2.50 x 350	3/32 x 14"	70-110	1960
300526	3.20 x 350	1/8 x 14"	110-150	3636
300527	4.00 x 350	5/32 x 14"	150-190	4500

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 430

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 17 B 22
EN ISO 3581 - A	:	E 17 B 22
AWS A5.4	:	E 430 - 15

C	Si	Mn	Cr
0.08	0.5	0.4	17.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Hardness (HB)	
			as welded	750°C/2h/furnace
min. 350	540-660	min. 20	~270	~200

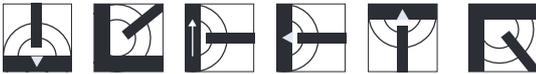
Typical Base Material Grades :

X6CrTi 17, X20CrNi17-2, 431, 430 Ti

Features and Applications :

- * Mainly used for corrosion-resistant, wear-resistant surfacing applications.
- * Preferably for surfacing on sealing faces of gas, water and steam valves.
- * Scaling resistance up to 900 °C.
- * Weld metal protector hardness up to 500°C.
- * Re-drying : 150-200 °C / min. 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302698	2.50 x 250	3/32 x 10"	50 - 90	1400
300550	3.20 x 350	1/8 x 14"	80 - 120	3000
302699	4.00 x 350	5/32 x 14"	110 - 160	4600

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 430 Mo

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	: E Z 17 Mo B 22
EN ISO 3581 - A	: E Z 17 Mo B 22

C	Si	Mn	Mo	Cr
0.20	0.5	0.5	1.2	17.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Hardness (HB)	
			as welded	750°C/2h/furnace
min. 490	650-750	min. 15	~400	~250

Typical Base Material Grades :

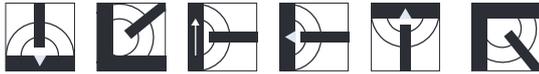
* GS-C 25, X22CrNi 17, 41 Cr 4

Features and Applications :

* Basic-coated alloyed-core wire electrode with good weldability in all positions except vertical-down. (Mainly used for hard surfacing, corrosion resistant, wear resistant). Preferably employed for sealing faces of gas, water and steam valves. In the machined condition, at least a two-layer buildup should remain on the surface. The weld metal features retention of hardness up to 500°C. Sea water resistant, scaling resistant up to 900°C. Preheating as required by the base metal, with temperatures between 100 and 200°C being generally sufficient (for joining operations 250-400°C). Annealing at 650-750°C may be carried out to improve the toughness values in the weld metal and in the transition zone.

* Re-drying : 300-350 °C / min. 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
301010	2.50 x 250	3/32 x 10"	50-90	1650
301011	3.20 x 350	1/8 x 14"	80-120	3030
302700	4.00 x 350	5/32 x 14"	110-160	4300

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX R 2209

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	: E 22 9 3 N LR 32
EN ISO 3581 - A	: E 22 9 3 N LR 32
AWS A5.4	: E 2209 - 17

C	Si	Mn	Mo	Ni	Cr	N
0.03	0.50	0.9	2.7	10.0	22.0	0.12

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L _o =5d _o)(%)
min. 520	690-850	min.47 J	min. 20

Typical Base Material Grades :

* X2CrNiMoN22-5-3, X2CrNiMoN23-4, X2CrNiMoN22-5-3 with X2CrNiMoNb18-12, X2CrNiMoN22-5-3 with P235GH/
P265GH, S255N, P295GH, S355N, 16Mo3

Features and Applications :

- * Applicability in welding duplex steels.
- * Suitability to joint- and surfacing applications of similar-type austenitic steels and cast steels.
- * Electrode coating of rutile character.
- * Excellent weldability.
- * Very high resistance to stress corrosion cracking and to corrosion at particularly chlorious and sulphurous media.
- * In the liquid conditions at chemical industry, serviceability at temperatures of values up to 280 °C.
- * Re-drying : 300 - 350 °C / min. 2 h

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g / 100 pcs
302701	2.50 x 250	3/32 x 10"	50-90	1570
302268	3.20 x 350	1/8 x 14"	80-120	3450
302442	4.00 x 350	5/32 x 14"	110-160	5200

Approvals :

TSE, CE, ABS, BV, GOST-R, Class NK, SEPRO

Stainless Steel Electrode



ELOX B 2209

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 3581 - A	:	E 22 9 3 N LB 22
EN ISO 3581 - A	:	E 22 9 3 N LB 22
AWS A5.4	:	E 2209 - 15

C	Si	Mn	Mo	Ni	Cr	N
0.03	0.40	1.30	2.6	9.0	22.0	0.14

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L _o =5d _o)(%)
		(ISO-V/+20°C)	(ISO-V/-60°C)	
min. 520	690-850	min. 80 J	min. 40 J	min. 30

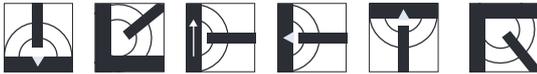
Typical Base Material Grades :

* X2CrNiMoN22-5-3, X2CrNiMoN23-4, X2CrNiMoN22-5-3 with X2CrNiMoNb18-12, X2CrNiMoN22-5-3 with P235GH/
P265GH, S255N, P295GH, S355N, 16Mo3

Features and Applications :

- * Applicability in welding duplex steels.
- * Suitability to joint- and surfacing applications of similar-type austenitic steels and cast steels.
- * Electrode coating of basic character.
- * Excellent weldability.
- * Very high resistance to stress corrosion cracking and to corrosion at particularly chlorious and sulphurous media.
- * In the liquid conditions at chemical industry, serviceability at temperatures of values up to 280 °C.
- * Re-drying : 300 - 350 °C / min. 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
	mm	inch		
302702	2.50 x 250	3/32 x 10"	60-80	1550
302473	3.20 x 300	1/8 x 12"	80-110	2850
302475	4.00 x 350	5/32 x 14"	110-140	5060

Approvals :

TSE, CE, GOST-R, SEPRO

Stainless Steel Electrode



ELOX B 2594

Standards :

TS EN ISO 3581-A	: E 25 9 4 N L B 42
EN ISO 3581-A	: E 25 9 4 N L B 42
AWS A5.4	: E 2594-15

Chemical Composition of Weld Metal-
% (Typical) :

C	Cr	Ni	Mn	Mo	Si	N
0.035	24.0	8.60	1.45	3.80	0.35	0.25

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20 °C)	Elongation (L _o =5d _o)(%)
min. 550	min. 760	min.47 J	min. 18

Typical Base Material Grades :

- 1.4410, X2CrNiMoN 25-7-4, 1.4501, X2CrNiMoCuWN 25-7-4, 1.4507, X2CrNiMoCuN 25-6-3
- UNS S32750, S32760, S32550

Features and Applications :

* Basic type electrode which used especially for the welding of duplex steels. It provides high yield and tensile strength and the weld metal is resistant to pitting corrosion.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306333	2.50 x 250	3/32 x 10"	60 - 80	1470
306334	3.20 x 300	1/8 x 12"	80 - 120	2870

Approvals :

CE, SEPRO

Stainless Steel Electrode



ELOX B 16-8-2

Standards :

TS EN ISO 3581-A	:	E Z 16 8 2 B 22
EN ISO 3581-A	:	E Z 16 8 2 B 22
AWS A5.4	:	E 16 8 2-15

Chemical Composition of Weld Metal-
% (Typical) :

C	Cr	Ni	Mo
0.05	16.0	8.5	1.30

Mechanical Properties :

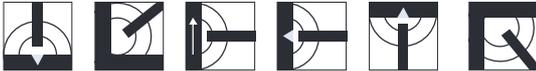
Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _c =5d ₀)(%)	Impact Strength (ISO-V/ +20°C)
min. 410	min. 550	min. 35	min. 47 J

Typical Base Material Grades :

* Basic coated electrode is used primarily for welding stainless steel, such as types 16-8-2, 316, and 347, for high pressure, high-temperature piping systems.

* A controlled chemical composition and ferrite number (<5 FN) of weld metal gives good creep, oxidation and general corrosion resistance.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306053	3.20 x 350	1/8 x 14"	100 - 130	3212

Approvals :

CE, SEPRO

Standards :

TS 9463 EN ISO 1071 :	E C Ni-CI 1
EN ISO 1071 :	E C Ni-CI 1
AWS A5.15 :	E Ni-CI

**Chemical Composition of Weld Metal-
% (Typical) :**

C	Ni
0.50	rest

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
200	250	3	~170

Typical Base Material Grades :

* Joint welding of grey cast iron, temper cast iron, nodular cast iron as well as joint welding of cast iron with steel, stainless steel and Monel metal.

* Ni cored stick electrode.

* Welding in short passes, and gently striking the bead of each pass with a hammer when the bead is hot are required.

* Ni-cored stick electrode.

Welding Positions :



Current Type :

D.C.(-)

A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300520	2.50 x 300	3/32 x 12"	60 - 90	1860
300521	3.20 x 300	1/8 x 12"	90 - 110	2847
300835	4.00 x 400	5/32 x 16"	110 - 130	5500

Approvals :

TSE, CE, GOST-R, SEPRO, RCB

Cast Iron Electrode



ELNIKEL-HD

Standards :

TS 9463 EN ISO 1071 :	E C Ni-CI 1
EN ISO 1071 :	E C Ni-CI 1
AWS A5.15 :	E Ni-CI

Chemical Composition of Weld Metal-
% (Typical) :

Fe	Ni
7.0	rest

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
200	250	3	~170

Typical Base Material Grades :

- * Ni cored stick electrode.
- * Welding in short passes, and gently striking the bead of each pass with a hammer when the bead is hot.
- * Joint welding of grey cast iron, temper cast iron, nodular cast iron and joint welding of cast iron with steel.
- * Weld metal recovery of approx. 110%.

Welding Positions :



Current Type :

D.C.(-) / A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306066	4.00 x 400	5/32 x 16"	110 - 140	6820

Approvals :

TSE, CE, SEPRO

Standards :

TS 9463 EN ISO 1071 :	E C Ni-CI 1
EN ISO 1071 :	E C Ni-CI 1
AWS A5.15 :	E Ni-CI

Chemical Composition of Weld Metal-
% (Typical) :

C	Ni
0.50	min. 96

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
200	250	3	~170

Typical Base Material Grades :

- * Non-conductive, basic-graphite-coated nickel stick electrode.
- * Repair welding of problematic cast iron parts of irregular shapes.
- * Joint welding of cast iron parts, and cast iron parts to steel parts.
- * Pre-heating to 200 °C is recommended for thick-walled components.
- * Welding in short runs, and peening are required.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302723	2.50 x 300	3/32 x 12"	70 - 100	1950
302724	3.20 x 300	1/8 x 12"	90 - 110	3050
302726	4.00 x 400	5/32 x 16"	110 - 130	5250

Approvals :

TSE, CE, GOST-R, SEPRO

Cast Iron Electrode



ELNIFER

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS 9463 EN ISO 1071	:	E C NiFe CI 1
EN ISO 1071	:	E C NiFe CI 1
AWS A5.15	:	E NiFe-CI

Ni	Fe
>45.0	>40.0

Mechanical Properties : _____

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
200	350	6	~190

Typical Base Material Grades : _____

- * Welding of grey cast iron, temper cast iron.
- * Joint welding of cast iron with hard-to-weld steels or cast parts.
- * Ni-Fe cored stick electrode.
- * Welding in short passes, and hammering the bead of each pass through gentle strikes are required.

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300516	2.50 x 300	3/32 x 12"	60 - 90	1730
300518	3.20 x 300	1/8 x 12"	80 - 120	2670
300519	4.00 x 400	5/32 x 16"	110 - 150	5260

Approvals : _____

TSE, CE, GOST-R, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS 9463 EN ISO 1071 :	E C NiCu-B1
EN ISO 1071 :	E C NiCu-B1
AWS A5.15 :	~E NiCu B

Ni	Cu
~68.0	~30.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
min. 190	300	min. 15	~140

Typical Base Material Grades :

- * Soft joint welding of grey cast iron.
- * Filler welding, repair welding and joint welding of cast iron with steel.
- * Welding by short passes and gently striking the bead of each pass with a hammer when the bead is hot are required.
- * Ni-Cu-Cored stick electrode.

Welding Positions :



Current Type :

- D.C.(-),
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300509	2.50 x 300	3/32 x 12"	60 - 90	1600
300510	3.20 x 300	1/8 x 12"	90 - 110	2750
300514	4.00 x 400	5/32 x 16"	110 - 130	5520

Approvals :

TSE, CE, GOST-R, SEPRO

Cast Iron Electrode



ELFER

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS 9463 EN ISO 1071 :	EC Fe - 2
EN ISO 1071 :	EC Fe - 2

C	Mn	Si	V
0.07	1.0	0.8	8.0

Mechanical Properties :

Weld Metal Hardness
(HB)

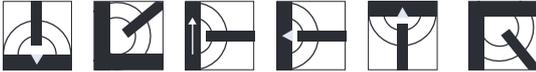
~250

Typical Base Material Grades :

* Repair of welding defects, for facing of worn-out parts of mold of automobile body, shielding process of metal frictioning works. * Good results at joint welding of steel with cast iron.

* Basic coated, Barium compound free, iron base, Vanadium alloyed cast iron electrode, which is used for repairing and maintenance of defective lamellar and nodular cast iron equipment and machine parts. Also used for hard face welding of wear susceptible of cast iron parts. Advantages of this Nickel free cast iron electrode is; * The deposit metal is a close color match to cast iron, * The similarity of chemical composition of weld metal and cast iron assures similar heat expansion and contraction characteristics, as a result there is no subject about thermal deformation. * When welding, electrode is not hot, as a result welding can be done uninterrupted and more quickly.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302249	2.50 x 350	3/32 x 14"	70 - 100	2350
302250	3.20 x 350	1/8 x 14"	100 - 120	3650
302727	4.00 x 350	5/32 x 14"	120 - 160	5260

Approvals :

TSE, CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 1
EN 14700	:	E Fe 1
DIN 8555	:	E 1-UM-250

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	Cr
0.15	1.0	0.8	1.0

Mechanical Properties : _____

Weld Metal Hardness (HB)
240 - 280

Typical Base Material Grades : _____

- * For tough build-ups on rails, gearwheels, shafts, gear parts, and couplings.
- *For buffer layers on carbon steels and low-alloyed steels with concurrent extreme compressive stress on anti-wear surfaces.
- * Re-drying : 300 °C / 2h

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300462	3.20 x 350	1/8 x 14"	100 - 140	3670
300464	4.00 x 450	5/32 x 18"	140 - 180	6820
300465	5.00 x 450	3/16 x 18"	180 - 230	10570

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 1
EN 14700	:	E Fe 1
DIN 8555	:	E1-UM-300

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	Cr
0.15	1.3	0.5	1.5

Mechanical Properties : _____

Weld Metal Hardness (HB)
280 - 330

Typical Base Material Grades : _____

- * Basic coated electrode for medium hardness value.
- * For tough build-ups, particularly on Mn-Mo-alloyed wing and junction rails with mechanical strength of minimum 880 N/mm². * Deposit offers ease of machining.
- * Pre-heating temperature 250-350°C.
- * Re-drying : 300°C / 2 h

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300471	3.20 x 350	1/8 x 14"	100 - 140	3571
300472	4.00 x 450	5/32 x 18"	140 - 180	6775
300473	5.00 x 450	3/16 x 18"	180 - 230	10500

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 1
EN 14700	:	E Fe 1
DIN 8555	:	E1-UM-300

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	Cr
0.14	0.5	0.5	1.8

Mechanical Properties :

Weld Metal Hardness (HB)	Weld Metal Hardness (HB) 900°C/cooled on water/tempered
300 - 330	450 - 470

Typical Base Material Grades :

- * Basic coated electrode for medium hardness value.
- * For tough build-ups, particularly on Mn-Mo-alloyed wing and junction rails with mechanical strength of minimum 880 N/mm². * Deposit offers ease of machining. * It can use with alternating current.
- * Pre-heating temperature 250-350°C.
- * Re-drying : 300°C / 2 h

Welding Positions :



Current Type :

- D.C.(+)
- A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300466	3.20 x 350	1/8 x 14"	90 - 135	3650
301119	4.00 x 450	5/32 x 18"	135 - 180	6800

Approvals :

CE, GOST-R, SEPRO

Hardfacing Electrode



ELHARD 350

Standards :

TS EN 14700	:	E Fe 1
EN 14700	:	E Fe 1
DIN 8555	:	E1-UM-350

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	Cr
0.17	1.5	0.8	2.0

Mechanical Properties : _____

Weld Metal Hardness (HB)
330 - 380

Typical Base Material Grades : _____

- * Basic-coated electrode.
- * Wear resistant surfacing on Mn-Cr-V alloyed frogs, track rollers, idlers, tracks, slideways and drive sprockets.
- * The deposits are machinable.
- * Re-drying : 300°C / 2 h

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300468	3.20 x 350	1/8 x 14 ^{3/4}	100 - 140	3600
300469	4.00 x 450	5/32 x 18 ^{3/4}	140 - 180	6750
300470	5.00 x 450	3/16 x 18 ^{3/4}	180 - 230	10540

Approvals : _____

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	E Fe 1
EN 14700	:	E Fe 1
DIN 8555	:	E1-UM-400

C	Mn	Si	Cr
0.14	1.50	0.60	2.00

Mechanical Properties : _____

Weld Metal Hardness (HB)
400 - 430

Typical Base Material Grades : _____

* Used for dozer, excavator, mineral mining machine equipment like ladle, idler, idler roller and their repair welding.
* Re-drying : 300°C / 2h

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
305764	4.00 x 450	5/32 x 18"	140-180	6750
305765	5.00 x 450	3/16 x 18"	180-230	10900

Approvals : _____

CE, SEPRO

Hardfacing Electrode



ELHARD 410 R

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	E Fe 7
EN 14700	:	E Fe 7
DIN 8555	:	E5-UM-400

C	Mn	Cr	Ni	Mo
0.05	0.45	12.0	4.5	0.6

Mechanical Properties : _____

Weld Metal Hardness (HB)
440 - 460

Typical Base Material Grades : _____

- * Rutile type electrode with high recovery.
- * Welding for stainless of similar chemical compositions or cast steels having Cr of ~12%.
- * Used of surfacing of carbon steels to resist corrosion, erosion and abrasion.
- * Used in chemical Industry, Steel Industry and also at continuous casting rolls and surfacing steel mill rolls.

Welding Positions : _____



Current Type : _____

D.C.(+)
A.C.

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306270	4.00 x 350	5/32 x 14"	140 - 180	6430

Approvals : _____

CE, SEPRO

Standards :

TS EN 14700	:	E Z Fe 1
EN 14700	:	E Z Fe 1
DIN 8555	:	E1-UM-50

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	Cr
0.3	1.3	1.2	~5.5

Mechanical Properties :

Weld Metal Hardness (HRC)
-50

Typical Base Material Grades :

* Used in hardfacing applications of guide roller, rope pulleys, ladle lugs etc. for land, mineral and coal sector.
Weld metal has strength against friction and wear.
Pre-heating is generally 200 °C according to base material.
* Re-drying : 300°C / 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300475	3.20 x 350	1/8 x 14"	100 - 140	3600
303777	4.00 x 450	5/32 x 18"	140 - 180	7010
302463	5.00 x 350	3/16 x 14"	180 - 230	7950

Approvals :

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	E Fe 8
EN 14700	:	E Fe 8
DIN 8555	:	E6-UM-60 P

C	Mn	Si	Mo	V	Cr
0.5	0.5	1.1	1.0	1.0	7.5

Mechanical Properties :

Weld Metal Hardness (HRC)	780 - 820°C Cooling in Furnace	1000 - 1050°C Hardening in Oil	300 - 400°C Tempered
55 - 59	~250 HB	~60 HRC	53 - 55 HRC

Typical Base Material Grades :

* Final pass-welding of parts of earth-moving and mining equipment with high resistance to abrasion, as well as of parts of hard manganese steels and frags.

* Weld metal is resistant to abrasion.

* Re-drying : 300°C / 2 h

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300500	2.50 x 350	3/32 x 14"	60 - 100	2220
300501	3.20 x 350	1/8 x 14"	100 - 140	3570
300502	4.00 x 450	5/32 x 18"	140 - 180	6750
300503	5.00 x 450	5/16 x 18"	180 - 230	10900

Approvals :

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 8
EN 14700	:	E Fe 8
DIN 8555	:	E6-UM-60 P

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Cr
0.50	1.80	9.00

Mechanical Properties :

Weld Metal Hardness As Welded (HRC)	Soft Annealing	Hardening	Tempered
54 - 58	780 - 820°C Slow Cooling in Furnace	1000 - 1050°C in oil	300 - 400°C

Typical Base Material Grades :

* Applicability in final-layer hardfacing of parts of earth and mineral mining machines, impact drilling and crushing devices, guide springs, edges of cutting tools, hard manganese steels, bucket edges and teeth, all of which are made of alloyed or unalloyed steels, as well as in other materials required to have high resistance to wear.
* Electrode of basic type with thick coating.* Inclusion of chromium-silicon alloy, very hard electrode.
* Weld metal with ductile and cracking-resistant behaviors.* Crack resistance to impact forcing due to its high ductility.* Machinability of weld metal through grinding only.* Requirement of re-drying at 300 °C for 2 hours for moistened electrodes.* Recommended pre-heating at 200-300 °C for welding thick work pieces and materials tending to get hardened.* Requirement of 2-3 layers hardfacing to obtain the highest resistance to wear.
* Suitability of harder and/or higher-quality steels to buffer-layering with the GeKa electrodes LASER B 50, TEMPO B 63, or, in some cases, with the GeKa electrodes such as ELOX B307, ELOX R 312.
* Re-drying : 300° C / 2h.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
303476	2.50 x 350	3/32 x 14"	60 - 100	2200
303472	3.20 x 350	1/8 x 14"	100 - 140	3570
303470	4.00 x 450	5/32 x 18"	140 - 180	6750
301059	5.00 x 450	3/16 x 18"	180 - 230	10900

Approvals :

CE, GOST-R, SEPRO

Hardfacing Electrode



ELHARD 600 R

Standards :

TS EN 14700	:	E Fe 8
EN 14700	:	E Fe 8
DIN 8555	:	E6-UM-60 P

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	Mo	V	Cr
0,5	0,3	1,1	1,0	1,0	7,0

Mechanical Properties : _____

Weld Metal Hardness (HRC)
55 - 59

Typical Base Material Grades : _____

- * Electrode covering of rutile character.
- * Usability with a welding transformer (Weldability with AC).
- * Weld metal with ductile and cracking-resistant behaviors.
- * Requirement of re-drying at the temperature range of 300-350°C for 2 hours.
- * Applicability in final layer welding of earth and mineral mining machines, impact drilling and crushing devices, guide springs, edges of cutting tools, hard manganese steels, bucket edges and teeth

Welding Positions : _____



Current Type : _____

- D.C.(+)
- A.C.

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300497	3.20 x 350	1/8 x 14"	90 - 135	4095
300498	4.00 x 450	5/32 x 18"	135 - 180	8170
300499	5.00 x 450	3/16 x 18"	180 - 230	12020

Approvals : _____

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	E Fe 6
EN 14700	:	E Fe 6
DIN 8555	:	E6-UM-60

C	Mn	Si	Mo	Nb	Cr
0.55	1.35	0.75	1.2	0.6	6.8

Mechanical Properties : _____

Weld Metal Hardness (HRC)
56 - 59

Typical Base Material Grades : _____

- * Used in hardfacing applications of earth-moving industry and wearing parts of grinders etc.
- * Can be used directly. After three or more passes, buffer-layering must be done according to material grade. (ELHARD 63, ELHARD 250, ELOX R 307 and ELHARD 14 Mn)
- * For hardenable steels, preheat temperature is 100-300°C.
- * Re-drying : 300° / 2h.

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300452	3.20 x 350	1/8 x 14"	100 - 140	3846
300453	4.00 x 450	5/32 x 18"	140 - 180	6896
300454	5.00 x 450	3/16 x 18"	180 - 230	11110

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 2
EN 14700	:	E Fe 2
DIN 8555	:	E2-UM-60

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	Cr
0,7	0,5	3,5	3,5

Mechanical Properties : _____

Weld Metal Hardness (HRC)
57 - 62

Typical Base Material Grades : _____

* Resistance to abrasion and shocks.

* Suitability for uses in harfacing worn parts of crushing, drilling, excavating, grinding machines in mines/quarries/soil crushing plants.

* Weld metal hardness can be exchange between 57 - 62 HRC according to welding current, number of passes, largeness of base metal and chemical composition of base metal.

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
305193	4.00 x 450	5/32 x 18"	140 - 180	6750
303532	5.00 x 450	3/16 x 18"	170 - 210	11200

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 2
EN 14700	:	E Fe 2
DIN 8555	:	~E6-UM-60

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	Mo	V	Cr
0.5	1.5	1.2	0.8	0.8	4.7

Mechanical Properties : _____

Weld Metal Hardness (HRC)
60 - 62

Typical Base Material Grades : _____

* Hardfacing of workpieces of steel, cast steel or hard Mn-steel exposed to a combination of impact, compression and abrasive wearing, such as cam shafts, gliding surfaces, gears, plough shares, rails, shunts, crosses, baffle plates, excavator parts, rope carrier wheels etc.

* Weld metal does not cracking

* Re-drying : 300-350°C / 2 h

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302733	3.20 x 350	1/8 x 14"	100 - 150	3700
302506	4.00 x 450	5/32 x 18"	140 - 180	7710
302734	5.00 x 450	3/16 x 18"	170 - 210	10750

Approvals : _____

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	EZ Fe 9
EN 14700	:	EZ Fe 9
DIN 8555	:	E 7-UM-200K
AWS A5.13	:	E FeMn-A

C	Mn	Si	Ni
0.60	13.5	0.1	3.0

Mechanical Properties : _____

Hardness (HB)	Hardness After Cold Deformation (HB)
180 - 220	~550

Typical Base Material Grades : _____

- * Hardfacing of mining and rock-crushing machine parts as well as of hard manganese steels.
- * Machinability of weld metal only if it is not hammered when it is cold, or, if it is not put into operation for a while.
- * Re-drying at condition 300 °C / 2 h is required.

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300457	3.20 x 350	1/8 x 14"	110 - 140	3750
300458	4.00 x 450	5/32 x 18"	150 - 180	7100
300459	5.00 x 450	3/16 x 18"	180 - 210	11170

Approvals : _____

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	E Fe 1
EN 14700	:	E Fe 1
DIN 8555	:	E3-UM-400GPTS

C	Mn	Si	Mo	V	W	Cr
0.2	1.1	0.8	0.6	0.4	0.5	3.2

Mechanical Properties :

Hardness (HB)
380 - 440

Typical Base Material Grades :

- * Used in surface coating applications and dies made from hot work tool steels.
- * According to the base material pre-heat and slow cooling can be done.
- * Weld metal keep its hardness until 500 °C.
- * Re-drying : 300 - 350 °C / 2h.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300506	3.20 x 350	1/8 x 14"	100 - 140	3700
300507	4.00 x 350	5/32 x 14"	140 - 180	5590

Approvals :

CE, GOST-R, SEPRO

Hardfacing & Tool Steel Electrode



ELHARD 56

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	E Fe 8
EN 14700	:	E Fe 8
DIN 8555	:	E6-UM-60 S

C	Mn	Si	Mo	V	Cr
0.70	0.2	0.4	1.4	0.4	5.3

Mechanical Properties :

Hardness (HRC)
60 - 63

Typical Base Material Grades :

1.2361 1.2601
1.2363 1.2080

Carbon and low-alloyed steels

Features and Applications :

- * Used in bending tools, deep drawing dies, cutting tools and blades made from cold work steels.
- * For % 5 Cr Steels 150 - 250° ; for % 12 Cr Steels 400 - 500°C pre-heat recommended.
- * Re-drying : 300°C / 2h

Welding Positions :



Current Type :

D.C.(-)
A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302735	3.20 x 350	1/8 x 14"	90 - 120	3400
302736	4.00 x 350	5/32 x 14"	120 - 150	4900

Approvals :

CE, GOST-R, SEPRO

Hardfacing & Tool Steel Electrode



ELHARD 58

Standards :

TS EN 14700	:	E Fe 4
EN 14700	:	E Fe 4
DIN 8555	:	-E 4-UM-60

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	Mo	Co	V	Cr
0.7	1.0	1.0	7.0	2.0	1.7	4.0

Mechanical Properties : _____

Hardness (HRC)
56 - 60

Typical Base Material Grades : _____

- * Used in repairing of machining and cutting tools, tool bits, press dies and supports, fillers against strong abrasion of excavating and detaching attachments.
- * Weld deposit has high resistance to friction and wear.
- * Re-drying : 300-350°C / 2 h

Welding Positions : _____



Current Type : _____

- D.C.(+)
- A.C.

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300477	3.20 x 350	1/8 x 14"	80 - 110	4200
300478	4.00 x 350	5/32 x 14"	110 - 140	5550

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 14
EN 14700	:	E Fe 14
DIN 8555	:	E 10-UM-60 GRZ

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	Cr
3,20	0,5	1,0	29,0

Mechanical Properties : _____

Hardness (HRC)
58 - 62

Typical Base Material Grades : _____

* On parts primarily exposed to abrasion combined with light impact, such as conveyor screws, mixer blades and mud pumps.

* Requirement of re-drying for 2 hours at the temperatures between 300 °C and 350 °C.

Welding Positions : _____



Current Type : _____

D.C.(+)

A.C.

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300482	3.20 x 350	1/8 x 14"	110 - 140	4810
300483	4.00 x 350	5/32 x 14"	170 - 200	7960
300485	5.00 x 350	3/16 x 14"	190 - 260	11400

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 16
EN 14700	:	E Fe 16
DIN 8555	:	~E 10-UM-60 GRZ

Chemical Composition of Weld Metal-
% (Typical) :

C	Cr	Nb
6,5	24,0	7,5

Mechanical Properties : _____

Hardness (HRC)
-62

Typical Base Material Grades : _____

- * On parts primarily exposed to abrasion combined with light impact, such as conveyor screws, mixer blades and sand pumps.
- * Weld metal has resistant to corrosion, friction and impact.
- * It is not recommended overlap passes.
- * Requirement of re-drying for minimum 2 hours at temperatures between 300 °C and 350 °C.

Welding Positions : _____



Current Type : _____

- D.C.(+)
- A.C.

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300486	3.20 x 350	1/8 x 14"	125 - 160	4985
300487	4.00 x 350	5/32 x 14"	170 - 200	7710
300488	5.00 x 350	3/16 x 14"	190 - 260	11970

Approvals : _____

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	E Z Fe 14
EN 14700	:	E Z Fe 14
DIN 8555	:	E 10-UM-60 GRZ
AWS A5.13	:	~E FeCr-A8

C	Cr	Si	Mn
4.5	34.0	1.0	0.5

Mechanical Properties : _____

Hardness (HRC)
60 - 64

Typical Base Material Grades : _____

* Special coating, high-chromium carbide electrode for hardfacing operations to provide maximum resistance to extreme mineral abrasion.

* A typical application is stringer beads on earth-moving, cement mill and brick making equipment.

* Weld metal efficiency is ~ % 220.

* Re-drying : 300-350°C / min. 2 h

Welding Positions : _____



Current Type : _____

D.C.(+)(-)

A.C.

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300489	3.20 x 350	1/8 x 14"	125 - 160	5200
300490	4.00 x 350	5/32 x 14"	170 - 200	7200
300491	5.00 x 350	3/16 x 14"	190 - 260	12190

Approvals : _____

CE, GOST-R, SEPRO

Standards :

**Chemical Composition of Weld Metal-
% (Typical) :**

TS EN 14700	:	E Fe 16
EN 14700	:	E Fe 16
DIN 8555	:	E 10-UM-65 GRZ

C	Mn	Si	Mo	V	W	Cr	Nb
4.5	0.3	1.0	5.0	1.7	2.5	23.5	4.0

Mechanical Properties : _____

Hardness (HRC)
63 - 67

Typical Base Material Grades : _____

- * Super hardfacing electrode with very high content of carbide formers (Mo, V, W, Nb) for deposits subject to extreme sliding mineral abrasion.
- * Used in blast furnace cover mechanism, breakers, mixers, gimlet, non-steel and cement industry, mining coal industries, weld metal efficiency is ~ % 230.
- * Re-drying : 300-350°C / min. 2 h

Welding Positions : _____



Current Type : _____

- D.C.(+)
- A.C.

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g / 100 pcs
300492	3.20 x 350	1/8 x 14"	110 - 150	6150
300493	4.00 x 350	5/32 x 14"	170 - 200	9450
300494	5.00 x 350	3/16 x 14"	190 - 250	14850

Approvals : _____

CE, GOST-R, SEPRO

Nickel Based Electrode



NIBAZ B 65

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 14172	: E-Ni 6625(NiCr22Mo9Nb)
EN ISO 14172	: E-Ni 6625(NiCr22Mo9Nb)
AWS A5.11	: ENiCrMo-3

C	Mn	Si	Mo	Ni	Fe	Cr	Ti	Nb
0.04	0.4	0.7	9.0	rest	5.0	21.0	+	3.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
		(ISO-V/+20°C)	(ISO-V/-196°C)	
min. 420	min. 760	min. 60 J	min. 35 J	min. 30

Typical Base Material Grades :

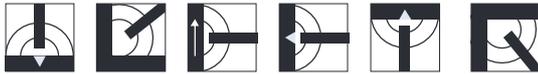
-1.4529 X2 NiCrMoCu 25 20 6	-2.4951 NiCr 20 Ti (ASTM 75)
-1.4583 X10 NiCrMoNb 18 12	-2.4952 NiCr 20 TiAl (ASTM 80A)
-1.4876 X10 NiCrAlTi 32 20 (Incoloy800)	-ASTM B443, B444, B446 (UNS N06625)
-1.5662 X8 Ni 9 (ASTM 9Ni)	
-2.4816 NiCr 15 Fe (Inconel 600)	
-2.4856 NiCr 22 Mo 9 Nb (Inconel 625)	
-2.4858 NiCr 21 Mo (Inconel 825)	

Features and Applications :

* High Molybdenum Nickel-base alloy electrode for creep-resistant steels, heat resisting steels, heat resisting and Cryogenic materials, dissimilar joints and high strength problem steels.

* Especially designed for Inconel 625 and Incoloy 825. * Re-drying cond. : 250-300 °C / 2 h.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
302728	2.50 x 250	3/32 x 10"	60 - 80	1600
300684	3.20 x 300	1/8 x 12"	70 - 100	3225
301197	4.00 x 350	5/32 x 14"	90 - 130	5200

Approvals :

CE, GOST-R, SEPRO

Nickel Based Electrode



NIBAZ B 70

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 14172	: E-Ni 6082(NiCr20Mn3Nb)
EN ISO 14172	: E-Ni 6082(NiCr20Mn3Nb)
AWS A5.11	: ~ENiCrFe3

C	Mn	Si	Mo	Ni	Fe	Cr	Nb	Ti
0.05	4.5	0.4	1.5	>65	3.0	20.0	1.8	0.25

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L _c =5d ₀)(%)
min. 390	630 - 710	min. 60 J	min. 30

Typical Base Material Grades :

* Un-alloyed and alloyed, high temperature steels to X8Ni9, high alloyed Cr and CrNi Steels, particularly for mixed alloy joints. Nickel and nickel alloys and joints to steels.

* NiCr 15 Fe, LC-NiCr 15Fe, NiCr 60 15, INCONEL 600 / 600 L, INCOLOY 800

Features and Applications :

* Resisting to low and high temperature and creep, low and unalloyed steels contain up to % 9 Ni Ni and Ni Alloys and pressure vessels.

* Weld metal has non-scaling structure at -196°C and 1200°C.

* Weld metal is stainless, austenitic steels and resistance to thermal shock.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300685	2.50 x 250	3/32 x 10"	50-80	1600
300686	3.20 x 300	1/8 x 12"	75-105	2850
301198	4.00 x 350	5/32 x 14"	90-130	5000

Approvals :

CE, GOST-R, SEPRO

Nickel Based Electrode



NIBAZ B 71

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 14172	:	E-Ni 6182(NiCr15Fe6Mn)
EN ISO 14172	:	E-Ni 6182(NiCr15Fe6Mn)
AWS A5.11	:	ENiCrFe3

C	Mn	Si	Ni	Fe	Cr	Nb
0.04	7.5	0.60	rest	7.5	16.7	2.2

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
		(ISO-V/+20°C)	(ISO-V/-196°C)	
min. 360	min. 550	min. 47 J	min. 32 J	min. 30

Typical Base Material Grades :

NiCr 15 Fe, LC-NiCr 15 Fe, NiCr 60 15, INCONEL 600/600L, INCOLOY 800

Features and Applications :

- * Nickel-based basic-type electrode
- * Applicability in welding high-temperature steels and low-temperature alloyed or unalloyed steels, nickel (Ni), and Ni-alloys
- * High creep-resistance
- * Serviceability at temperatures ranging between -196 °C and 480 °C
- * Requirement of re-drying at 300-350 °C for 2 hours

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
304980	2.50 x 250	3/32 x 10"	50-80	1600
302243	3.20 x 300	1/8 x 12"	75-105	2850
305075	4.00 x 350	5/32 x 14"	90-130	5000

Approvals :

CE, GOST-R, SEPRO

Typical Base Material Grades : _____

* Non-alloyed and low alloyed steels, stainless steels, aluminium and aluminium alloys, copper and copper alloys, cast-iron and steel casts.

Features and Applications : _____

* Usability in cutting, in making welding grooves, or in drilling all metals that cannot be oxygen-cut or -drilled.
* Resistance against high values of current at welding.* Requirement of holding the electrode in the direction perpendicular to work direction.

Welding Positions : _____



Current Type : _____

D.C.(-) A.C.

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300687	3.20x350	1/8x14"	160-240	3550
300689	4.00x350	5/32x14"	180-300	5000
300690	4.00x450	5/32x18"	180-300	6660
300691	5.00x450	3/16x18"	240-400	10140

Gouging Electrode

ELIT NUT

Typical Base Material Grades : _____

* Non-alloyed and low alloyed steels, stainless steels, aluminium and aluminium alloys, copper and copper alloys, cast-iron and steel casts.

Features and Applications : _____

* Usability in making welding grooves, or in removing defective weld beads in all metals that cannot be worked through oxygen.* Very easy usage. * Arc start by holding the electrode in a direction perpendicular to that of the work, and, by subsequently pushing it forward after approaching it at an angle of 15° to work direction.

* Groove depth of half of the electrode's coating thickness. * Deeper grooves obtained only by repeating the operation after the work piece is cooled.

Welding Positions : _____



Current Type : _____

D.C.(-) A.C.

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
300702	3.20 x 350	1/8 x 14"	180-240	3593
300703	4.00 x 350	5/32 x 14"	250-320	5140
300704	5.00 x 350	3/16 x 14"	360-500	8030

Approvals (ELIT CUT / NUT) : GOST-R, SEPRO





Welding Wires

**Gas Shielded
Arc Welding Wires & Rods**



SG 1

Standards :

TS EN ISO 14341-A	:	G2Si
TS EN ISO 636-A	:	W2Si
EN ISO 14341-A	:	G2Si
EN ISO 636-A	:	W2Si
AWS A5.18	:	ER 70 S-3

Chemical Composition of Welding Wire-
% (Typical) :

C	Si	Mn
0.10	0.6	1.2

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L ₀ =5d ₀)(%)
min. 400	480 - 600	min. 47 J	min. 22

Typical Base Material Grades :

* S235J2G3-S355J2G3, P235T2-P355T2, L210NB-L290NB, L290MB-L360MB, P235G1TH, P255G1TH, P235GH-P355GH, S235JRS1-S235J4S, S315G1S-S355G3S, P255NH-P355NH, GE200-GE300

Features and Applications :

- * Welding of thin walled parts.
- * Root pass welding.
- * For making galvanized coating.
- * TIG welding of tubes and pipes.
- * Shielding gases : TIG: Ar MAG: 20% CO₂ - 80% Ar or pure CO₂

Welding Positions :



Current Type :

TIG D.C.(-)
MAG D.C.(+)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
304430	304030	303001	0.8	0.030*	15	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
	303011	302636	1.0	0.040*	15	
	303021	303023	1.2	0.047*	15	
		303028	1.6	0.062*	15	
			(0.8,0.9,1.14,1.4)		(1, 5, 15, 18, 50, 250, 400)	
	303618		1.6X1000	1/16 x 39*	5	Carton Box
	303619		2.0X1000	5/64 x 39*	5	
	303620		2.4X1000	3/32 x 39*	5	
	303621		3.2X1000	1/8 x 39*	5	
	303622		4.0X1000	5/32 x 39*	5	
	303623		5.0X1000	3/16 x 39*	5	

Approvals :

SG1/CO₂ : TSE, CWB, CE, GOST-R, SEPRO SG1/TIG : CE, SEPRO

Standards :

TS EN ISO 14341-A	:	G2Ti
TS EN ISO 636-A	:	W2Ti
EN ISO 14341-A	:	G2Ti
EN ISO 636-A	:	W2Ti
AWS A5.18	:	ER 70 S-2

Chemical Composition of Welding Wire-
% (Typical) :

C	Mn	Si	Zr	Ti	Al
0.05	1.1	0.55	0.07	0.12	0.11

Mechanical Properties (MAG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L _o =5d _o)(%)
min. 400	min. 480	min. 47 J	min. 22

Typical Base Material Grades :

* S235J2G3-S355J2G3, P235T2-P355T2, L210NB-L290NB, L290MB-L360MB, P235G1TH, P255G1TH, P235GH-P355GH, S235JRS1-S235J4S, S315G1S-S355G3S, P255NH-P355NH, S255N-S420N, GE200-GE300,

Features and Applications :

- * Wire for welding mild and low alloy steels as well as thin walled materials.
- * Being triple deoxidized with Aluminium, Titanium and Zirconium as well as Manganese and Silicon, the wire is capable of producing efficient welds when the steel to be welded is rusty, dirty, undercoat painted.
- * It is recommended for pipe welding and for root passes in heavy vessel construction.
- * Also for welding of steels of which surface will be coated (such as galvanized, etc.)
- * Shielding gases : MAG; Ar +CO₂ mix gases, TIG; %100 Ar gas can be used

Welding Positions :



Current Type :

TIG D.C.(-)

MAG D.C.(+)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
	304738	302816	0.8	0.030"	15	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
	304739	303367	1.0	0.040"	15	
	304740	303371	1.2	0.047"	15	
		302846	1.6	0.062"	15	
			(0.6,0.9,1.14,1.4)		(1, 5, 15, 18, 50, 250, 400)	
	303651		1.6X1000	1/16 x 39"	5	Carton Box
	303652		2.0X1000	5/64 x 39"	5	
	303653		2.4X1000	3/32 x 39"	5	
	303654		3.2X1000	1/8 x 39"	5	
	303655		4.0X1000	5/32 x 39"	5	

Approvals :

SG 70 S2 : TSE, CE, GOST-R, SEPRO

**Gas Shielded
Arc Welding Wires & Rods**



SG 2

Standards :

TS EN ISO 14341-A	:	G3 Si 1
TS EN ISO 636-A	:	W3 Si 1
EN ISO 14341-A	:	G3 Si 1
EN ISO 636-A	:	W3 Si 1
AWS A5.18	:	ER 70 S-6

Chemical Composition of Welding Wire-
% (Typical) :

C	Si	Mn
0.08	0.85	1.45

Mechanical Properties (MAG/M21) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L _c =5d ₀)(%)
min. 420	500 - 640	min. 47 J	min. 22

Typical Base Material Grades :

* E295, E335, S235J2G3-S355J2G3, P235T1-P355T1, P235T2,P355T2, L210NB-L415NB, L290MB-L360MB, P235G1TH, P255G1TH, P235GH-P355GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S380N,P255NH-P355NH, GE200-GE260

Features and Applications :

- * Steel construction and machinery production.
- * Welding of ships, boiler tanks, pipe parts.
- * Welding of thin walled steels.
- * Thin sheet welding in automotive industry.
- * Perfect smooth feedability, perfect welding characteristics.
- * Shielding gases : MAG; Ar+CO₂ mix gases, TIG; %100 Ar gas can be used

Welding Positions :



Current Type :

TIG D.C.(-)

MAG D.C.(+)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
303572	303571	303574	0.8	0.030"	15	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
303729	303585	303587	1.0	0.040"	15	
303428	303594	303598	1.2	0.047"	15	
302438	303602	303603	1.6	0.062"	15	
			(0,6,0,9,1,14,1,4)		(1, 5, 15, 18, 50, 250, 400)	
			303396	1,6X1000	1/16 x 39"	Carton Box
			303625	2,0X1000	5/64 x 39"	
			303626	2,4X1000	3/32 x 39"	
			303627	3,2X1000	1/8 x 39"	
			303628	4,0X1000	5/32 x 39"	

Approvals :

SG2 / M24 : BV, DNV-GL, TL, DB, ABS, LR, RS, RINA, NK
GOST-R, DB, TÜV, SEPRO

SG2 / CO2 : TSE, CWB, CE, DB, TÜV
GOST-R, SEPRO

SG2 / TIG : BV, ABS, CE, DB
GOST-R, DNV-GL, SEPRO

Standards :

TS EN ISO 14341-A	:	G4 Si 1
TS EN ISO 636-A	:	W4 Si 1
EN ISO 14341-A	:	G4 Si 1
EN ISO 636-A	:	W4 Si 1
AWS A5.18	:	ER 70 S-6

Chemical Composition of Welding Wire-
% (Typical) :

C	Si	Mn
0.10	1.0	1.70

Mechanical Properties (MAG/M21) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-40°C)	Elongation (L ₀ =5d ₀)(%)
min. 460	540 - 680	min. 47 J	min. 22

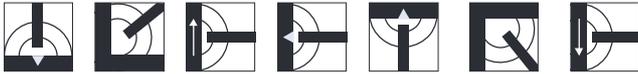
Typical Base Material Grades :

* E295, E360, S235J2G3-S355J2G3, P235T1-P355T1, P235T2,P355T2, L210NB-L415NB, L290MB-L360MB, P235G1TH, P255G1TH, P235GH-P355GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S420N, P255NH-P420NH, GE200-GE260

Features and Applications :

- * Used for the same welding purposes as SG-2.
- * Its strength is increased by Si-Mn.
- * Low spatter although used under CO₂ atmosphere.
- * Excellent wire feeding capability.
- * Shielding gases : MAG; Ar+CO₂ mix gases, TIG; %100 Ar gas can be used

Welding Positions :



Current Type :

TIG D.C.(-)
MAG D.C.(+)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
302523	303577	303579	0.8	0.030"	15	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
302546	303404	303606	1.0	0.040"	15	
302272	303286	303611	1.2	0.047"	15	
303748	303316	303615	1.6	0.062"	15	
			(6,6,0.9,1,14,1,4)		(1, 5, 15, 18, 50, 250, 400)	
303761			1.6X1000	1/16 x 39"	5	Carton Box
303630			2.0X1000	5/64 x 39"	5	
303631			2.4X1000	3/32 x 39"	5	
303632			3.2X1000	1/8 x 39"	5	
304708			4.0X1000	5/32 x 39"	5	

Approvals :

SG3 / M24 : TSE, DB, TÜV, CE, DNV-GL, GOST-R, SEPRO

Heat Resisting Arc Welding Wires & Rods



SG Mo

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 21952-A :	G Mo Si
EN ISO 21952-A :	G Mo Si
TS EN ISO 21952-A :	W Mo Si
EN ISO 21952-A :	W Mo Si
AWS A5.28 :	ER 80 S-G (mod.) (ER 70 S-A1)

C	Si	Mo	Mn
0,10	0,6	0,5	1,1

Mechanical Properties (MAG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-40°C)	Elongation (L ₀ =5d ₀)(%)
min. 460	550 - 670	min. 47 J	min. 22

Typical Base Material Grades :

* S355J2G3, L320-L415NB, L320MB-L415MB, P255G1TH, P235GH-P355GH, P255NH, 16Mo3, 17MnMoV6-4, 20MnMoNi5-5, 20MnMoNi4-5, GE240-GE300, 22Mo4, S255N-S460N, P255NH-P460 NH

Features and Applications :

* Copper coated wire for GMAW and rod TIG welding in boiler pressure vessel, pipework and crane construction as well as in structural steel engineering. * High quality, very tough deposit of high crack resistance and non-aging.

* Recommended for service in temperature range -45°C (TIG) or -40°C (GMAW) to +550°C. * Good copper bonding with low total copper content. Very good welding and flow characteristics. * Preheating interpass and postweld heat treatment as required by base metal. * Shielding gases : MAG; Ar+CO₂ mix gases, TIG; %100 Ar

Welding Positions :



Current Type :

TIG D.C.(-)

MAG D.C.(+)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
304653	302788	302954	0,8	0,030*	15	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
		302851	1,0	0,040*	15	
		302950	1,2	0,047*	15	
		303338	1,6	0,062*	15	
			(0,6,0,9,1,1,4,1,4)		(1, 5, 15, 18, 30, 250, 400)	
303633			1,6X1000	1/16 x 39"	5	Carton Box
303634			2,0X1000	5/64 x 39"	5	
303635			2,4X1000	3/32 x 39"	5	
303636			3,2X1000	1/8 x 39"	5	
303637			4,0X1000	5/32 x 39"	5	

Approvals :

SGMo : CE, GOST-R, SEPRO

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 21952-A	: G Z Mn Mo
EN ISO 21952-A	: G Z Mn Mo
TS EN ISO 21952-A	: W Z Mn Mo
EN ISO 21952-A	: W Z Mn Mo
AWS A5.28	: ER 80 S-D2

C	Si	Mo	Mn
0.10	0.65	0.5	1.8

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L ₀ =5d ₀)(%)
min. 470	550 - 680	min. 47 J	min. 22

Typical Base Material Grades :

* S355J2G3, L320-L415NB, L320MB-L415MB, P255G1TH, P235GH-P355GH, 16Mo3, 17MnMoV6-4, 20MnMoNi5-5, 20MnMoNi4-5, GE240-GE300, 22Mo4, S255N-S460N, P255NH-P460 NH

Features and Applications :

* Copper coated for GMAW and TIG welding in boiler pressure vessel, pipework and crane construction as well as in structural steel engineering. * High quality, very tough deposit of high crack resistance and non-aging. * Recommended for service in temperature range -45°C (TIG) or -40°C (GMAW) to +550°C. * Good copper bonding with low total copper content. * Very good welding and flow characteristics. * Preheating interpass and postweld heat treatment as required by base metal. * Shielding gases : MAG; Ar+CO₂ mix gases, TIG; pure Ar gas can be used.

Welding Positions :



Current Type :

TIG D.C.(-) MAG D.C.(+)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
	302998	302845	0,8	0,030*	15	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
	302584	303337	1,0	0,040*	15	
		303361	1,2	0,047*	15	
		302975	1,6	0,062*	15	
			(0,6;0,9;1,14;1,4)		(1, 5, 15, 18, 50, 250, 400)	
	303657		1,6X1000	1/16 x 39"	5	Carton Box
	303658		2,0X1000	5/64 x 39"	5	
	303659		2,4X1000	3/32 x 39"	5	
	303660		3,2X1000	1/8 x 39"	5	
	303661		4,0X1000	5/32 x 39"	5	
	303662		5,0X1000	3/16 x 39"	5	

Approvals :

SG80 S-D2 : CE, GOST-R, SEPRO

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 21952-A	: G Z Cr Mo 1 Si
EN ISO 21952-A	: G Z Cr Mo 1 Si
TS EN ISO 21952-A	: W Z Cr Mo 1 Si
EN ISO 21952-A	: W Z Cr Mo 1 Si
AWS A5.28	: ER 80 S-B2

C	Si	Mn	Mo	Cr
0.10	0.6	0.5	0.5	1.2

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 470	550 - 670	min. 78 J	min. 19	620°C/1hour-300°C air

Typical Base Material Grades :

13CrMo4-5, 15CrMo5, 42CrMo4, 16CrMoV4, 25CrMo4, 24CrMo5, G22CrMo5-4, G17CrMo5-5, A 333Gr; P11,

Features and Applications :

- * Used for the welding of high heat resisting. Cr-Mo alloyed steels which are used for the production of boilers tubes and pipes and nitrided steels.
- * Weld metal is resistant to temperatures up to +570°C
- * Shielding gases : MAG; Ar+CO₂ and Ar+ O₂ mix gases, TIG; pure Ar gas can be used.

Welding Positions :



Current Type :

TIG D.C.(-)

MAG D.C.(+)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
304643	302600	303992	0.8	0.030"	15	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
		303340	1.0	0.040"	15	
		303343	1.2	0.047"	15	
		303346	1.6	0.062"	15	
			(0.8,0.9,1.14,1.4)		(1, 5, 15, 18, 50, 250, 400)	
304215			1.6X1000	1/16 x 39"	5	Carton Box
303701			2.0X1000	5/64 x 39"	5	
303638			2.4X1000	3/32 x 39"	5	
303639			3.2X1000	1/8 x 39"	5	
303640			4.0X1000	5/32 x 39"	5	

Approvals :

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 21952-A	:	G Cr Mo 1 Si
EN ISO 21952-A	:	G Cr Mo 1 Si
TS EN ISO 21952-A	:	W Cr Mo 1 Si
EN ISO 21952-A	:	W Cr Mo 1 Si
AWS A5.28	:	ER 80 S-G

C	Si	Mn	Mo	Cr
0.10	0.6	1.0	0.5	1.2

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 470	550 - 670	min. 78 J	min. 20	680°C/1hour-300°C air

Typical Base Material Grades :

13CrMo4-5, 15CrMo5, 42CrMo4, 16CrMoV4, 25CrMo4, 24CrMo5, G22CrMo5-4, G17CrMo5-

Features and Applications :

- * Used for the welding of high heat resisting. Cr-Mo alloyed steels which are used for the production of boilers tubes and pipes and nitrided steels.
- * Weld metal is resistant to temperatures up to +570°C
- * Shielding gases : MAG; Ar+CO₂ and Ar+O₂ mix gases, TIG; pure Ar gas can be used.

Welding Positions :



Current Type :

TIG D.C.(-)

MAG D.C.(+)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
		304964	0.8	0.030"	15	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
		304965	1.0	0.040"	15	
		304966	1.2	0.047"	15	
		304967	1.6	0.062"	15	
			(0.8,0.9,1.14,1.4)		(1, 5, 15, 18, 50, 250, 400)	
		304976	1.6X1000	1/16 x 39"	5	Carton Box
		304977	2.0X1000	5/64 x 39"	5	
		304771	2.4X1000	3/32 x 39"	5	
		304978	3.2X1000	1/8 x 39"	5	
		304979	4.0X1000	5/32 x 39"	5	

Approvals :

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 21952-A	:	G Z Cr Mo 2 Si
EN ISO 21952-A	:	G Z Cr Mo 2 Si
TS EN ISO 21952-A	:	W Z Cr Mo 2 Si
EN ISO 21952-A	:	W Z Cr Mo 2 Si
AWS A5.28	:	ER 90 S-B3

C	Si	Mn	Mo	Cr
0.08	0.6	0.5	1.0	2.4

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 540	620 - 760	min. 47 J	min. 20	690°C/1h/300°C air

Typical Base Material Grades :

* 10 CrMo9-10, 10 CrSiMoV 7, 10 CrV 63, G-17 CrMo 9-10, A 335 Gr. P22

Features and Applications :

- * Used for the welding of high heat resisting.
- * XCr-Mo alloyed steels which are used for the production of boilers tubes, pipes and nitrided steels.
- * Weld metal is resistant to temperatures up to +600°C
- * Shielding gases : MAG; Ar+CO₂ and Ar+O₂ mix gases, TIG; pure Ar gas can be used.

Welding Positions :



Current Type :

TIG D.C.(-)

MAG D.C.(+)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
	304466 302614	303349 303351 303353	0.8 1.0 1.2 1.6	0.030" 0.040" 0.047" 0.062"	15 15 15 15	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
			(0.8,0.8,1.1,1.4,1.4)		(1, 5, 15, 18, 50, 250, 400)	
	303641 303642 303643 303644 303645		1.6X1000 2.0X1000 2.4X1000 3.2X1000 4.0X1000	1/16 x 39" 5/64 x 39" 3/32 x 39" 1/8 x 39" 5/32 x 39"	5 5 5 5 5	Carton Box

Approvals :

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 21952-A	:	G Cr Mo 2 Si
EN ISO 21952-A	:	G Cr Mo 2 Si
TS EN ISO 21952-A	:	W Cr Mo 2 Si
EN ISO 21952-A	:	W Cr Mo 2 Si
AWS A5.28	:	ER 90 S-G

C	Si	Mn	Mo	Cr
0.08	0.6	1.0	1.0	2.4

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L _a =5d ₀)(%)	Heat Treatment
min. 540	620 - 760	min. 47 J	min. 20	720°C/1h/300°C air

Typical Base Material Grades :

* 10 CrMo9-10, 10 CrSiMoV 7, 10 CrV 63, G-17 CrMo 9-10, A 335 Gr. P22

Features and Applications :

- * Used for the welding of high heat resisting.
- * XCr-Mo alloyed steels which are used for the production of boilers tubes, pipes and nitrided steels.
- * Weld metal is resistant to temperatures up to +600°C
- * Shielding gases : MAG; Ar+CO₂ and Ar+O₂ mix gases, TIG; pure Ar gas can be used.

Welding Positions :



Current Type :

TIG D.C.(-)
MAG D.C.(+)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
		304975	0,8	0,030"	15	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
		304968	1,0	0,040"	15	
		304969	1,2	0,047"	15	
		304971	1,6	0,062"	15	
			(0,6,0,8,1,14,1,4)		(1, 5, 15, 18, 50, 250, 400)	
		304981	1,6X1000	1/16 x 39"	5	Carton Box
		304982	2,0X1000	5/64 x 39"	5	
		304983	2,4X1000	3/32 x 39"	5	
		304984	3,2X1000	1/8 x 39"	5	
		304985	4,0X1000	5/32 x 39"	5	

Approvals :

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 21952-A	: G / W Cr Mo 5 Si
EN ISO 21952-A	: G / W Cr Mo 5 Si
AWS A5.28/(A5.9)	: ER 80 S-B6/ (ER 502)

C	Si	Mn	Mo	Cr
0.07	0.45	0.5	0.6	6.0

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 420	590 - 690	min. 70 J	min. 18	745°C/1h/300°C air

Typical Base Material Grades :

X12CrMo5, GX12CrMo5

Features and Applications :

* Used for the welding of high heat resisting steels, hot hydrogen plants, working temperature IS +600°C and also used for the welding of steels with 5 Cr 1/2 Mo.

* Shielding gases : TIG: pure Ar gas can be used. MAG; Ar+CO₂ and Ar+O₂ mix gases can be used.

Welding Positions :



Current Type :

TIG D.C.(-)

MAG D.C.(+)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
	302997	303355 303357 303359	0.8 1.0 1.2 1.6 <small>(0.6,0.8,1,1.4,1.4)</small>	0.030* 0.040* 0.047* 0.062*	15 15 15 15 <small>(1, 5, 15, 18, 50, 250, 400)</small>	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
	303646 303647 303648 303649 303650		1.6X1000 2.0X1000 2.4X1000 3.2X1000 4.0X1000	1/16 x 39* 5/64 x 39* 3/32 x 39* 1/8 x 39* 5/32 x 39*	5 5 5 5 5	Carton Box

Approvals :

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 21952-A	:	W Cr Mo91
EN ISO 21952-A	:	W Cr Mo91
AWS A5.28/(A5.9)	:	ER 90 S-B9

C	Si	Mn	Mo	Cr	V	Ni	Nb	N
0.09	0.25	0.6	0.95	9.0	0.2	0.65	0.06	0.05

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
650	740	min. 60 J	min. 18	760°C / 2h 300°C / air

Typical Base Material Grades :

* X10CrMoVNb 9-1, A213 Gr. T91, A 335 Gr. P91 (T31), A 139 GR. T91, %9-12 Cr martensitic stainless steels.

Features and Applications :

Used for TIG welding of high heat resistance steels such as P91 / T91. Power plants, turbines, oil refineries, cool and gasification plants, boiler production, also used for the welding of steels with 9Cr 1Mo. Weld metal is resistant to working temperature up to 600 0C.

Shielding gas (TIG): Pure Ar.

Welding Positions :



Current Type :

TIG D.C.(-)

MAG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm)	Diameter x Length (inch)	Weight (kg)	Package Type
607705	2,00 x 1000	5/64 x 39"	5	Carton Box
607704	2,40 x 1000	3/32 x 39"	5	

Approvals :

CE, GOST-R, SEPRO

Standards :

TS EN ISO 14341-A :	G3Ni 1
TS EN ISO 636A :	W3Ni 1
EN ISO 14341-A :	G3Ni 1
EN ISO 636A :	W3Ni 1
AWS A5.28 :	ER80S-Ni1

Chemical Composition of Welding Wire-
% (Typical) :

C	Si	Mn	Ni
0.08	0.65	1.10	1.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-45°C)	Elongation (L _o =5d _o)(%)
min. 470	min. 550	min. 27 J	min. 24

Typical Base Material Grades :

- * A106; A515; A714; A131; A369; A210; L290; P235 T1 / T2; P275 T1;
- * L360; L415; P275T2; P355N; API X-42; X46; X62; X60; P235GH; P355GH;
- * A283; A285; A414; A372; A662; S275; S420; A516; A255; A333; A350; A612

Features and Applications :

- * Building up of cranes, transport, industrial facilities, equipment in general, pipelines, shipbuilding, etc./
- * Working temperatures are between of -45°C and +400°C.
- * Shielding gas : Ar+CO₂ mix gases can be used for MAG
- * Shielding gas : Ar gas can be used for TIG

Welding Positions :



Current Type :

MAG D.C.(+) / TIG D.C. (-)

Operating Data :

Product Code	Diameter x Length (mm)	Diameter x Length (inch)	Weight (kg)	Package Type
606763	1.20	0.047"	15	BS 300 Spool
608550	2.0 x 1.000	5/64 x 39"	5	Carton Box
607966	2.4 x 1.000	3/32 x 39"	5	

Approvals :

CE, SEPRO

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 14341-A :	G2Ni 2
EN ISO 14341-A :	G2Ni 2
AWS A5.28 :	ER80S-Ni2

C	Si	Mn	Ni
0.08	0.55	1.10	2.30

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L ₀ =5d ₀)(%)	PWHT
min. 470	min. 550	min. 27 J	min. 24	620 ± 15°C / 2 hours

Typical Base Material Grades :

- * S255NL2-S355NL2; 14Ni6; 12Ni14; X12Ni5; S255N, S380N, S255NL, S380NL;
- S255NL1-S355NL1; S380NL1;
- * A333: Gr.1-3; A442; Gr55-60; A334: Gr.3;
- * 10Ni14, 13MnNi63; TTSt E355; TTSt E 460; HY 80; TTSE 35 N

Features and Applications :

- * Applications down to -60°C on mild steels, low-alloy steels and fine-grainedsteels, plates, storage tanks, pipelines and equipment for cryogenic use.
- * Shielding gas: Ar+CO₂ mix gases can be used.

Welding Positions :



Current Type :

MAG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm)	Diameter x Length (inch)	Weight (kg)	Package Type
606764	1.20	0.047"	15	BS 300 Spool

Approvals :

CE, SEPRO

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 16834-A : G 62 6 C1/M21 Mn3Ni1Mo
EN ISO 16834-A : G 62 6 C1/M21 Mn3Ni1Mo
AWS A5.28 : ER 100 S-G

C	Si	Mn	Ni	Mo
0.09	0.65	1.70	1.15	0.40

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L ₀ =5d ₀)(%)
min. 620	700 - 890	min. 47	min. 18

Typical Base Material Grades :

* P355NL1, P460NL1, StE460-590, USS-T.TTS, TE47-51, N-X-ATRA 70, WTSt37-2, WT37-3, WT St52-3,
WT St52-3A, Corten A, Patinax 37, Alcodur 50, Korlpin 52, S255, S550, A516, A350, A612, A255, A299, A333,

Features and Applications :

* Fine-grained low alloy steels and also austempering steels for applications. Building up of cranes, transport, tanks, industrial facilities, equipment in general, pipelines, shipbuilding, etc.

* If necessary, post-weld stress relief shall be heat treated at 560°C-600°C for 1 hour and left in the furnace for cooling down to 300°C.

* Shielding gas: Ar+CO₂ mix gases can be used.

Welding Positions :



Current Type :

MAG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm)	Diameter x Length (inch)	Weight (kg)	Package Type
606766	1.20	0.047"	15	BS 300 Spool

Approvals :

CE, SEPRO

High Strength MAG Wire & TIG Rod



ER 100 SG

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 16834-A	G/W Mn3Ni1CrMo
EN ISO 16834-A	: G/W Mn3Ni1CrMo
AWS A5.28	: ER 100S-G

C	Mn	Mo
0.07	1.55	0.25
Cr	Ni	Si
0.25	1.50	0.50

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L ₀ =5d ₀)(%)
min. 620	min.690	min. 47 J	min. 18

Typical Base Material Grades :

* S460N, S500N, S550NC, S500NL, N-A-XTRA 56-70, BHV 70, PAS700, HSM700, E 295-E 360

Features and Applications :

- * ER 100 SG is low alloyed and high strength GMAW wire.
- * It is used for joining of the high strength low alloy steels and the fine grained constructional steels.
- * It has high yield strength and impact toughness at low temperatures.
- * Shielding gases MAG : (Ar+% 15-25 CO₂) / TIG : Ar

Welding Positions :



Current Type :

MAG D.C.(+)

TIG D.C.(-)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
304719			0.8	0.030"	15	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
304720	304744	304895	1.0	0.040"	15	
304683	304807	304713	1.2	0.047"	15	
304721		304894	1.6	0.062"	15	
			(0.8, 0.9, 1.14, 1.4)		(1, 5, 15, 18, 50, 250, 400)	
304745			1.6X1000	1/16 x 39"	5	Carton Box
304766			2.0X1000	5/64 x 39"	5	
304767			2.4X1000	3/32 x 39"	5	
304768			3.2X1000	1/8 x 39"	5	

Approvals :

CE, GOST-R, SEPRO

High Strength MAG Wire & TIG Rod



ER 110 SG

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 16834-A	G/W Mn4Ni2CrMo
EN ISO 16834-A	: G/W Mn4Ni2CrMo
AWS A5.28	: ER 110S-G

C	Si	Mn	
0.09	0.75	1.70	
Mo	Ni	Cr	Cu
0.50	2.0	0.30	0.20

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L _o =5d _o)(%)
min. 690	min. 760	min.47 J	19

Typical Base Material Grades :

- * High strength structural steels and fine grained steels
- * S690Q, L690M, N-A-XTRA 70, USS-T1, BH 70 V, HY 100, ASTM A514 Gr.F

Features and Applications :

- * ER 110 SG is low alloyed and high strength GMAW wire and GTAW rods.
- * It is used for joining of the high strength low alloy steels and the fine grained constructional steels with minimum yield strength of 690 N/mm², especially Hardox and Weldom sheets.
- * Boilers, pressure vessels, pipelines, structure steels are the other application areas.
- * Weld metal has high impact and toughness at low temperatures.
- * Pre-heat can be according to the base material.
- * Shielding gases - MAG : (Ar+ % 15-25 CO₂) / TIG : (Ar)

Welding Positions :



Current Type :

MAG D.C.(+)

TIG D.C.(-)

Operating Data :

Product Code			Diameter x Length (mm) (inch)		Weight Kg	Package Type
BS 300	D 300	K 300				
305283	305925	305265	0.8	0.030"	15	BS/D/K 300 D 200 D 100 EGO PACK BIG PACK
305273	305857	305427	1.0	0.040"	15	
	305427	305268	1.2	0.047"	15	
	306253		1.6	0.062"	15	
			(0.8,0.9,1,1.4,1.6)		(1, 5, 15, 18, 50, 250, 400)	
305234			1.6X1000	1/16 x 39"	5	Carton Box
305233			2.0X1000	5/64 x 39"	5	
305232			2.4X1000	3/32 x 39"	5	

Approvals :

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TSEN ISO 16834-A G 89 4 M21 Mn4Ni2,5CrMo
EN ISO 16834-A : G 89 4 M21 Mn4Ni2,5CrMo
AWS A5.28 : ER 120S-G

C	Si	Mn	
0.10	0.55	1.70	
Mo	Ni	Cr	Cu
0.50	2.50	0.30	0.20

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-40°C)	Elongation (L ₀ =5d ₀)(%)
min. 890	940-1180	min.47 J	min.15

Typical Base Material Grades :

- * S890QL, P460NH, P460NL1,
- * WELDOX 900, StE 960, S960Q

Features and Applications :

- * Fine grained steels, high yield strength, austempering steels excellent properties low temperatures.
- * Lifting and handling machines, bridges, tanks, transport, shipbuilding, railway sector, mines, cranes, frames, etc.
- * Shielding gas: Ar+CO₂ mix gases can be used

Welding Positions :



Current Type :

MAG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (kg)	Package Type
606760	1.00	0,040"	15	BS 300 Spool
606761	1.20	0,047"	15	

Approvals :

CE, GOST-R, SEPRO

Weather Resistant MAG Wire



SG NiCu

Standards :

TS EN ISO 14341-A :	~G3Ni 1
EN ISO 14341-A :	~G3Ni 1
AWS A5.28 :	ER80S-G

Chemical Composition of Welding Wire-
% (Typical) :

C	Si	Mn
0.08	0.80	1.30
Ni	Cr	Cu
0.80	0.20	0.40

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
		(ISO-V/+20°C)	(ISO-V/-60°C)	
510	590	130 J	50 J	25

Typical Base Material Grades :

* S235JRW, S235J2G3, Patinax 37, Alcodur 50, Korlpin 52, S355J2G3Cu, 9CrNiCuP3-2-4, Corten A-B1, Itacor, WTSt37, WTST52.3, S355K2W

Features and Applications :

- * Excellent resistance to atmospheric agents thanks to the presence of Cu, Cr, Ni.
- * Suitable for bridges, cranes, ground moving machines, boilers, building structures, petrochemical sector, fans gas pipes, fume section, etc.
- * Shielding gas: Ar+CO₂ mix gases can be used.

Welding Positions :



Current Type :

MAG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (kg)	Package Type
606762	1.20	0.047"	15	BS 300 Spool

Approvals :

CE, SEPRO

Stainless Steel Gas Shielded Welding Wire & Rod



ELOX SG 307

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 14343-A	:	G 18 8 Mn
EN ISO 14343-A	:	G 18 8 Mn
TS EN ISO 14343-A	:	W 18 8 Mn
EN ISO 14343-A	:	W 18 8 Mn
AWS A5.9	:	~ER 307

C	Si	Mn	Cr	Ni
0.08	0.9	7.0	19.2	9.0

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 370	580 - 750	min. 63 J	min. 30

Features and Applications :

- * Filler welding of high-strength low-alloyed and alloyed heat-treatable steels, armor steels, steels including 14 % Mn, ferritic chromium steels, heat-resistant steels, non-magnetic steels etc.
- * Joint welding of different types of steels with each other.
- * Filler welding of abrasion-resistant steels for valves and turbines.
- * As shielding gas, Argon is used at TIG welding, where as Ar+ %2.5 O₂ or Ar+ %2.5 CO₂ mixed gas is used at MIG welding.

Welding Positions :



Current Type :

- TIG D.C.(-)
- MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
600200	2.0 x 1000	5/64 x 39 ¹¹	5	Plastic Box
600199	2.4 x 1000	3/32 x 39 ¹¹	5	
600198	3.2 x 1000	1/8 x 39 ¹¹	5	
600204	0.8	0.030 ¹¹	12.5	D 300 BS 300
600203	1.0	0.040 ¹¹	15	
600202	1.2	0.047 ¹¹	15	
600201	1.6	0.062 ¹¹	15	

Approvals :

GOST-R, SEPRO

Stainless Steel Gas Shielded Welding Rod



ELOX SG 308-H

Standards :

TS EN ISO 14343-A	:	G 19 9 H
EN ISO 14343-A	:	G 19 9 H
TS EN ISO 14343-A	:	W 19 9 H
EN ISO 14343-A	:	W 19 9 H
AWS A5.9	:	ER 308 H

Chemical Composition of Welding Wire
% (Typical) :

C	Si	Mn	Cr	Ni
0.06	0.5	1.7	20.1	9.8

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/0°C)	Elongation (L _c =5d ₀)(%)
min. 350	min. 550	min. 63 J	min. 25

Typical Base Material Grades :

* X 2 CrNi 19 11, X 5 CrNi 19 11, X 5 CrNi 18 8, X 12 CrNi 17 7, X 12 CrNi 18 8, G-X 10 CrNi 18 8,
G-X 12 CrNi 18 8 AISI : 304 L, 301, 302, 304, 308

Features and Applications :

* Applicability in welding tempered high-strength steels as well as stainless steels, carbon steels, and 18/8,
Cr-Ni -alloy steels

* Requirement of use of Ar as "shielding gas for TIG welding", and of Ar+ %2.5 O₂ or Ar+ %2.5 CO₂ mixed
gas as "shielding for MIG welding"

Welding Positions :



Current Type :

TIG D.C.(-)
MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
607649	2.0 x 1000	5/64 x 39"	5	Plastic Box
606441	2.4 x 1000	3/32 x 39"	5	
607650	3.2 x 1000	1/8 x 39"	5	

Approvals :

GOST-R, SEPRO

Stainless Steel Gas Shielded Welding Rod



ELOX SG 308 L

Standards :

TS EN ISO 14343-A	: W 19 9 L
EN ISO 14343-A	: W 19 9 L
AWS A5.9	: ER 308 L

Chemical Composition of Welding Wire
% (Typical) :

C	Si	Mn	Cr	Ni
0.02	0.5	1.7	20.1	9.8

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 390	540 - 660	min. 63 J	min. 35

Typical Base Material Grades :

* X2CrNi 19 11, X5CrNi 18 10, X6CrNiTi 18 10, X6CrNiNb 18 10, X2CrNiN 18 10, X10CrNiNb 18 10, 304, 304L, 304LN, 347, 321, A320 B 8 C, A320 B 8 D

Features and Applications :

- * TIG welding of 13% Cr ferritic stainless steels, high-carbon steels of type 304, or stabilized steels of type 347, or steels of similar qualities, all of which used in drug, cellulose, paper and food (production) industries.
- * The shielding gas is Argon (Ar).
- * Maintenance of ductile behavior at temperature values down to -196 °C.
- * Maintenance of resistance against intergranular corrosion at temperatures up to 400 °C.

Welding Positions :



Current Type :

TIG D.C.(-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
600232	1.6 x 1000	1/16 x 39"	5	Plastic Box
600231	2.0 x 1000	5/64 x 39"		
600230	2.4 x 1000	3/32 x 39"		
600229	3.2 x 1000	1/8 x 39"		

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Wire



ELOX SG 308 L Si

Standards :

TS EN ISO 14343-A	:	G 19 9 L Si
EN ISO 14343-A	:	G 19 9 L Si
AWS A5.9	:	ER 308 L Si

Chemical Composition of Welding Wire
% (Typical) :

C	Si	Mn	Cr	Ni
0.02	0.8	1.7	20.4	10.2

Mechanical Properties (MIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 350	520 - 660	min. 63 J	min. 35

Typical Base Material Grades :

* X2 CrNi 19 11, X5CrNi 18 10, X6 CrNiTi 18 10, X6 CrNiNb 18 10, X2 CrNiN 18 10, X10 CrNiNb 18 10, 304, 304L, 304 LN, 321, 347, A 320 B 8 C, A 320 B 8 D

Features and Applications :

- * MIG welding of 13% Cr ferritic stainless steels, high-carbon steels of type 304 or stabilized steels of type 347, or steels of similar types, used in industries of drug, cellulose, paper, and food (production).
- * Ar+ %2.5 O₂ or Ar+ %2.5 CO₂ mixed gas is used as shielding gas.
- * Maintenance of ductile behavior at temperature values down to -196 °C.
- * Maintenance of resistance to intergranular corrosion at temperatures up to 350 °C.

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
600235	0.8	0.030"	12.5	D 300
600234	1.0	0.040"	15	
600233	1.2	0.047"	15	BS 300
600197	1.6	0.062"	15	

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Rod



ELOX SG 309 L

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 14343-A	:	W 23 12 L
EN ISO 14343-A	:	W 23 12 L
AWS A5.9	:	ER 309 L

C	Si	Mn	Cr	Ni
0.03	0.45	1.80	23.5	13.0

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 320	min. 520	min. 47 J	min. 30

Typical Base Material Grades :

* Ferritic Cr and austenitic CrNi steels, austenitic manganese steels, unalloyed high strength steels, high temperature steels.

Features and Applications :

* Applicability on ferritic Cr or austenitic CrNi steels, austenitic manganese steels, unalloyed high-strength steels, heat-treated steels.

* Usability in welding austenitic stainless steels, in joint-welding of different kinds of metals, in buffer layers, in joint-welding of corrosion-resistant stainless steels to each other or to low-alloyed steels, and in welding coated steels.

* Requirement of use of Ar as shielding gas.

Welding Positions :



Current Type :

TIG D.C.(-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
600226	1.6 x 1000	1/16 x 39"	5	Plastic Box
600225	2.0 x 1000	5/64 x 39"		
600224	2.4 x 1000	3/32 x 39"		
602448	3.2 x 1000	1/8 x 39"		

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Wire



ELOXSG309LSi

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 14343-A	: G 23 12 L Si
EN ISO 14343-A	: G 23 12 L Si
AWS A5.9	: ER 309 L Si

C	Si	Mn	Cr	Ni
0.03	0.80	1.80	23.5	13.0

Mechanical Properties (MIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 320	min. 520	min. 47 J	min. 30

Typical Base Material Grades :

* Ferritic Cr and austenitic CrNi steels, austenitic manganese steels, unalloyed high strength steels, high temperature steels.

Features and Applications :

* Applicability on ferritic Cr or austenitic CrNi steels, austenitic manganese steels, unalloyed high-strength steels, heat-treated steels.

* Usability in welding austenitic stainless steels, in joint-welding of different kinds of metals, in buffer layers, in joint-welding of corrosion-resistant stainless steels to each other or to low-alloyed steels, and in welding coated steels.

* Ar+ %2.5 O₂ or (Ar+%2.5 CO₂) gas is used as shielding gas.

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
604383	0.8	0.030''	12.5	D/BS 300
600228	1.0	0.040''	15	
600227	1.2	0.047''	15	

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Wire & Rod



ELOX SG 310

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 14343-A	: G 25 20
EN ISO 14343-A	: G 25 20
TS EN ISO 14343-A	: W 25 20
EN ISO 14343-A	: W 25 20
AWS A5.9	: ER 310

C	Si	Mn	Cr	Ni
0.12	0.5	1.6	25.0	20.5

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 350	550 - 720	min. 63 J	min. 30

Typical Base Material Grades :

* X15CrNiSi 25 20, X12CrNi 25 21, X15CrNi 20 12, G-X15CrNi 25 20, G-X40 CrNi 25 21, X10CrAl 7, X10CrAl 18, X10CrAl 24, 305, 310, 314, A297 HF, A297 HJ

Features and Applications :

* Applicability in cement and ceramic industries, in manufacture processes of industrial furnaces, oil refineries, in welding of steel and steel castings used in steam boiler manufacture.

* Suitability of weld metal for use at temperatures between -196 °C and 1200 °C.

* Suitability for both TIG and MIG welding.

* Requirement of use of Ar as shielding gas in TIG welding, and of Ar+ %2.5 O₂ or Ar+ %2.5 CO₂ mixed gas as shielding in MIG welding.

Welding Positions :



Current Type :

TIG D.C.(-)

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
600180	1.6 x 1000	1/16 x 39"	5	Plastic Box
600179	2.0 x 1000	5/64 x 39"	5	
600178	2.4 x 1000	3/32 x 39"	5	
600177	3.2 x 1000	1/8 x 39"	5	
600183	0.8	0.030"	12.5	D/BS 300
600182	1.0	0.040"	15	
600181	1.2	0.047"	15	

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Wire & Rod



ELOX SG 312

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 14343-A :	G 29 9
EN ISO 14343-A :	G 29 9
TS EN ISO 14343-A :	W 29 9
EN ISO 14343-A :	W 29 9
AWS A5.9 :	ER 312

C	Si	Mn	Cr	Ni
0.12	0.40	1.80	30.0	9.0

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 450	min. 660	47 J	min. 20

Typical Base Material Grades :

DIN :	X 7 Cr 13	G-X 7 Cr 13	AISI :	403
	X 7 Cr Al 13	G-X 20 Cr 14		405
	X 10 Cr Al 13	G-X 10 Cr Mo 13		410
	X 8 Cr 17	G-X 8 Cr Ni 13		420
	X 20 Cr 13			430
	X 15 Cr 13			430 Ti
	X 22 Cr Ni 17			431
	X 15 Cr Ni 13 4			446
	X 8 Cr Ti 17			

Features and Applications :

- * Applicability in joint-welding of unalloyed and alloyed high-strength steels, Cr and Mn steels, tool steels, and of different metals.
- * Resistance to wearing, cracking and corrosion.
- * Requirement of use of Ar as shielding gas in TIG welding, and Ar+ %2.5 O₂ or Ar+ %2.5 CO₂ mix as shield gas in MIG welding.

Welding Positions :



Current Type :

- TIG D.C.(-)
- MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
600176	1.6 x 1000	1/16 x 39"	5	Plastic Box
600175	2.0 x 1000	5/64 x 39"	5	
600174	2.4 x 1000	3/32 x 39"	5	
604891	0.8	0.030"	12.5	D/BS 300
604857	1.0	0.040"	15	
602889	1.2	0.047"	15	

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Rod



ELOX SG 316 L

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 14343-A	:	W Z 19 12 3 L
EN ISO 14343-A	:	W Z 19 12 3 L
AWS A5.9	:	ER 316 L

C	Si	Mn	Mo	Cr	Ni
0.02	0.5	1.6	2.2	18.5	11.5

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	570 - 700	min. 63 J	min. 30

Typical Base Material Grades :

* X2 CrNiMo 18 14 3, X5 CrNiMo 17 13 3, X2 CrNiMo 17 13 2, X5 CrNiMoTi 17 12 2, X6 CrNiMoTi 17 12 2, X6 CrNiMoNb 17 12 2, X2 CrNiMoN 17 13 3, X2 CrNiMoN 17 12 2. 316, 316L, 316Cb, 316Ti

Features and Applications :

* TIG welding of 13% Cr ferritic stainless steels, high-carbon or stabilized steels of type 316, low-carbon stainless steels of type 316 L, all of which are used in machinery and equipment parts at production plants for food, chemical, drug textile and similar kinds of industries.

* As shielding gas, Argon (Ar) is used.

* Maintenance of resistance to intergranular corrosion at temperature valves up to 400 °C.

* Resistance to low temperatures varying at values down to -196 °C.

Welding Positions :



Current Type :

TIG D.C.(-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
600214	1.6 x 1000	1/16 x 39"	5	Plastic Box
600213	2.0 x 1000	5/64 x 39"	5	
600212	2.4 x 1000	3/32 x 39"	5	

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Wire



ELOX SG 316 L Si

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 14343-A :	G Z 19 12 3 L Si
EN ISO 14343-A :	G Z 19 12 3 L Si
AWS A5.9 :	ER 316 L Si

C	Si	Mn	Cr	Ni	Mo
0.02	0.80	1.6	18.5	11.5	2.2

Mechanical Properties (MIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L _o =5d _o)(%)
min. 400	550 - 700	min. 63 J	min. 30

Typical Base Material Grades :

X2 CrNiMo 18 14 3, X5 CrNiMo 17 13 3, X2 CrNiMo 17 13 2, X5 CrNiMo 17 12 2, X6 CrNiMoTi 17 12 2, X6 CrNiMoNb 17 12 2, X2 CrNiMoN 17 13 3, X2 CrNiMoN 17 12 2, 316, 316 Cb, 316 L, 316 Ti.

Features and Applications :

* MIG welding of 13% ferritic stainless steels, high-carbon or stabilized stainless steels of type 316 and low-carbon stainless steels of type 316 L, used in machinery and equipment parts of production plants for food, chemical, drug, textile and similar kinds of industries.

* As shielding gas, Ar+ %2.5 O₂ or Ar+ %2.5 CO₂ mixed gas is used.

* Maintenance of resistance to intergranular corrosion at temperature values up to 400 °C.

* Resistance to low temperatures varying at values down to -196°C.

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
600217	0.8	0.030"	12.5	D 300 BS 300
600216	1.0	0.040"	15	
600215	1.2	0.047"	15	

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Rod



ELOX SG 318

Standards :

TS EN ISO 14343-A :	W 19 12 3 Nb
EN ISO 14343-A :	W 19 12 3 Nb
AWS A5.9 :	ER 318

Chemical Composition of Welding Wire
% (Typical) :

C	Si	Mn	Cr	Ni	Mo	Nb
0.035	0.50	1.7	19.6	11.4	2.7	+

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 440	640 - 780	min. 63 J	min. 30

Typical Base Material Grades :

* X6 CrNiMoTi 17 12 2, X6 CrNiMoNb 17 12 2, X5 CrNiMo 17 12 2, G-X5 CrNiMoNb 18 10, X10 CrNiMoNb 18 12, 316, 316Cb, 316L, 316 Ti

Features and Applications :

- * TIG welding of 13% ferritic stainless steels as well as of stainless steels of similar chemical compositions as those of welding wires used in chemical, textile, paint, food and synthetic resin production.
- * As the shielding gas, argon(Ar) is used.
- * Maintenance of resistance to intergranular corrosion at temperature values up to 400 °C.

Welding Positions :



Current Type :

TIG D.C.(-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
602271	1.6 x 1000	1/16 x 39"	5	Plastic Box
600164	2.0 x 1000	5/64 x 39"	5	
600163	2.4 x 1000	3/32 x 39"	5	

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Wire



ELOX SG 318 Si

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 14343-A :	G 19 12 3 Nb Si
EN ISO 14343-A :	G 19 12 3 Nb Si
AWS A5.9 :	~ER 318

C	Si	Mn	Cr	Ni	Mo	Nb
0.035	0.8	1.4	19.9	11.5	2.8	+

Mechanical Properties (MIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 390	600 - 780	min. 63 J	min. 30

Typical Base Material Grades :

* X6 CrNiMoTi 17 12 2, X6 CrNiMoNb 17 12 2, X5 CrNiMo 17 12 2, G-X5 CrNiMoNb 18 10, G-X10 CrNiMo 18 10, X10 CrNiNb 18 10, X10 CrNiMoNb 18 12, 316, 316Cb, 316L, 316 Ti

Features and Applications :

- * Used for the welding of 13% ferritic stainless steels or stainless steels which have the similar chemical analysis to welding wires that are used in the chemical, textile, paint and food industries.
- * Weld metal is resistant to corrosion up to +400°C and chlorine.
- * Suitable for MIG welding.
- * Ar+ %2.5 O₂ or Ar+ %2.5 CO₂ mixed gases are the shielding gases.

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
	mm	inch		
606440	1.0	0.040"	15	D 300
606439	1.2	0.047"	15	BS300

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Rod



ELOX SG 347

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 14343-A :	W 19 9 Nb
EN ISO 14343-A :	W 19 9 Nb
AWS A5.9 :	ER 347

C	Si	Mn	Cr	Ni	Nb
0.035	0.5	1.4	19.4	9.5	+

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 430	600 - 740	min. 63 J	min. 30

Typical Base Material Grades :

* X6 CrNiNb 18 10, X6 CrNiTi 18 10, G-X5 CrNiNb 18 9, X-5 CrNi 18 10, G-X10 CrNi 18 8, X12 CrNiTi 18 9, X10 CrNiNb 18 10, 304, 321, 347, A 157 C9, A 296 CF 8 C, A 320 B 8 C, A 320 B 8 D

Features and Applications :

- * Used for the welding of 13% Cr steels which are used in the textile, paper, paint and food industries.
- * Resistant to corrosion up to +400°C, suitable for TIG welding.
- * Argon is the shielding gas and it is also used for the welding of materials which have the similar chemical composition to welding wire.

Welding Positions :



Current Type :

TIG D.C.(-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
600159	1.6 x 1000	1/16 x 39"	5	Plastic Box
600158	2.0 x 1000	5/64 x 39"	5	
600209	2.4 x 1000	3/32 x 39"	5	
600156	3.2 x 1000	1/8 x 39"	5	

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Wire



ELOX SG 347 Si

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 14343-A :	G 19 9 Nb Si
EN ISO 14343-A :	G 19 9 Nb Si
AWS A5.9 :	ER 347 Si

C	Si	Mn	Cr	Ni	Nb
0.035	0.9	1.2	19.4	9.7	+

Mechanical Properties (MIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 400	570 - 710	min. 63 J	min. 30

Typical Base Material Grades :

* X6 CrNiNb 18 10, X6 CrNiTi 18 10, G-X5 CrNiNb 18 9, X5 CrNi 18 10, G-X 10 CrNi 18 8, X12 CrNiTi 18 9, X10 CrNiNb 18 10, 304, 321, 347, A 157 C 9, A 296 CF 8 C, A 320 B 8 C, A 320 B 8 D.

Features and Applications :

- * Used for the welding of 13% Cr steels which are used in the textile, paper, paint and food industries.
- * Resistant to corrosion up to +400°C, suitable for MIG welding.
- * Ar+ %2.5 O₂ or Ar+ %2.5 CO₂ mixed gases are used for shielding, also used for the welding of materials which have the similar chemical composition to welding wire.

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
	mm	inch		
600161	1.0	0.040"	15	BS 300
600160	1.2	0.047"	15	D 300

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Wire



ELOX SG 409 CB

Standards :

AWS A5.9 : ER 409 Nb

Chemical Composition of Welding Wire
% (Typical) :

C	Si	Mn	Cr	Ni	Mo
0.07	1.0	0.8	12.0	0.6	0.5

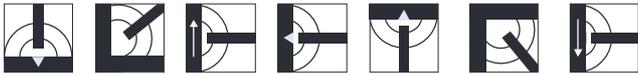
Mechanical Properties (MIG) : _____

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)
min. 355	min. 450	min. 20

Features and Applications : _____

- * It used for the welding of ferritic stainless steel 409Cb and 409Ti which are commonly used for exhaust parts in automotive industry.
- * High resistant to thermal fatigue.
- * With help of Nb addition, Chromium carbide formation is prevented.
- * Ar+ %2.5 O₂ or Ar+ %2.5 CO₂ mixed gases are used as shielding gas.

Welding Positions : _____



Current Type : _____

MIG D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
606443	1.20	0.047"	15	D 300

Approvals : _____

CE, SEPRO

Stainless Steel Gas Shielded Welding Wire & Rod



ELOX SG 410

Standards :

TS EN ISO 14343-A	: G / W 13
EN ISO 14343-A	: G / W 13
AWS A5.9	: ER 410

Chemical Composition of Welding Wire
% (Typical) :

C	Si	Mn	Cr
0.10	0.35	0.50	13.0

Mechanical Properties (MIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 250	min. 520	min. 20	840 °C - 870 °C/2h

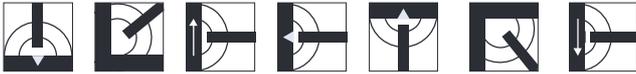
Typical Base Material Grades :

* X 6 CrTi 17, X 20 CrNi 17 2, 431, 430 Ti.

Features and Applications :

- * Preferred use in formation of surfaces resistant to corrosion, wear, and heat.
- * Maintained hardness at temperatures of up to 500 °C.
- * Resistance to formation of oxide layers at temperatures up to 900 °C.
- * Required use of Ar+ %2.5 O₂ or Ar+ %2.5 CO₂ mixed gas as shielding gas.
- * For TIG; Ar gas as shielding.

Welding Positions :



Current Type :

MIG D.C. (+)
TIG D.C. (-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
606090	1.0	0.040"	15	BS 300
604338	1.2	0.047"	15	D 300
606442	2.40 x 1000	3/32 x 39"	5	Plastic Box

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Wire & Rod



ELOX SG 430

Standards :

TS EN ISO 14343-A :	G / W 17
EN ISO 14343-A :	G / W 17
AWS A5.9 :	ER 430

Chemical Composition of Welding Wire
% (Typical) :

C	Si	Mn	Cr
0.05	0.40	0.40	17.0

Mechanical Properties (MIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Heat Treatment
min. 300	min. 450	min. 20	750 °C/2h

Typical Base Material Grades :

* X 6 CrTi 17, X 20 CrNi 17 2, 431, 430 Ti.

Features and Applications :

- * Applicability in surfacing to provide resistance to corrosion, wearing, and heat.
- * Usability in MIG welding only.
- * Requirement of use of For MIG : Ar+ %2.5 O₂ or Ar+ %2.5 CO₂ mix gas as shielding.
For TIG : Ar gas as shielding.

Welding Positions :



Current Type :

MIG D.C.(+)
TIG D.C. (-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
603518	1.0	0.040"	15	BS 300 D 300
600153	1.2	0.047"	15	
604859	1.6	0.062"	15	
606410	2.40 x 1000	3/32 x 39"	5	Plastic Box

Approvals :

GOST-R, CE, SEPRO

Stainless Steel Gas Shielded Welding Rod



ELOX SG 2209

Standards :

Chemical Composition of Welding Wire
%(Typical):

TS EN ISO 14343-A	:	W 22 9 3 N L
EN ISO 14343-A	:	W 22 9 3 N L
AWS A5.9	:	ER 2209

C	Si	Mn	Cr	Ni	Mo	N
0.02	0.40	1.70	22.80	7.80	2.90	0.15

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Impact Strength (ISO-V/-46°C)
550	700	28	100 J

Typical Base Material Grades:

* SAE 2209, SAE 2205, EN14462, X2CrNiMoN22-5-3, X2CrNiN23-4, X2CrNiMoN22-5-3 with X10CrNiMoNb18-12 and X2CrNiMoN22-5-3 with P235GH/ P265GH, S255N, P295GH, S355N and 16Mo3 combinations, UNS S31803, S32205.

Features and Applications :

* GeKa ELOX SG 2209 is duplex stainless steel TIG Welding rod contains low Carbon and approximate %22Cr, %9Ni and %3Mo.

* Microstructure is Austenite + Ferritic.

* The weld metal has an excellent resistance to stress corrosion, cracking and pitting.

* The use of this welding rod, pipe and general manufacturing industries, offshore applications, oil, gas, chemical and petrochemical industry.

* Shielding gas : TIG: pure Ar or Ar+%1-2N₂ mix gases can be used.

Welding Positions :



Current Type :

TIG D.C. (-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
606590	2.00 x 1000	5/64 x 39"	5	Plastic Box
606591	2.40 x 1000	3/32 x 39"	5	Plastic Box

Approvals :

CE, SEPRO

Stainless Steel Gas Shielded TIG Welding Rod



ELOX SG 2594

Standards :

Chemical Composition of Welding Wire
%(Typical):

TS EN ISO 14343-A	:	W 25 9 4 N L
EN ISO 14343-A	:	W 22 9 4 N L
AWS A5.9	:	ER2594

C	Si	Mn	Cr	Ni	Mo
0.02	0.35	0.70	25.0	9.00	3.80

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Impact Strength (ISO-V/+20°C)
min. 550	min. 760	min. 18	min. 47 J

Typical Base Material Grades:

* (1.4501)X2CrNiMoCuWN25-7-4, (1.4515)GX3CrNiMoCuN26-6-3, (1.4517)GX3CrNiMoCuN25-6-3-3,
UNS S 32750, S 32760 ZERON 100, SAF 25/07, FALC100

Features and Applications :

- * GeKa ELOX SG 2594 is a super duplex welding wire.
- * Used for the welding Austenitic-Ferritic stainless alloys of %25 Cr, %9 Ni, %3.5 Mo and low C types.
- * It has high resistance to intergranular corrosion and pitting.
- * GeKa ELOX SG 2594 is intended for welding super duplex alloys such as 2507, ASTM S32760, S32550 and A31260.
- * As the shielding gas, Argon (Ar) is used.

Welding Positions :



Current Type :

TIG D.C. (-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
608043	1.60 x 1000	1/16 x 39"	5	Plastic Box
608044	2.00 x 1000	5/64 x 39"	5	Plastic Box
608218	2.40 x 1000	3/32 x 39"	5	Plastic Box

Approvals :

SEPRO

Aluminium Alloyed MIG Welding Wire



AISI 5

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS 6204 EN ISO 18273	: S AI 4043(AISI5)
EN ISO 18273	: S AI 4043(AISI5)
AWS A5.10	: ER-4043

Si	Mn	Al	Fe
5.0	<0.05	rest	<0.8

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Working Temperature (°C)
110	150	15	575 - 633

Typical Base Material Grades :

AlMgSi 0.5, AlMg1SiCu, AlMgSi 1, AlZn4.5Mg 1, Al 99.5, Al 99, AlCuMg 1, AlMgSi 0.7, AlMgSi 0.8, AlMgSiCu, AlMn 1, G-AISI 6 Cu 4

Features and Applications :

- * It is Al-Si welding MIG wire.
- * Application range is joining of cast aluminum parts and aluminum profiles, motor blocks.
- * Material range is AlMgSi 0.5, AlMgSiCu, Al99.5 etc.
- * It is recommended that preheating to 105°C before welding of plates thicker than 10 mm.
- * Required use of Ar, He or Ar+He gas as shielding gas.

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
600319	0.8	0.030"	5
600318	1.0	0.040"	7
600317	1.2	0.047"	7
600316	1.6	0.062"	7

Approvals :

GOST-R, SEPRO

Aluminium Alloyed MIG Welding Wire



Al 99.5

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS6204	ENISO18273	: S AI 1100(Al99.0Cu)
ENISO18273		: S AI 1100(Al99.0Cu)
AWSA5.10		: ~ER 1100

Al	Cu	Fe	Si
99.5	0.10	<0.40	<0.30

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Working Temperature (°C)
50	85	25	647-658

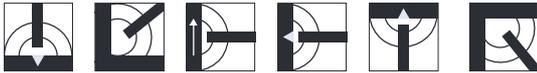
Typical Base Material Grades :

Al 99.5, Al 99.7, Al 99.8, E Al 99.9, Al 99, E-Al MgSi

Features and Applications :

- * It is aluminum MIG welding wire.
- * Application field is truck chassis and body, tanks, buses and containers, railway trucks, marine applications, pipes, flanges, panels, ship ports, barriers, ship boards etc.
- * It is recommended that preheating to 150°C before welding of plates thicker than 10 mm.

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	mm	inch	
600328	0.80	0.030"	5
600330	1.00	0.040"	7
600329	1.20	0.047"	7
602278	1.60	0.062"	7

Approvals :

GOST-R, SEPRO

Aluminium Alloyed MIG Welding Wire



AlMg 3

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS6204ENISO18273 : S Al5754(AlMg3)
ENISO18273 : S Al5754(AlMg3)

Mg	Mn	Si	Fe	Al
3.0	<0.5	<0.40	<0.40	rest

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Working Temperature (°C)
100	200	20	610-642

Typical Base Material Grades :

* AlMg 1, AlMg 2.5, AlMg 3, AlMg 2.7 Mn, AlMg Si 0.5, AlMg 2, AlMg2 Mn 0.8, AlMgSi 0.7, AlMgSi 0.8, G-AlMg 3, G-AlMg3 (Cu), G-AlMg 3 Si.

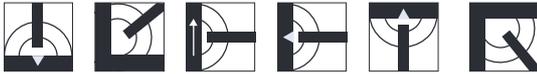
Features and Applications :

* It is used for joining aluminum alloys includes up to 3 % Mg. Resistance to sea water. Parent metals AlMg1, AlMg2.5, and AlMg2Mn0.8 etc.

* Required use of Ar, He or Ar+He gas as shielding gas.

* It is recommended that preheating to 150°C before welding of plates thicker than 10 mm.

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	mm	inch	
600327	1.20	0.047"	7
600326	1.60	0.062"	7

Approvals :

GOST-R, SEPRO

Aluminium Alloyed MIG Welding Wire



AlMg 5

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS 6204 EN ISO 18273	: S Al 5356 (AlMgC-A)
EN ISO 18273	: S Al 5356 (AlMgC-A)
AWSA 5.10	: ER 5356

Mg	Mn	Si	Fe	Al
5,0	0,3	<0,25	<0,40	rest

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _e =5d ₀)(%)	Working Temperature (°C)
180	260	20	575-633

Typical Base Material Grades :

* AlMg 5, AlMg 4.5, G-AlMg 5, G-AlMg 10, AlMgSi 1, G-AlMg 3(Cu), AlMg 2.5Mn, AlMg 2 Mn 0.8, AlMg 3, AlMg 3 Si, G-AlMg 3, AlMg 4.5 Mn, G-AlMg 3 Si, AlMg Si 0.5, AlMgSi 0.7, AlMgSi 0.8, AlMgSi 0.8, AlMgSi 1 Cu, AlZn 4.5 Mg 1.

Features and Applications :

- * It is used for joining aluminum alloys includes over 3 % Mg. Resistance to sea water.
- * Application field is cup and boilers, columns, marine applications.
- * Required use of Ar, He or Ar+He gas as shielding gas.
- * It is recommended that preheating to 150°C before welding of plates thicker than 10 mm.

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	Diameter	Length	
600323	0.80	0.030"	5
600322	1.00	0.040"	7
600321	1.20	0.047"	7
600320	1.60	0.062"	7

Approvals :

GOST-R, SEPRO

Aluminium Alloyed MIG Welding Wire



AlMg 4.5 Mn

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS 6204 EN ISO 18273	: S Al 5183 (AlMg 4.5 Mn 0.7 A)
EN ISO 18273	: S Al 5183 (AlMg 4.5 Mn 0.7 A)
AWS A5.10	: ER 5183

Mg	Mn	Si	Fe	Al	Cr
5.0	0.8	<0.40	<0.40	rest	0.20

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Working Temperature (°C)
170	250	20	574-638

Typical Base Material Grades :

* AlMg 2.7 Mn, AlMg 3, AlMg 4.5 Mn, AlMg 4 Mn, AlMg 5, AlMgSi 0.5, AlMgSi 0.7, AlMgSi 0.8, AlMgSi 1, AlMgSi 1 Cu, AlZn 4.5 Mg 1, AlZnMgCu 1.5, AlZnMgCu 0.5, G-AlMg 5 Si, G-AlMg 3, G-AlMg 5.

Features and Applications :

* It is used in welding exposed to sea water aluminum parts, high strength aluminum alloys work in low temperatures (-196°C).

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	mm	inch	
600325	1.00	0.040"	7
600324	1.20	0.047"	7

Approvals :

GOST-R, SEPRO

Aluminium TIG & Gas Welding Rod



AISI 5 TIG

Standards :

TS 6204 EN ISO 18273	: S Al 4043 (AISI5)
EN ISO 18273	: S Al 4043 (AISI5)
TS EN ISO 17672	: Al 105
EN ISO 17672	: Al 105
AWS A5.10	: ER 4043

Chemical Composition of Welding Rod
% (Typical) :

Al	Si	Mn	Fe
rest	5,0	max. 0,2	max. 0,4

Mechanical Properties :

Density (kg/dm ³)	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Melting Range (°C)
2.7	100	160	15	573 -625

Features and Applications :

- * AISi5 is aluminum TIG rod with high content of silicon.
- * It is used for joining and filling of aluminum silicon cast alloys including up to 7% silicon.
- * It is recommended that preheating to 150°C before welding of plates thicker than 15 mm.
- * For gas welding, GeKaTec F-LH1 is recommended.

Welding Method :

TIG Welding - Gas Welding

Current Type	MIG Wire	Electrode
TIG A.C.	GeKa AISi 5	GeKaTec Aluweld Si

Welding Positions :



Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
602159	1.6 x 1000	1/16 x 39"	5
600256	2.0 x 1000	5/64 x 39"	5
600255	2.4 x 1000	3/32 x 39"	5
600254	3.2 x 1000	1/8 x 39"	5
600253	4.0 x 1000	5/32 x 39"	5

Approvals :

GOST-R, SEPRO

Aluminium TIG & Gas Welding Rod



AISI 12 TIG

Standards :

Chemical Composition of Welding Rod
% (Typical) :

TS 6204 EN ISO 18273	: S AI 4047 (AISI 12)
EN ISO 18273	: S AI 4047 (AISI 12)
TS EN ISO 17672	: AI 112
EN ISO 17672	: AI 112
AWS A5.10	: ER 4047

Al	Si	Fe	Mn
rest	12.0	max. 0.5	max. 0.3

Mechanical Properties :

Density (kg/dm ³)	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _c =5d ₀)(%)	Melting Range (°C)	Hardness (HB)
2.6	80	170	8	575 - 585	45

Features and Applications :

- * AISi12 is aluminum TIG rod with high content of silicon.
- * It is used for joining and filling of aluminum silicon cast alloys including more than 7% silicon.
- * It has a good fluidity. Oxyacetylene welding and brazing is possible with Gekatec F-LH1.
- * It is recommended that preheating to 150°C before welding of plates thicker than 15mm.
- * Shielding gas : Ar

Welding Method :

TIG Welding - Gas Welding

Current Type	Electrode
TIG A.C.	GeKaTec Aluweld 12Si

Welding Positions :



Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
600244	2.0 x 1000	5/64 x 39"	5
600243	2.4 x 1000	3/32 x 39"	5
600242	3.2 x 1000	1/8 x 39"	5

Approvals :

GOST-R, SEPRO

Aluminium TIG & Gas Welding Rod



Al 99.5 TIG

Standards :

Chemical Composition of Welding Rod
% (Typical) :

TS 6204 EN ISO 18273	: S Al 1100 (Al 99.0 Cu)
EN ISO 18273	: S Al 1100 (Al 99.0 Cu)
DIN 1732	: SG-Al 99.5Ti
AWS A5.10	: ~ER 1100

Al
min. 99.5

Mechanical Properties :

Density (kg/dm ³)	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _c =5d ₀)(%)	Melting Range (°C)	Electrical Conductivity (Sm/mm•)
2.7	min. 40	min. 70	30	658 - 674	35

Features and Applications :

- * Al99.5 TIG is pure aluminum welding TIG rod.
- * It is used for joining of aluminum alloys required high electrical conductivity.
- * It is recommended that preheating to 200 °C before welding of plates thicker than 15mm.
- * For gas welding, GeKaTec F-LH1 is recommended.
- * Shielding gas : Ar

Welding Method :

TIG Welding - Gas Welding

Current Type	MIG Wire	Electrode
TIG A.C.	GeKa Al99.5	GeKaTec Aluweld 99Al

Welding Positions :



Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	Diameter	Length	
600250	2.0 x 1000	5/64 x 39"	5
600251	2.4 x 1000	3/32 x 39"	5
600249	3.2 x 1000	1/8 x 39"	5
600252	4.0 x 1000	5/32 x 39"	5

Approvals :

GOST-R, SEPRO

Aluminium TIG & Gas Welding Rod



AlMg 5 TIG

Standards :

Chemical Composition of Welding Rod
% (Typical) :

TS 6204 EN ISO 18273	: S Al 5356 (AlMgCr-A)
EN ISO 18273	: S Al 5356 (AlMgCr-A)
DIN 1732	: SG-A1 Mg5
AWS A5.10	: ER 5356

Al	Mg	Si	Mn
rest	5.0	0.5	0.5

Mechanical Properties :

Density (kg/dm ³)	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _c =5d ₀)(%)	Melting Range (°C)	Hardness (HB)
2.6	120	250	25	560 - 630	70

Features and Applications :

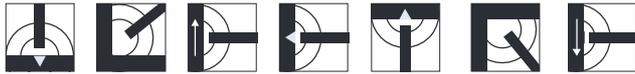
- * AlMg5 is magnesium alloyed aluminum TIG rod.
- * It is used for joining of aluminum alloys required high mechanical properties.
- * The weld deposit has a good resistance to atmospheric influences and sea water.
- * And the weld metal is proper for surface treatment such as anodizing and polishing.
- * It is recommended that preheating to 150 °C before welding of plates thicker than 15mm.
- * For gas welding, GeKaTec F-LH1 is recommended.
- * Shielding gas : Ar

Welding Method :

TIG Welding - Gas Welding

Current Type	MIG Wire
TIG A.C.	GeKa AlMg 5

Welding Positions :



Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	600248	2.0 x 1000	
600247	2.4 x 1000	3/32 x 39"	5
600246	3.2 x 1000	1/8 x 39"	5

Approvals :

GOST-R, SEPRO

Aluminium TIG & Gas Welding Rod



AlMg4.5Mn TIG

Standards :

Chemical Composition of Welding Rod
% (Typical) :

TS 6204 EN ISO 18273	: SAI 5183(AlMg4.5Mn0.7A)
EN ISO 18273	: SAI 5183(AlMg4.5Mn0.7A)
AWS A5.10	: ER 5183

Al	Si	Fe	Mn	Mg	Cr
rest	max. 0.4	max. 0.4	0.8	5.0	0.2

Mechanical Properties :

Density (kg/dm ³)	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Melting Range (°C)	Hardness (HB)
2.6	170	250	20	575 - 585	45

Features and Applications :

- * AlMg4.5Mn is magnesium alloyed aluminum TIG rod.
- * It is used for joining of aluminum alloys including more than 3% Mg.
- * The weld deposit has a good resistance to atmospheric influences and sea water.
- * It is recommended that preheating to 150 °C before welding of plates thicker than 15mm.
- * For gas welding, Gekatec F-LH1 is recommended.
- * Shielding gas : Ar

Welding Method :

TIG Welding - Gas Welding

Welding Positions :



Current Type :

TIG A.C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
604749	2.0 x 1000	5/64 x 39"	5
604750	2.4 x 1000	3/32 x 39"	5
604751	3.2 x 1000	1/8 x 39"	5

Approvals :

GOST-R, SEPRO

Copper Alloyed MIG Welding Wire



R1

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TSENISO 24373	: S Cu 6560 (CuSi3Mn1)
EN ISO 24373	: S Cu 6560 (CuSi3Mn1)
AWS A5.7	: ER Cu Si A

Si	Mn	Fe	Sn	Cu
3.0	1.0	<0.20	0.10	rest

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
130	220	30	55

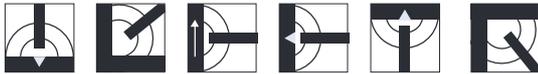
Typical Base Material Grades :

CuSi 2 Mn, CuSi 3 Mn, CuMn 5, CuMn 2 , Galvanized steels and Cu-Zn (brass) alloyed, Cu-Mn alloyed

Features and Applications :

- * It is Copper-Silicon alloyed MIG welding wire and used in welding of galvanized steels.
- * Shielding Gas: Ar (I1)

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (kg)
	Diameter	Length	
603432	0.8	0.030"	15
600274	1.0	0.040"	15
600273	1.2	0.047"	15

Approvals :

GOST-R, SEPRO

Copper Alloyed MIG Welding Wire



R1 L

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 24373	: ~S Cu1898 (CuSn1)
EN ISO 24373	: ~S Cu1898 (CuSn1)
AWS A.5.7	: ER Cu

Si	Mn	Sn	Cu
0.3	0.3	0.8	rest

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
115	200	35	60

Typical Base Material Grades :

* OF-Cu, SE-Cu, SW-Cu, SF-Cu, Cu Fe 2P, CuSP, CuTeP, E-Cu C, F-Cu, D-Cu, SD Cu, SB-Cu, SA-Cu.

Features and Applications :

- * It is Cu-Sn alloy welding wire.
- * It is used in welding of pure copper and copper based low alloy, tank and boilers, graphite electrode holders, slag baths, oxygen tubes, electrical equipment.
- * Shielding Gas: Ar, He, Ar+He

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	mm	inch	
600276	1.0	0.040"	15
600275	1.2	0.047"	15
600277	1.6	0.062"	15

Approvals :

GOST-R, SEPRO

Copper Alloyed MIG Welding Wire



R1 AG

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 24373 : S Cu1897 (CuAg1)
EN ISO 24373 : S Cu1897 (CuAg1)

Ag	P	Mn	Cu
0.8 - 1.20	0.01	0.1	rest

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _c =5d ₀)(%)	Hardness (HB)
80	200	20	~50

Typical Base Material Grades :

* 2.0076, 2.0090, 2.0040

Features and Applications :

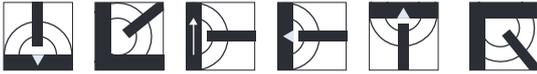
* Applicability in arc welding of copper materials with high electric conductivity, of copper-silver alloys containing low amounts of phosphor as well as of pure copper.

* Additional applicability in gas welding of deoxidized copper.

* High electric conductivity (30-45 S.m/mm²).

* Use of Ar (I1) as shielding gas.

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	Diameter	Length	
604292	1.2	0.047"	15

Approvals :

GOST-R, SEPRO

Copper Alloyed MIG Welding Wire



R4

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 24373 : Cu5410 (CuSn12 P)
EN ISO 24373 : Cu5410 (CuSn12 P)

Sn	P	Fe	Cu
12.0	0.20	<0.10	rest

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
260	380	10	130

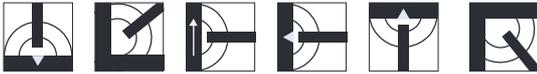
Typical Base Material Grades :

* Cu Sn 8, Cu Sn 12

Features and Applications :

- * It is Cu-Sn alloy welding wire.
- * It is used in welding of pure copper and copper based low alloy, tank and boilers, graphite electrode holders, slag baths, oxygen tubes, electrical equipment.
- * Shielding Gas: Ar, Ar+He

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	mm	inch	
600262	1.0	0.040"	15
600261	1.2	0.047"	15
600260	1.6	0.062"	15

Approvals :

GOST-R, SEPRO

Copper Alloyed MIG Welding Wire



R4 L

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 24373	: CuSn6 P - CF452K
EN ISO 24373	: CuSn6 P - CF452K
AWS A 5.7	: ~ER CuSn - A

Sn	P	Fe	Cu	Pb
6.0	0.20	<0.10	rest	<0.02

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
270	410	30	100

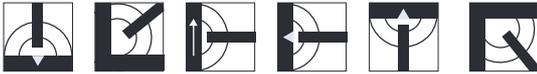
Typical Base Material Grades :

* CuSn 2, CuSn 4, CuSn 6, CuSn 8, CuSn 6 Zn, G-CuSn 2 ZnPb, G-CuSn 5 ZnPb, G-CuSn 6 ZnNi.

Features and Applications :

- * It is Cu-Sn alloy welding wire.
- * Joining and surfacing of tin bronzes, cast tin bronzes, such as CuSn 2, CuSn 6, CuSn 8 and CuSn 6 Zn...
- * Shielding Gas: Ar, Ar+He

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	mm	inch	
600267	1.0	0.040"	15
600266	1.2	0.047"	15
600265	1.6	0.062"	15

Approvals :

GOST-R, SEPRO

Copper Alloyed MIG Welding Wire



R4 A

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 24373	: Cu6180 (CuAl10Fe)
EN ISO 24373	: Cu6180 (CuAl10Fe)
AWS A 5.7	: ER CuAl-A2

Al	Si	Fe	Cu
9.0	<0.10	<1.50	rest

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
410	590	45	145

Typical Base Material Grades :

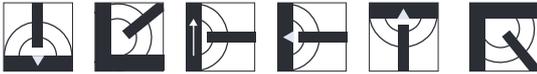
* CuAl 5, CuAl 8, G-CuAl 8 Mn

Features and Applications :

* It is Cu-Al MIG welding wire.

* It is used for welding of sea water vaporizers, door accessories, rolling equipment, CuAl 5, CuAl8, G-CuAl 8 Mn and abrasive resistant coatings.

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	Diameter (mm)	Length (mm)	
600272	1.0	0.040"	15
600271	1.2	0.047"	15
602108	1.6	0.062"	15

Approvals :

GOST-R, SEPRO

Copper Alloyed MIG Welding Wire



R4 AL

Standards :

Chemical Composition of Welding Wire
% (Typical) :

TS EN ISO 24373	: S Cu 6100(CuAl8)
EN ISO 24373	: S Cu 6100(CuAl8)
AWS A 5.7	: CuAl-A1

Al	Si	Zn	Cu	Mn
8.0	<0.10	<0.20	rest	<0.50

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Hardness (HB)
200	430	40	100

Typical Base Material Grades :

* CuAl 5, CuAl 8, G-CuAl 8 Mn, CuAl 5 As, CuZn 20 Al 2

Features and Applications :

- * It is Cu-Al MIG welding wire.
- * It is used for surfacing of steel and cast steels
- * It is used for joining and surfacing of aluminum bronzes, e.g. CuAl5, CuAl8, G-CuAl 8 Mn, Cu Al 5 As, C Zn 20 Al 2, surfacing of Copper, Brass, non alloyed and low alloyed steels.
- * Shielding Gas: Ar, He+Ar, He
- * Metal to metal wear, sea water and is used in parts exposed to corrosive liquids such as acids.

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	mm	inch	
600269	1.0	0.040"	15
600268	1.2	0.047"	15
600270	1.6	0.062"	15
602632	1.0	0.040"	200 (Big Pack)

Approvals :

GOST-R, SEPRO

Copper Alloyed MIG Welding Wire



R4 M

Standards :

Chemical Composition of Welding Wire
% (Typical) :

AWS A5.7 : ER CuMn Ni Al

Al	Fe	Ni	Cu	Mn
7.5	2.5	2.0	rest	13.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
470	650	20	205

Typical Base Material Grades :

* Ductile cast iron steels, ductile cast iron-manganese steels.

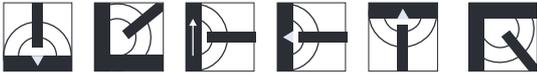
Features and Applications :

* Mn-Ni, Aluminium Bronze is MIG welding wire.

* Used for welding of screw, clutch pulley and compression plates.

* Shielding gas: Ar (%99.99)

Welding Positions :



Current Type :

MIG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
	Diameter	Length	
603236	1.0	0,040"	15
600264	1.2	0,047"	15
600263	1.6	0,062"	15

Approvals :

SEPRO

Copper Alloyed TIG Welding Rod



CuNi SG

Standards :

Chemical Composition of Welding Rod
% (Typical) :

TS EN ISO 24373	: S Cu 7158(CuNi30)
EN ISO 24373	: S Cu 7158(CuNi30)
AWS A 5.7	: ER CuNi

Mn	Ti	Fe	Ni	S	Cu
0.9	0.4	0.5	30.0	max. 0.01	rest

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
250	400	100 J	30

Typical Base Material Grades :

* CuNi 10 Fe 1 Mn(2.0872) - CuNi 20 Fe(2.0878) - CuNi 30 Fe(2.0882)

Features and Applications :

- * It is used of Copper alloys includes up to 30% Nickel, joining and surfacing of steel alloys.
- * Joining of stainless steel to copper alloys is possible.
- * Because of excellent resistance to sea water corrosion, it is used marine off-shore applications, sea water exchangers and food and chemical industries.
- * Shielding Gas: Ar

Welding Positions :



Current Type :

TIG D.C.(-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
602778	1,6 x 1000	1/16 x 39"	5
602779	2,0 x 1000	5/64 x 39"	5
602780	2,4 x 1000	3/32 x 39"	5

Approvals :

GOST-R, SEPRO

Copper Alloyed TIG Welding Rod



CuNiFe SG

Standards :

Chemical Composition of Welding Rod
% (Typical) :

TS EN ISO 24373	: S Cu 7061(CuNi10)
EN ISO 24373	: S Cu 7061(CuNi10)
DIN 1733	: SG-CuNi10 Fe

Cu	Fe	Mn	Ti	Ni
rest	1.8	1.0	0.17	10.0

Mechanical Properties (TIG) :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _c =5d ₀)(%)	Hardness (HB)
150	350	30	200

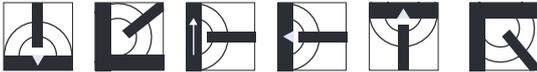
Typical Base Material Grades :

* CUNIFER 30, CUNIFER 40, Cu90-Ni10 and low Ni Alloys Cu-Ni alloys
2.0862 CuNi5Fe
2.0872 CuNi10Fe

Features and Applications :

- * It is used for copper nickel alloys with 10% nickel such as CuNi5Fe, CuNi10Fe.
- * Weld deposit is highly corrosion resistant.
- * It is used for joining and surfacing copper-nickel alloys and CuNiFe pipes which perform in corrosive areas such as seawater.
- * Shielding Gas: Ar

Welding Positions :



Current Type :

TIG D.C.(-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
605300	1.6 x 1000	1/16 x 39"	5
605301	2.0 x 1000	5/64 x 39"	5
605302	2.4 x 1000	3/32 x 39"	5

Approvals :

GOST-R, SEPRO

Rutile Type Flux Cored Wire



ELCOR R 71

Standards :

TS EN ISO 17632-A	: T 42 4 P C 1 H5
EN ISO 17632-A	: T 42 4 P C 1 H5
AWS A5.20	: E 71 T-1C-J

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	P	S
0.06	0.5	1.3	0.015	0.015

Mechanical Properties :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-40°C)	Elongation (Lo=5d ₀)(%)
AW	min. 420	500 - 640	min. 50 J	min. 22

AW : as welded

Typical Base Material Grades :

* S235JR, S275JR, S235J2G3-S355J2G3, P 235T1-P355T1, P235T2-P355T2, L210NB-L360NB, L290MB-L360MB, P235G1TH, P255G1TH, P235GH-P355GH, P295GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S380N, S255NL-S355NL, GE200-GE260

Features and Applications :

- * Rutile-type flux-cored wire which is used for the production welding of machine and welding applications on ship, industry vehicle building and steel constructions in all positions.
- * Provides high mechanical properties, proper, smooth, X-ray safety seams.
- * It is economical as it has high melting ability and can work under high current in all positions.
- * Shielding gas : %100 CO₂.

Welding Positions :



Current Type :

FCAW
D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
	mm	inch		
304873	1.20	0.047"	4.5	D 200
305268	1.20	0.047"	15	D 300
304002	1.20	0.047"	15	BS 300
304031	1.60	0.062"	15	BS 300
305095	1.20	0.062"	200	BIG PACK

Approvals :

ELCOR R71 (CO₂) : TL, DNV-GL, BV, ABS, LR, RS, DB
NK, RINA, CWB, CE, GOST-R, HAKC(1.20mm), SEPRO

Rutile Type Flux Cored Wire



ELCOR R 71 CM

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17632-A	: T 46 2 P M (C) 1
EN ISO 17632-A	: T 46 2 P M (C) 1
AWS A5.20	: E 71 T-1C/-1M

C	Si	Mn	P	S
0.06	0.5	1.3	< 0.015	< 0.015

Mechanical Properties :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-20°C)	Elongation (Lo=5d ₀)(%)
AW	min. 460	530 - 600	min. 50 J	min. 22

AW : as welded

Typical Base Material Grades :

S235JR, S275JR, S235J2G3-S355J2G3, P 235T1-P355T1, P235T2-P355T2, L210NB-L360NB, L290MB-L360MB, P235G1TH, P255G1TH, P235GH-P355GH, P295GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S380N, S255NL-S355NL, GE200-GE260

Features and Applications :

Rutile type flux cored wire which is used for the production welding of machine and welding applications on ship, and steel constructions in all positions. Provides high mechanical properties, proper, smooth, X-ray safety seams. It is economical as it has high melting ability and can work with high current in all positions. Shielding Gas: M21 (CO₂)

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
304546	1.20	0.047"	15	BS 300

Approvals :

CE, GOST-R, SEPRO

Seamless Rutile Type Flux Cored Wire



ELCOR R 71 SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17632-A :	T 46 4 PC 1 H5
EN ISO 17632-A :	T 46 3 PM 1 H5
AWS A5.20 :	E 71 T-1C/-1M H4

C	Si	Mn	P	S
0.05	0.5	1.3	< 0.015	< 0.015

Mechanical Properties :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
			(150-V/-30°C) {with M21 gas}	(150-/-40°C) {with CO ₂ gas}	
AW	min. 460	530 - 680	min. 47J	min. 47 J	min. 22

AW : as welded

Typical Base Material Grades :

S235JR, S275JR, S235J2G3-S355J2G3, P 235T1-P355T1, P235T2-P355T2, L210NB-L360NB, L290MB-L360MB, P235G1TH, P255G1TH, P235GH-P355GH, P295GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S380N, S255NL-S355NL, GE200-GE260

Features and Applications :

Rutile type flux cored wire which is used for the production welding of machine and welding applications on ship, and steel constructions in all positions. Provides high mechanical properties, proper, smooth, X-ray safety seams. It is economical as it has high melting ability and can work with high current in all positions. Shielding Gas: CO₂ or M21

Welding Positions :



Current Type :

FCAW
D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
607485	1.20	0.047"	15	D 300

Approvals :

CE, GOST-R, SEPRO

Rutile Type Flux Cored Wire



ELCOR MR 70

Standards :

TS EN ISO 17632-A	: T 42 4 R C 3 H 10
EN ISO 17632-A	: T 42 4 R C 3 H 10
AWS A5.20	: E 70 T-9 C J H 8

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	P	S
0.04	0.70	1.40	< 0.030	< 0.030

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-40°C)	Elongation (L ₀ =5d ₀)(%)
min. 420	500 - 640	min. 47 J	min. 22

AW : as welded A : aging

Features and Applications :

- * Metal-Rutile type flux cored welding wire.
- * High fill rate and deep penetration.
- * Suitability flat and horizontal fillet weld.
- * Excellent notch toughness value at low temperatures.
- * Shielding Gas: CO₂

Welding Positions :



Current Type :

FCAW
D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
305353	1.20	0.047"	15	BS 300

Approvals :

CE, SEPRO

Basic Type Flux Cored Wire



ELCOR B 70

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17632-A :	T 42 4 B M 3 H5
EN ISO 17632-A :	T 42 4 B M 3 H5
AWS A5.20 :	E 70 T-5 M J

C	Si	Mn	P	S
0.05	0.55	1.35	< 0.015	< 0.015

Mechanical Properties :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
			(ISO-V/-30°C)	(ISO-V/-40°C)	
AW or A	min. 420	520 - 670	120 J	min. 47 J	min. 22

AW : as welded A : aging

Typical Base Material Grades :

EN: S185, S235-S355, P 235 GH, P 265 GH, P 295 GH, P 235 T1/T2-P355N, L210-L485, S 255-S460, X42-X70

ASTM: A 131, A106/A515/A 714, A283/A285/A414/A662/A372, A369/A210/ A106, A516/A255/A 333/ A350/

Features and Applications :

* Used for semi-automatic or fully automatic welding of alloyed or unalloyed construction steels, thin-walled steels.

* It has soft arc, deep penetration, good bead features.

* Impact strength values are higher than those of E71 T-1 in at low temperatures.

* M21 gas is used for shielding.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
	Diameter	Length		
304488	1.20	0.047"	15	BS 300
304489	1.60	0.062"	15	BS 300

Approvals :

CE, GOST-R, DB, SEPRO

Seamless Basic Type Flux Cored Wire



ELCOR B 70 SC

Standards :

TS EN ISO 17632-A	: T 42 4 B C M 3 H5
EN ISO 17632-A	: T 42 4 B C M 3 H5
AWS A5.20	: E 70 T-5C/-5M H4

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	P	S
0.05	0.60	1.40	< 0.015	< 0.015

Mechanical Properties :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
			(ISO-V/-20°C)	(ISO-V/-40°C)	
AW or SR	min. 470	550 - 640	min. 100 J	min. 60 J	min. 27

AW : as welded - SR : stress relieved

Typical Base Material Grades :

EN: S185, S235-S355, P 235 GH, P 265 GH, P 295 GH, P 235 T1/T2-P355N, L210-L485, S 255-S460, X42-X70
ASTM: A 131, A106/A515/A 714, A283/A285/A414/A662/A372, A369/A210/ A106, A516/A255/A 333/ A350/

Features and Applications :

ELCOR B 70 SC is high-basicity flux-cored wire. Extremely crack resistant weld metal conditioned by the basic slag. High mechanical properties are easily obtained when used in single-sided welding operations using a ceramic back-up. Weld has X-ray quality with low spatter formation. Well-suited for joining high carbon steels and when welding critical mixed base metal combinations. Ideal metallurgical choice for repair welding and production as well as for use as a buffer layer.

Shielding gas ; CO₂ or M 21.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
605451	1.20	0.062''	15	BS 300

Approvals :

CE, SEPRO

Basic Type Flux Cored Wire



ELCOR B 70 - ARM

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17632-A :	T 42 A Z B M 3
EN ISO 17632-A :	T 42 A Z B M 3
AWS A5.20 :	E 70 T-5 M

C	Si	Mn
0.03	0.10	0.35

Mechanical Properties : _____

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-30°C)	Elongation (L ₀ =5d ₀)(%)
AW	min. 420	500 - 640	min. 47	min. 22

Typical Base Material Grades : _____

* Armco Iron and mild steels.

Features and Applications : _____

* Suitable for use in welding of Armco Iron and mild steels. Applicability in welding of galvanized tanks made of Armco Iron.

* Suitable for automation.

* Shielding gas: M21

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
305769	1.20	0.047"	15	BS 300

Approvals : _____

CE, SEPRO

Standards :

TS EN ISO 17632-A	:	T 46 5 MM 3
EN ISO 17632-A	:	T 46 5 MM 3
AWS A5.18	:	E 70 C-6 M

**Chemical Composition of Weld Metal-
% (Typical) :**

C	Si	Mn
0.05	0.63	1.58

Mechanical Properties :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-50°C)	Elongation (L _o =5d _o)(%)
AW	min. 460	530-650	min. 47 J	min.22

AW : as welded

Typical Base Material Grades :

S235JR, S275JR, S235J2G3-S355J2G3, P 235T1-P355T1, P235T2-P355T2, L210NB-L415NB, L290MB-L415MB, P235G1TH, P255G1TH, P235GH-P355GH, P295GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S420N, S255NL-S355NL, GE200-GE260, X42-X60

Features and Applications :

* Suitable for butt and fillet welding. Better arc stability and wider optimum current range for spray transfer arc with less spattering than solid wire.

* Shielding gas M21

Welding Positions :

Current Type :

FCAW
D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
	mm	inch		
304443	1.20	0.047"	15	BS 300
304473	1.60	0.062"	15	BS 300

Approvals :

ELCOR M 70 (M21) : BV, ABS, CE, GOST-R, SEPRO

Seamless Metal Cored Wire



ELCOR M 70 SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17632-A	:	T 46 6 M M 1 H5
EN ISO 17632-A	:	T 46 6 M M 1 H5
AWS A5.18	:	E 70 C-6 M H4

C	Si	Mn
0.05	0.7	1.5

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
			(ISO-V/-40°C)	(ISO-V/-60°C)	
AW or SR	>460	530 - 650	>60 J	>47 J	>26

AW : as welded - SR : stress relieved

Typical Base Material Grades : _____

S235JR, S275JR, S235J2G3-S355J2G3, P 235T1-P355T1, P235T2-P355T2, L210NB-L415NB, L290MB-L415MB, P235G1TH, P255G1TH, P235GH-P355GH, P295GH, S235JRS1-S235J4S, S315G1S-S355G3S, S255N-S420N, S255NL-S355NL, GE200-GE260, X42-X70

Features and Applications : _____

GEKA ELCOR M 70 is metal cored wire. Good arc striking even with cold wire tip, suitable for robot applications. Multi-pass welding without in-between cleaning. Ideal for use in the field short arc and spray arc. Excellent gap bridging for root welding. Typical applications are shipbuilding, steel and pressure vessel construction, mechanical engineering and pipe work. High-efficiency type for economic production.

Shielding Gas: M21

Welding Positions : _____



Current Type : _____

FCAW
D.C. (+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
304512	1.20	0.047"	15	BS 300

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN ISO 17632-A	:	T 50 4 M M 3
EN ISO 17632-A	:	T 50 4 M M 3
AWS A5.28	:	E 80 C Ni 1

**Chemical Composition of Weld Metal-
% (Typical) :**

C	Si	Mn	Ni
0.05	0.50	1.20	1.00

Mechanical Properties :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-45°C)	Elongation (L _o =5d _o)(%)
AW	min. 500	560-720	min. 47 J	min.24

AW : as welded

Features and Applications :

- * Used for automatic welding.
- * It is metal cored wire
- * It has soft arc, deep penetration, good bead features
- * Suitable for butt and fillet welding
- * Shielding gases : Ar+ %5-25 CO₂ (M21)

Welding Positions :



Current Type :

FCAW
D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
	mm	inch		
305789	1.20	0.047"	15	BS 300
305649	1.40	0.055"	15	BS 300
305787	1.40	0.055"	200	Big Pack

Approvals :

CE, SEPRO

Rutile Type Flux Cored Wire



ELCOR R 81 Ni

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17632-A	:	T 46 4 1NiPC 1
EN ISO 17632-A	:	T 46 4 1NiPC 1
AWS A5.29	:	E 81 T1-Ni1 C

C	Si	Mn	Ni
0.05	0.5	1.30	0.90

Mechanical Properties - % (Typical) :

(Typical values : with CO₂ gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
			(ISO-V/-40°C)	(ISO-V/-30°C)	
AW	min. 460	560 - 690	50 J	80 J	>24

AW : as welded

Typical Base Material Grades :

EN: S 185, S235-S355, P 235 GH, P 265 GH, P 295 GH, P 235 T1/T1-P 355 N, L210-L485, S 255-S500 (NL1,2), X 42-X80

ASTM: A 131, A 106/A515/A714, A 283/A285/A414/A662/A372, A369/A210/A106/A516/A573/A707, A516/A255/A299/ A333/ A350/ A612

Features and Applications :

Rutile type flux cored wire for mild steel and 490-550 MPa high tensile strength steel for low temperature service. Suitable for butt and fillet welding in all positions. You can get smooth arc, and low spatter, good weldability. Shielding Gas: CO₂

Welding Positions :



Current Type :

FCAW
D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
304547	1.20	0.047"	15	BS 300

Approvals :

ABS, CE, GOST-R, SEPRO

Seamless Rutile Type Flux Cored Wire



ELCOR R 81 Ni SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TSENISO 17632-A : T 50 3 1Ni P M 1 H5/T 46 4 1Ni P C 1 H5
EN ISO 17632-A : T 50 3 1Ni P M 1 H5/T 46 4 1Ni P C 1 H5
AWS A5.29 : E 81 T1-Ni1C,Ni1MH4

C	Si	Mn	Ni
0.05	0.5	1.30	0.90

Mechanical Properties - % (Typical) :

(Typical values : with CO₂ gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (150-V/-30°C) (with M21 gas)	Impact Strength (150-V/-40°C) (with CO ₂ gas)	Elongation (L _e =5d ₀)(%)
AW	min 460	530 - 680	min47 J	min47 J	min22

AW : as welded

Typical Base Material Grades :

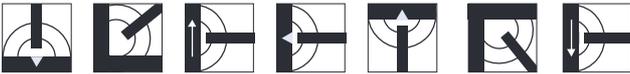
EN: S 185, S235-S355, P 235 GH, P 265 GH, P 295 GH, P 235 T1/T1-P 355 N, L210-L485, S 255-S500 (NL1,2), X 42-X80

ASTM: A 131, A 106/A515/A714, A 283/A285/A414/A662/A372, A369/A210/A106/A516/A573/A707, A516/A255/A299/ A333/ A350/ A612

Features and Applications :

Micro-alloy rutile flux-cored wire with rapidly solidifying slag for CO₂ and Ar+CO₂ mix. Excellent weld puddle manipulation, superior all-position welding. Using temperature up to -60 °C. Particularly suited for MAG orbital welding applications and all-position welding on ceramic backing. Low spatter loss, easy slag removal. CTOD-tested for offshore applications.
Shielding Gases: CO₂ or M21

Welding Positions :



Current Type :

FCAW
D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
607486	1.20	0.047"	15	D 300

Approvals :

CE, GOST-R, SEPRO

Rutile Type Flux Cored Wire



ELCOR R 91

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18276-A	:	T 62 4 Mn 1.5 Ni PC 1
EN ISO 18276-A	:	T 62 4 Mn 1.5 Ni PC 1
AWS A5.29	:	E 91 T1 - K2C J

C	Si	Mn	Ni
0.08	0.5	1.20	1.70

Mechanical Properties - % (Typical) : _____
(Typical values : with CO₂ gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L _c =5d ₀)(%)
			(ISO-V/-20°C)	(ISO-V/-40°C)	
AW	min. 620	690 - 890	>62 J	>47 J	>18

AW : as welded

Typical Base Material Grades : _____

* S380N-S500N, S355NH-S460NH, S380NL-S500NL

Features and Applications : _____

- * Rutile type flux cored wire for 550-620 MPa high tensile strength steel for low temperature service.
- * Suitable for butt and fillet welding all positions.
- * Excellent impact value at low temperatures down to -40 °C.
- * Shielding gas: CO₂

Welding Positions : _____



Current Type : _____

FCAW
D.C. (+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
305867	1.20	0.047''	15	D 300

Approvals : _____

ABS, GOST-R, SEPRO

Seamless Rutile Type Flux Cored Wire



ELCOR R 91 SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18276-A :	T 62 4 Mn 1.5 Ni PC 1 H5
EN ISO 18276-A :	T 62 3 Mn 1.5 NiP M 1 H5
AWS A5.29 :	E 91 T1 - K2C,-K2M H4

C	Si	Mn	Ni	Mo
>0.07	0.5	1.40	1.70	0.20

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
			(ISO-V/-30°C) with M21 gas	(ISO-V/-40°C) with CO2 gas	
AW	min. 620	690 - 890	min. 47 J	min. 47 J	min. 18

AW : as welded

Typical Base Material Grades : _____

S380N-S500N, S355NH-S460NH, S380NL-500NL

Features and Applications : _____

Rutile type flux cored wire for especially 550-620 MPa high tensile strength steel at low temperature service. Suitable for butt and fillet welding all positions. Excellent impact value at low temperatures down to -40 °C. Shielding Gas: M21 or CO2

Welding Positions : _____



Current Type : _____

FCAW
D.C. (+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
607487	1.20	0.047"	15	D 300

Approvals : _____

GOST-R, SEPRO

Rutile Type Flux Cored Wire



ELCOR R 110

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18276-A	:	T 69 4 Mn2.5Ni P C 1
EN ISO 18276-A	:	T 69 4 Mn2.5Ni P C 1
AWS A5.29	:	E 111 T1-GC

C	Si	Mn	Ni	Mo
<0.08	0.5	1.70	2.10	0.20

Mechanical Properties - % (Typical) : _____
(Typical values : with CO₂ gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-40°C)	Elongation (L ₀ =5d ₀)(%)
AW	min. 690	770 - 940	min. 47 J	min. 17

AW : as welded

Typical Base Material Grades : _____

S690Q, L690M, N-A-XTRA, USS-T1, BH 70V, HY100, ASTM A514Gr.F,
High alloyed structural steels, fine grained steels.

Features and Applications : _____

- * Rutile type flux cored wire which provides an exceptionally smooth and stable arc, low spatter.
- * Applications of single and multipass welding of high strength low alloy steels, such as HY-80, and HY-100.

Welding Positions : _____



Current Type : _____

FCAW
D.C. (+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
304631	1.20	0.047''	15	BS 300

Approvals : _____

ABS (AWS), GOST-R, SEPRO

Seamless Rutile Type Flux Cored Wire



ELCOR R 110 SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18276-A :	T 69 4 Mn 2,5Ni PC 1 H5
EN ISO 18276-A :	T 69 3 Mn 2,5 Ni PM 1 H5
AWS A5.29 :	E 111 T1-GC ,GM H4 (mod.)

C	Si	Mn	Ni	Mo
<0.08	0.5	1.70	2.00	0.30

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
			(ISO-V/-30°C) with M21 gas	(ISO-V/-40°C) with CO ₂ gas	
AW	min. 690	770 - 940	min. 47 J	min. 47 J	min. 17

AW : as welded

Typical Base Material Grades : _____

S690Q, L690M, N-A-XTRA, USS-T1, BH 70V, HY100, ASTM A514Gr.F,
High alloyed structural steels, fine grained steels.

Features and Applications : _____

ELCOR R 110 SC rutile type flux cored wire which provides an exceptionally smooth and stable arc, low spatter. Applications of single and multipass welding of high Strength low alloy steels, such as HY-80, and HY-100. Shielding Gas: M21 or CO₂

Welding Positions : _____



Current Type : _____

FCAW
D.C. (+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
607488	1.20	0.047''	15	D 300

Approvals : _____

GOST-R, SEPRO

Seamless Metal Cored Wire



ELCOR M Ni2 SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18276-A	:	T 55 6 Mn2Ni M M 1 H5
EN ISO 18276-A	:	T 55 6 Mn2Ni M M 1 H5
AWS A5.28	:	E80C-Ni2 H4

C	Si	Mn	Ni
0.05	0.6	1.4	2.0

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L _o =5d _o)(%)
			(ISO-V/-40°C)	(ISO-V/-60°C)	
AW	min. 550	640 - 820	min. 80 J	min. 47J	min. 24

AW : as welded

Typical Base Material Grades : _____

- * Pipe Steels : P235T1/T2-P355N, L210-L485, ASTM A 537M
- * Fine grained structural steels : S255(NL1/2) – S550 (QL/1)
- * Ship building steels : 15 NiCrMo10-6 (HY 80), ASTM G18NiCrMo12-6 HY80, ASTM A543M-93 B,C
- * Pipeline Steels : API X42 – X80

Features and Applications : _____

- * Good arc restriking even with cold wire tip, suitable for robot applications.
- * Ideal for use in the field short arc and spray arc.
- * Excellent gap bridging for root welding.
- * High-efficiency type for economic production.
- * Shielding Gas: M21

Welding Positions : _____



Current Type : _____

FCAW
D.C. (+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
605140	1.20	0.047"	15	D 300

Approvals : _____
GOST-R, SEPRO

Seamless Metal Cored Wire



ELCOR M NiMo1 SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18276-A	: T 55 4 1NiMo M M 3 H5
EN ISO 18276-A	: T 55 4 1NiMo M M 3 H5
AWS A5.28	: E 90C-K3M H4
AWS A5.29	: E 91 T1-G

C	Si	Mn	Ni	Mo
0.05	0.40	1.20	1.00	0.50

Mechanical Properties - % (Typical) :
(Typical values : with M21 gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
			(ISO-V/-20°C)	(ISO-V/-40°C)	
AW	>560	650 - 750	>60 J	>47 J	>17
SR	>540	630 - 710	>60 J	>47 J	>17

AW : as welded - SR : stress relieved
(580° -620°C/1h)

Typical Base Material Grades :

HY-80 and HY 100 steels

Features and Applications :

* Metal type flux-cored wire. * Good arc striking even with cold wire tip, suitable for robot applications.* Multi-pass welding without in-between cleaning.* Usable in the field short arc and spray arc.* Excellent gap bridging for root welding.* High-efficiency type for economic production.* Typical applications are crane, steel, vessel and apparatus construction.

* Shielding Gas: M21

Welding Positions :



Current Type :

FCAW

D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
605452	1.20	0.047"	15	BS 300

Approvals :

GOST-R, SEPRO

Seamless Metal Cored Wire



ELCOR M NiCrMo SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 18276 A	: T 69 6 Mn2NiCrMo M M 1 H5
EN ISO 18276 A	: T 69 6 Mn2NiCrMo M M 1 H5
AWS A5.28	: E 110 C-K4 H4

C	Si	Mn	Cr	Ni	Mo
0.05	0.40	1.60	0.5	2.2	0.50

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength			Elongation (L _o =5d _o)(%)
			(ISO-V/-20°C)	(ISO-V/-40°C)	(ISO-V/-60°C)	
AW	min. 690	770 - 940	>80 J	>75 J	>75 J	>17

AW : as welded -

Typical Base Material Grades : _____

HY-80 and HY 100 steels

Features and Applications : _____

ELCOR M NiCrMo SC metal cored wire without slag for Ar+CO₂ mix is a metal cored wire which provides an exceptionally smooth and stable arc, low spatter and minimal slag coverage.
Shielding Gas: M21

Welding Positions : _____



Current Type : _____

FCAW
D.C. (+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
	mm	inch		
304517	1.20	0.047"	15	BS 300
305114	1.60	0.062"	15	BS 300

Approvals : _____
GOST-R, SEPRO

Rutile Type Flux Cored Wire



ELCOR R 81 NiCu

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17632-A	: T 46 3 Z P C 1
EN ISO 17632-A	: T 46 3 Z P C 1
AWS A5.29	: E 81 T1-W2 C

C	Si	Mn	Ni	Cr	Cu
0.05	0.50	1.30	0.50	0.55	0.50

Mechanical Properties - % (Typical) : _____

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
			(ISO-V/-20°C)	(ISO-V/-30°C)	
AW	min. 460	550 - 650	min. 60 J	min. 47 J	min. 22

AW : as welded

Typical Base Material Grades : _____

DIN: COR-TEN A-B-C

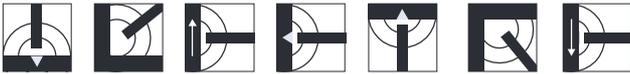
EN: S235JRW-S355JRW, 9CrNiCuP3-2-4, S255-S460,

ASTM: A 242/A441, A423/ A 588, A516/ A 255/ A 333/ A 350 / A612

Features and Applications : _____

* Rutile flux-cored wire.* Typical application is weathering grades of steels.* Excellent weld puddle manipulation, superior all-position welding.* Particularly suited for mechanized MAG welding and all-position welding on ceramic backing.* Low spatter with easy slag removal.* Shielding Gas: CO₂.

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
304885	1.20	0.047''	15	BS 300

Approvals : _____

GOST-R, CE, SEPRO

Seamless Rutile Type Flux Cored Wire



ELCOR R 81 NiCu SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17632-A : T 462 Z P C 1 H5/T 462 Z P M 1 H5
EN ISO 17632-A : T 462 Z P C 1 H5/T 462 Z P M 1 H5
AWS A5.29 : E 81 T1-G H4

C	Si	Mn	Ni	Cu
0.05	0.50	1.30	1.2	0.5

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
			(ISO-V/-20°C)	(ISO-V/-40°C)	
AW	min. 460	550 - 650	min. 60 J	min. 47 J	>22

AW : as welded

Typical Base Material Grades : _____

DIN: COR-TEN A-B-C
EN: S235JRW-S355JRW, 9CrNiCuP3-2-4, S255-S460,
ASTM: A 242/A441, A423/ A 588, A516/ A 255/ A 333/ A 350 / A612

Features and Applications : _____

* Micro-alloy rutile flux-cored wire with rapidly solidifying slag for Ar+CO₂ mix.* Typical application is weathering grades of steels.* Excellent weld puddle manipulation, superior all-position welding.* Particularly suited for mechanized MAG welding and all-position welding on ceramic backing.* Low spatter with easy slag removal. Shielding Gas: M21 or CO₂

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (kg)	Package Type
304508	1.20	0.047"	15	BS 300
605619	1.20	0.047"	16	D 300

Approvals : _____

CE, GOST-R, SEPRO

Rutile Type Flux Cored Wire



ELCOR R Mo

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17632-A	:	T 46 2 Mo R C 2
EN ISO 17632-A	:	T 46 2 Mo R C 2
AWS A5.29	:	E 81 T1 - A1C

C	Si	Mn	Mo
0.05	0.50	1.25	0.50

Mechanical Properties - % (Typical) : _____

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
			(RT)	(ISO-V/-20°C)	
AW	>470	550 - 650	>70 J	min. 47 J	>22
SR(620 °C / 1h, air cooled at 300°C)	>470	550 - 680	>70 J	min. 47 J	>21

AW : as welded SR : stress relieved RT : room temperature

Typical Base Material Grades : _____

- * DIN: HI, HII, 17Mn4, 19Mn5, 15Mo3, 16 Mo 3
- * EN: P 235 GH, P 265 GH, P 295 GH, 16 Mo 3, P 235 T1/T2-P355 N, L210-L485, S255-L485
- * ASTM: A283, A285, A414, A662, A372, A204, A 369, A210, A106, A 516, A 255, A 333, A 350, A 612

Features and Applications : _____

* Rutile type flux-cored wire.* Typical applications are vessel and steel construction, mechanical engineering and pipe work.* Good arc striking even with cold wire tip, suitable for robot applications.* Multi-pass welding without in-between cleaning.* Ideal for use in the field short arc and spray arc.* Excellent gap bridging for root welding. High-efficiency type for economic production environments.*Shielding Gas: CO₂

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
304850	1.20	0.047"	15	BS 300

Approvals : _____

CE, GOST-R, SEPRO

Metal Type Flux Cored Wire



ELCOR M Mo

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17632-A	:	T 46 2 Mo M M1
EN ISO 17632-A	:	T 46 2 Mo M M1
AWS A5.29	:	E 81 T1 - A1 M

C	Cr	Mn	Mo
0.05	0.03	1.00	0.50

Mechanical Properties - % (Typical) :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-20°C)	Elongation (L _o =5d _o)(%)
SR 620 °C / 1h	470	550 - 680	min. 47	min. 20

Typical Base Material Grades :

DIN: HI, HII, 17Mn4, 19Mn5, 15Mo3, 16Mo3

EN: P 235 GH, P 265 GH, P 295 GH, 16 Mo 3, P 235 T1/T2-P355 N, L210-L485, S255-L485

ASTM: A283, A285, A414, A662, A372, A204, A369, A210, A106, A516, A255, A333, A350, A612

Features and Applications :

- * Metal type flux-cored wire which provides a smooth and stable arc.
- * Excellent weldability for vertical up position (PG) and overhead fillet (PD) position.
- * Pressure vessels and steel constructions are typical applications.
- * Shielding gas: Ar+CO₂ MIX.

Welding Positions :



Current Type :

FCAW D.C (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
306213	1.20	0.047"	15	BS 300

Approvals :

SEPRO

Seamless Rutile Type Flux Cored Wire



ELCOR R Mo SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17632-A	:	T 46 2 Mo R C 2 H5
EN ISO 17632-A	:	T 46 2 Mo R C 2 H5
AWS A5.29	:	E 81 T1 - A1C H4

C	Si	Mn	Mo
0.05	0.50	1.30	0.50

Mechanical Properties - % (Typical) : _____
(Typical values : with CO₂ gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (RT)		Elongation (L ₀ =5d ₀)(%)
AW	>470	550 - 660	>70 J		>22
SR(620 °C / 1h, air cooled at 300 °C)	>460	550 - 680	>70 J		>21

AW : as welded SR : stress relieved RT : room temperature

Typical Base Material Grades : _____

* DIN: H1, H11, 17Mn4, 19Mn5, 15Mo3, 16 Mo 3

* EN: P 235 GH, P 265 GH, P 295 GH, 16 Mo 3, P 235 T1/T2-P355 N, L210-L485, S255-L485

* ASTM: A283, A285, A414, A662, A372, A204, A 369, A210, A106, A 516, A 255, A 333, A 350, A 612

Features and Applications : _____

* Rutile type flux-cored wire.* Typical applications are vessel and steel construction, mechanical engineering and pipe work.* Good arc striking even with cold wire tip, suitable for robot applications.* Multi-pass welding without in-between cleaning.* Ideal for use in the field short arc and spray arc.* Excellent gap bridging for root welding. High-efficiency type for economic production environments. *Shielding Gas: CO₂

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (kg)	Package Type
605618	1.20	0.047"	16	D 300

Approvals : _____

CE, GOST-R, SEPRO

Seamless Metal Cored Wire



ELCOR M Mo SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17632-A	:	T 46 2 Mo M M 1 H5
EN ISO 17632-A	:	T 46 2 Mo M M 1 H5
AWS A5.29	:	E 81 T1 - A1
AWS A5.28	:	E 80 C - D2 - H4

C	Si	Mn	Mo
0.05	0.50	1.30	0.50

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength RT	Elongation (L _o =5d _o)(%)
AW	min. 470	550 - 650	min. 70 J	min. 22
SR	min. 540	630 - 710	min. 70J	min. 22

AW : as welded SR : stress relieved RT : room temperature

Typical Base Material Grades : _____

DIN: H1, H11, 17Mn4, 19Mn5, 15Mo3, 16 Mo 3

EN: P 235 GH, P 265 GH, P 295 GH, 16 Mo 3, P 235 T1/T2-P355 N, L210-L485, S255-L485

ASTM: A283, A285, A414, A662, A372, A204, A 369, A210, A106, A 516, A 255, A 333, A 350, A 612

Features and Applications : _____

* Metal cored wire without slag for Ar+CO₂ mix.* Typical applications are vessel and steel construction, mechanical engineering and pipe work.* Good arc restriking even with cold wire tip, suitable for robot applications.* Multi-pass welding without in-between cleaning.* Ideal for use in the field short arc and spray arc.* Excellent gap bridging for root welding.* High-efficiency type for economic production environments. * Shielding Gas: M21

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
304518	1.20	0.047"	15	BS 300

Approvals : _____

CE, GOST-R, SEPRO

Heat Resisting Flux Cored TIG Welding Rod



FC TIG-B2

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

EN ISO 21952-A	:	W Z CrMo1Si
ISO 21952-A	:	W Z CrMo1Si
AWS A5.28	:	E80C-B2 (mod.)

C	Si	Mn	Mo	Cr
0.06	0.55	0.90	0.5	1.0

Mechanical Properties - % (Typical) : _____

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-40°C)	Elongation (L ₀ =5d ₀)(%)
680°C /2h	min. 355	min. 550	min. 47 J	min. 20

Typical Base Material Grades : _____

13CrMo4-5, 15CrMo5, 42CrMo4, 16CrMoV4, 25CrMo4, 24CrMo5, G22CrMo5-4, G17CrMo5-5

Features and Applications : _____

- * Recommended for welding of Cr-Mo alloyed steels which are used for the production of boilers, tubes, pipes and nitride steels.
- * Weld metal is resistant to temperatures up to +570 0C.
- * Suitable for step-cooling applications.
- * Shielding Gas: 100% Argon

Welding Positions : _____



Current Type : _____

TIG D.C (-)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)
	306339	2.40x1000	

Approvals : _____

CE, SEPRO

Rutile Type Flux Cored Wire



ELCOR R CrMo 1

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17634-A	:	T CrMo1 R C 2
EN ISO 17634-A	:	T CrMo1 R C 2
AWS A5.29	:	E 81 T1-B 2 C

C	Si	Mn	P	S	Cr	Mo
0.06	0.50	1.20	<0.015	<0.015	1.2	0.5

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength RT	Elongation (L _o =5d _o)(%)
680 °C/2h	min. 460	550 - 690	min. 80 J	min. 19
920 °C/0.5h	min. 320	450 - 550	min. 100J	min. 26

AW : as welded SR : stress relieved RT : room temperature

Typical Base Material Grades : _____

* DIN : 13 CrMo 44, 24 CrMo 5

* Cast Steels : GS 17CrMo55, GS 22CrMo54, G17CrMo5-5, G22CrMo5-4

* EN : 13 CrMo 4-5, G 17 CrMo 5-5, G 22 CrMo 5-4

* ASTM : A 182, A 387, A 217, A 387 Gr. 11-12

Features and Applications : _____

* Rutile type flux-cored wire.* Typical applications are vessel and steel construction, mechanical engineering and pipe work.* Good arc striking even with cold wire tip, suitable for robot applications.* Multi-pass welding without in-between cleaning.* Ideal for use in the field short arc and spray arc.* Excellent gap bridging for root welding.* High-efficiency type for economic production environments.* Shielding gas: CO₂

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
306041	1.20	0.047"	15	BS 300

Approvals : _____

CE, GOST-R, SEPRO

Seamless Metal Cored Wire



ELCOR M CrMo1 SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17634-A	:	T CrMo1 M M 1 H5
EN ISO 17634-A	:	T CrMo1 M M 1 H5
AWS A5.28	:	E 80 C-B2-H4

C	Si	Mn	P	S	Cr	Mo
0.05	0.30	1.40	<0.015	<0.015	1.1	0.5

Mechanical Properties - % (Typical) :

(Typical values : with M21 gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength RT	Elongation (L ₀ =5d ₀)(%)
AW	min. 480	580 - 700	min. 80 J	min. 20
920 °C/0.5h	min. 320	450 - 550	min. 100J	min. 26
680 °C/2h	min. 320	450 - 550	min. 100J	min. 26

AW : as welded RT : room temperature

Typical Base Material Grades :

- * DIN : 13 CrMo 44, 24 CrMo 5
- * EN : 13 CrMo 4-5, G 17 CrMo 5-5, G 22 CrMo 5-4
- * ASTM : A 182, A 387, A 217

Features and Applications :

- * Metal cored wire without slag for Ar+CO₂ mix.* Typical applications are vessel and steel construction, mechanical engineering and pipe work.* Good arc striking even with cold wire tip, suitable for robot applications.
- * Multi-pass welding without in-between cleaning.* Ideal for use in the field short arc and spray arc.
- * Excellent gap bridging for root welding.* High-efficiency type for economic production environments
- * Shielding Gas: M21

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
	mm	inch		
304519	1.20	0.047"	15	D 300
605455	1.20	0.047"	16	BS 300

Approvals :

GOST-R, CE, SEPRO

Rutile Type Flux Cored Wire



ELCOR R CrMo 2

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17634-A	:	T CrMo2 R C 1 / T CrMo2 R M 1
EN ISO 17634-A	:	T CrMo2 R C 1 / T CrMo2 R M 1
AWS A5.29	:	E 91T1 - B3C/B3M

C	SS	Mn
0.05	0.45	1.00

Cr	Mo
2.40	1.00

Mechanical Properties - % (Typical) : _____

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L _o =5d _o)(%)
690°C/1h	min. 540	620 - 760	50	min. 18

Typical Base Material Grades : _____

2.25% Cr - 1% Mo steels such as ASTM A387 or P21/P22 pipes.

Features and Applications : _____

- * Rutile type flux cored wire for all position welding.
- * Excellent weldability for vertical up position (PG) and overhead fillet (PD) position.
- * Good arc stability and weldability.
- * Shielding gas: 100% CO₂ or Ar+CO₂ MIX.

Welding Positions : _____



Current Type : _____

FCAW D.C (+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
306340	1.20	0.047"	15	BS 300

Approvals : _____

SEPRO

Seamless Basic Type Flux Cored Wire



ELCOR B CrMo2 SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17634-A : T CrMo 2 BM 3 H5/T CrMo2BC3H5	C	Si	Mn	P	S	Cr
EN ISO 17634-A : T CrMo 2 BM 3 H5/T CrMo2BC3H5	0.07	0.30	1.00	<0.015	<0.015	2.3
AWS A5.29 : E 90 T5-B3-H4	As	Sn	Mo	Sb		
	<0.020	<0.015	1.1	<0.003		

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V)			Elongation (L ₀ =5d ₀)(%)
			RT	-0 °C	-15 °C	
SR	min.530	620 - 820	min. 120 J (89)	min. 100 J (74)	min. 80 J (59)	min. 18

RT : room temperature S.R.stress relieved (675°-705°C/1h)

Typical Base Material Grades : _____

* DIN : 10 CrMo 9 10, 10 CrSiMoV 7, 12 CrMo 9 10

* EN : 10 CrMo 9-10, 12 Cr 9-10

* ASTM : A 182, A 217, A 541

Features and Applications : _____

* High-basicity flux-cored wire with slag for CO₂ and Ar+CO₂ mix.* Typical applications are pressure vessels; Chemical apparatus, and steam turbine construction.* Extremely crack resistant weld metal conditioned by the basic slag in combination with very low hydrogen content.* Well suited for the economic joining of high temperature and compressed hydrogen resistant 2,25 Cr2 Mo steels.* Meets requirements of step cooling by very low weld metal contaminations.

*Shielding Gas: CO₂ or M21

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
	mm	inch		
304528	1.20	0.047''	15	D 300
605457	1.20	0.047''	16	BS 300

Approvals : _____

GOST-R, CE, SEPRO

Stainless Steel Flux Cored Wire



ELOXCOR S 307

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17633-A	: T 18 8 Mn P M 1(C1)
EN ISO 17633-A	: T 18 8 Mn P M 1(C1)
AWS A5.22	: E307 T1-1/4 (mod.)

C	Si	Mn	Cr	Ni
0.10	0.70	6.00	19.0	9.0

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
480	630	50 J	40

Typical Base Material Grades : _____

* High-strength low alloyed and alloyed heat-treatable steels, armor steels, steels including 14 % Mn, ferritic chromium steels, heat-resistant steels, non-magnetic steels, dissimilar joints and repair welding.

Features and Applications : _____

* ELOXCOR S 307 is rutile fast freezing type flux cored wire. Work-hardening austenitic deposit in CrNiMn steel modified type 307. Dissimilar joint, welding of steels of unknown types, armouring steels, buffering joining of 14 %Mn austenitic steels.

Service temperatures from -120 °C to +300 °C

* Shielding Gas: CO₂ or M21

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
604936	1.20	0.047"	15	D 300

Approvals : _____

GOST-R, CE, SEPRO

Stainless Steel Flux Cored Wire



ELOXCOR S 308 L

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17633-A	: T 199 L P M 1(C1)
EN ISO 17633-A	: T 199 L P M 1(C1)
AWS A5.22	: E308L T1-1/-4

C	Si	Mn	Cr	Ni
0.030	0.70	1.40	20.0	10.5

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-196°C)	Elongation (L _o =5d _o)(%)
460	620	34 J	36

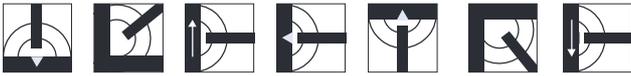
Typical Base Material Grades : _____

* (1.4306) X2CrNi19-11, (1.4301) X5CrNi18-10, (1.4311) X2 CrNiN 18-10, (1.4312) GX10CrNi18-8
 AISI 304-304L-304LN, 302, 321-347
 ASTM: A 157, Gr C9, A 320 Gr B8C or D

Features and Applications : _____

- * Rutile type, rapid hardening flux cored wire.
- * Weld metal structure is austenitic (CrNi alloyed, 308 type)
- * Used in pharmaceutical, paper and food industry.
- * Ferritic stainless steel, high carbon 304 and stabilized 347 grades can be welded this wire.
- * Weld metal has resisting between -196°C and 400°C service temperature.
- * Shielding Gas: CO₂ or M21

Welding Positions : _____



Current Type : _____

FCAW
D.C. (+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
	mm	inch		
604937	1.20	0.047"	15	D 300

Approvals : _____

ELOXCOR S 308 L (CO₂) : DNV-GL, GOST-R, CE, SEPRO

Stainless Steel Flux Cored Wire



ELOXCOR S 309 L

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17633-A	: T 23 12 L P M 1 (C1)
EN ISO 17633-A	: T 23 12 L P M 1 (C1)
AWS A5.22	: E309L T1-1/-4

C	Si	Mn	Cr	Ni
0.030	0.70	1.40	23.5	13.0

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L ₀ =5d ₀)(%)
460	580	40 J	35

Typical Base Material Grades : _____

* High-strength unalloyed and heat-treatable steels, ferritic Cr and austenitic CrNi steels, austenitic Mn steels, unalloyed tempered steels, tool steels, hard manganese steels, ferritic chromium steels, austenitic nickel-chromium steels, hard-to-weld steels, similar-type austenitic steels, dissimilar metals, joining of corrosion Resistant Stainless steel with mild or low alloy steels, clad steels.

Features and Applications : _____

* ELOXCOR S 309L is rutile fast freezing type flux cored wire. Austenitic-ferritic deposit in over-alloyed CrNi steel-type 309L, with optimised ferrite content for joining dissimilar metals. Joining of steels with similar compositions and joining carbon steels to Stainless steels. Buffering before cladding. Service temperatures from - 60 °C to + 350 °C. * Shieldin Gas: CO₂ or M21

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
604938	1.20	0.047"	15	D 300

Approvals : _____

ELOXCOR S 309 L (CO₂) : DNV-GL, GOST-R, CE, SEPRO

Stainless Steel Flux Cored Wire



ELOXCOR S 316 L

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17633-A : T Z 19 12 3 LP M1(C1)
EN ISO 17633-A : T Z 19 12 3 LP M1(C1)
AWS A5.22 : E316L T1-1/4

C	Si	Mn	Cr	Ni	Mo
0.030	0.80	1.40	19.0	12.0	2.10

Mechanical Properties - % (Typical) :
(Typical values : with M21 gas)

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-110°C)	Elongation (L _o =5d _o)(%)
490	600	35 J	32

Typical Base Material Grades :

* (1.4401) X5CrNiMo 17-12-2, (1.4404) X2CrNiMo 17-12-2, (1.4435) X2CrNiMo 18-14-3, (1.4436) X3 CrNiMo 17-13-3, (1.4571) X6 CrNiMoTi 17-12-2, (1.4580) X6 CrNiMoNb 17-12-2, (1.4583) X10 CrNiMoNb 18-12, (1.4409) GX2 CrNiMo 19-11-2

AISI 316 L, 316 Ti, 316 Cb

Features and Applications :

* Rutile type, rapid hardening flux cored wire.

* Weld metal microstructure is austenite (CrNiMo alloyed, 316 type).

* Used in welding of high carbon and stabilized 316 grade steels, low carbon 316 L grade stainless steels, food, pharmaceutical, chemical dye and Machinery and equipment industries.

* Weld metal has resisting between -116 °C and 400 °C service temperature.

* Shielding Gas: CO₂ or M21

Welding Positions :



Current Type :

FCAW

D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
604939	1.20	0.047''	15	D 300

Approvals :

ELOXCOR S 316 L (CO₂) : DNV-GL, GOST-R, SEPRO

Stainless Steel Flux Cored Wire



ELOXCOR S 2209

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN ISO 17633-A : T 22 93 N L P M 1 (C1)
EN ISO 17633-A : T 22 93 N L P M 1 (C1)
AWS A5.22 : E2209 T1-1/-4

C	Si	Mn	Cr	Ni	Mo	N
0.030	0.80	1.40	23.0	9.0	3.20	0.14

Mechanical Properties - % (Typical) : _____
(Typical values : with M21 gas)

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/-60°C)	Elongation (L ₀ =5d ₀)(%)
630	780	32 J	28

Typical Base Material Grades : _____

* (1.4462) X2CrNiMoN 22-5-3, (1.4362) X2 CrNiN 23-4, UNS S31803, S32205, J92295, S31500, S32304, S32404

Features and Applications : _____

- * Rutile type and rapid hardening flux cored wire.
- * Weld metal microstructure is austenite - ferritic.
- * The weld metal has an excellent resistance to stress corrosion, cracking and pitting.
- * used in duplex stainless steel and similar materials
- * Shielding Gas: CO₂ or M21

Welding Positions : _____



Current Type : _____

FCAW
D.C. (+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
	mm	inch		
604940	1.20	0.047"	15	D 300

Approvals : _____

ELOXCOR S 2209 : GOST-R, CE, CLASS NK, SEPRO

Submerged Flux Cored Wire



SUBCOR B 31 SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

AWS A5.23 : F8A4 - EC - 1

C	Si	Mn	P	S
0.05	0.3	1.5	< 0.025	< 0.025

Mechanical Properties :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
			(ISO-V/-20°C)	(ISO-V/-40°C)	
AW vs SR	>460	540 - 640	>140 J	>100 J	25

AW : as welded SR : stress relieved

Typical Base Material Grades :

* DIN: HI, HII, 17Mn4, 19Mn5 etc.

EN: S 185, S 235-S355, P235 GH, P 265 GH, P 295 GH, P 235 T1/T2 – P 355 N – L210-L485, S 255-S 460

ASTM: A 131, A 106, A 515, A 714, A 283, A 285, A 414, A 662, A 372, A369, A210, A 106, A 516, A 255, A 333, A 350, A 612, X 42-X 70

Features and Applications :

* High-basicity flux cored wire for submerged arc welding. Extremely crack resistant weld metal conditioned by the basic slag. High mechanical properties are easily obtained when used in single sided welding operations using a ceramic back up. Weld X-ray quality. Well- suited for joining high carbon steels and when welding critical mixed base metal combinations. Ideal metallurgical choice for repair welding and production as well as a buffer layer. As welding flux we recommend our type GeKa ELIFLUX BFF, .

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
304666	2.40	3/32	25
304665	3.20	1/8	30
304664	4.00	5/32	30

Approvals :

GOST-R, CE, SEPRO

Submerged Flux Cored Wire



SUBCOR B-1D 35 SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

AWS A5.23 : F8A6 - EC - 1D

C	Si	Mn	P	S	Mo
0.05	0.3	1.5	< 0.025	< 0.025	0.5

Mechanical Properties :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V)				Elongation (L ₀ =5d ₀)(%)
			RT	0 °C	-20 °C	-40 °C	
AW	>460	520 - 620	>140	>100	>80	>60	>24
SR	>460	520 - 620	>100	>80	>60	>47	>24

AW : as welded SR : stress relieved RT : room temperature

Typical Base Material Grades :

* DIN: HI, HII, 17Mn4, 19Mn5, 15 Mo 3, 16 Mo 3

EN: P 235 GH, P 265 GH, P 295 GH, 16 Mo 3, P 235 T1/T2, P 355 N, L290-L485, S 255-S460

ASTM: A 283, A 285, A 414, A 662, A 372, A 204, A 369, A 210, A 106, A 516, A 255, A 333, A 350, A 612

Features and Applications :

* Extremely crack resistant weld metal is result of high-basicity slag and very low diffusible hydrogen content. Especially suited for multi-wire welding applications. Typical applications are micro-alloy, basic slag flux-cored wire, for submerged-arc welding, vessel, steel and apparatus construction, production of large diameter pipes, shipbuilding.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
304667	2.40	3/32	25
304668	3.20	1/8	30
304669	4.00	5/32	30

Approvals :

GOST-R, CE, SEPRO

Submerged Flux Cored Wire



SUBCOR B 40 SC

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

AWS A5.23 : F7A8 - EC - G
F7P8 - EC - G

C	Si	Mn	P	S	Ni
0.10	0.3	1.4	<0.015	<0.015	0.9

Mechanical Properties :

Heat Treatment	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V)		Elongation (L ₀ =5d ₀)(%)
			-40 °C	-60 °C	
AW	>480	550 - 680	>100	>80	>22
SR	>460	530 - 660	>120	>100	>24
N	>355	480 - 560	>100	>100	>26
N+A	>355	480 - 560	>120	>100	>26

AW : as welded SR : stress relieved N : normalized N+A : cooling in air

Typical Base Material Grades :

* DIN: H1, H11, 17Mn4, 19Mn5, 15 Mo 3, 16 Mo 3

EN: P 235 GH, P 265 GH, P 295 GH, 16 Mo 3, P 235 T1/T2, P 355 N, L290-L485, S 255-S460

ASTM: A 283, A 285, A 414, A 662, A 372, A 204, A 369, A 210, A 106, A 516, A 255, A 333, A 350, A 612

Features and Applications :

* Basic flux-cored wire for submerged-arc welding. Typical applications are apparatus and vessel construction. Extremely crack resistant weld metal conditioned by the high-basicity slag in combination with very low hydrogen content. Well suited for the economic joining of high temperature Resistant CrMoV-steels up to 550 °C. Weld X-ray quality.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
304544	3.20	1/8	30

Approvals :

GOST-R, CE, SEPRO

Submerged Arc Welding Wire for Hardfacing



SUBCOR 41 NiMo - LH

Standards :

AWS A5.23 : ~ EC 410 NiMo

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Ni	Mo	V
0.07	0.35	1.50	12.5	2.2	1.0	0.2

Mechanical Properties :

Hardness (HV)	
Single Pass	3 Pass
350	400

Typical Base Material Grades :

* Applicability in welding of martensitic and martensitic-ferritic materials used in tools of Rolling forging and steel casting operations. Continuous casting rollers particularly or iron-steel productions plants, relays, rolls, valves, used in gas/water/seam environments, flanges, compressions.

Features and Applications :

* A tubular wire for submerged arc welding of martensitic stainless steels. Good resistance to corrosion and thermal fatigue. It used with GeKa ELIFLUX BSS flux for surfacing continuous casting, rollers.

* Weld metals of martensitic micro-structure.

* It is using with submerged arc fluxes of GeKa ELIFLUX BFB or GeKa ELIFLUX BSS.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
305110	2.40	3/32	25
305371	2.80	7/64	25
305328	2.80	7/64	200

Approvals :

GOST-R, CE, SEPRO

Submerged Arc Welding Wire for Hardfacing



SUBCOR 41 NiMo - MH

Standards :

AWS A5.23 : ~ EC 410 NiMo

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Ni	Mo	V	Nb
0.13	1.00	2.00	12.5	2.5	1.0	0.2	0.15

Mechanical Properties :

Hardness (HRC)	
Single Pass	3 Pass
40	45

Typical Base Material Grades :

* Applicability in welding of martensitic and martensitic-ferritic materials used in toolsof Rolling forging and steel casting operations. Continuous casting rollers particularly or iron-steel productions plants, relays, rolls, valves, used in gas/water/syeam environments, flanges, compresssons.

Features and Applications :

* A tabular wire for submerged arc welding of martensitic stainless steels. Good resistance to corrosion and thermal fatigue. It used with GeKa ELIFLUX BSS flux for surfacing continuous casting, rollers.

* Weld metals of martensitic micro-structure.

* It is using with submerged arc fluxes of GeKa ELIFLUX BFB or GeKa ELIFLUX BSS.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
305203	2.40	3/32	25
305372	2.80	7/64	25

Approvals :

GOST-R, CE, SEPRO

Submerged Arc Welding Wire for Hardfacing



SUBCOR 430

Standards :

TS EN 14700	:	T Fe 7
EN 14700	:	T Fe 7

Chemical Composition of Weld Metal-
% (Typical) :

C	Cr	Mn	Si
0.05	17	2.0	0.7

Mechanical Properties - % (Typical) : _____

Hardness (HV)
3 Pass
200

Features and Applications : _____

- * %17 Chromium ferritic stainless steel deposit.
- * It is used for buffer layers before hardfacing of SUBCOR 41 NiMo LH and MH.
- * High resistant to combination of high temperature, corrosion and adhesive / friction wear.
- * Application; rolls, continuous casting rolls, shafts.it is using with submerged arcfluxes of Geka ELIFLUX BSS-F.
- * It is using with submerged arc fluxes of GeKa ELIFLUX BSS-F.

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
305293	2.40	3/32	25
305370	2.80	7/64	25

Approvals : _____

GOST-R, CE, SEPRO

Submerged Arc Welding Wire



S1

Standards :

TS EN ISO 14171-A	:	S 1
EN ISO 14171-A	:	S 1
AWS A5.17	:	EL 12

Chemical Composition of Welding Wire-
% (Typical) :

C	Si	Mn	Cu
0.08	0.10	0.50	<0.30 ¹⁾

Mechanical Properties :

Sumerged Arc Flux	AWS A5.17	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (L _o =5d _o)(%)	Impact Strength ISO-V(J)		
					0°C	-20°C	-30°C
ELIFLUX BAR	F6 AZ-EL 12	360	460	26	47	---	--
ELIFLUX BFB	F6 A2-EL 12	380	480	28	---	55	47
ELIFLUX BMS	F6 AZ-EL 12	395	475	24	38	---	--
ELIFLUX BBR-AG	F6 A0-EL 12	370	480	30	60	50	--

Chemical Composition of Weld Metal - % (Typical)

Sumerged Arc Flux	C	Si	Mn
ELIFLUX BAR	0.07	0.50	1.10
ELIFLUX BFB	0.06	0.25	1.20
ELIFLUX BMS	0.05	0.80	1.10
ELIFLUX BBR-AG	0.06	0.30	0.90

Typical Base Material Grades :

- * Structural Steels : S185-S235JR
- * Pipe Steels : S275N
- * Boiler Steels : P235GH
- * Ship-Construction Steels : A, B, D
- * Fine-grained Steels : P275N, S355N

Features and Applications :

- * Copper-coated wire.
- * Applicability in welding of steel constructions, pipes and tanks as well as in submerged arc welding of unalloyed structural steels, and plates.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
304432	1.6	1/16	25	K 435 *BIG PACK
303664	2.0	5/64	25	
303468	2.4	3/32	25	
303668	3.2	1/8	25	
303670	4.0	5/32	25	
303672	5.0	3/16	25	

* Packaging alternatives according to the order ; 30 - 350 - 550 - 1000 Kg

Approvals :

S1 x ELIFLUX BAR : BV, DNV-GL, TL, ABS, LR, CE, SEPRO

S1 : TSE, CE GOST-R, SEPRO

1) Copper Coated

Submerged Arc Welding Wire



S2

Standards :

TS EN ISO 14171-A	:	S2
EN ISO 14171-A	:	S2
AWS A5.17	:	EM 12

Chemical Composition of Welding Wire-
% (Typical) :

C	Si	Mn	Cu
0.12	0.10	1.0	<0.30 ¹⁾

1) Copper Coated

Mechanical Properties :

Submerged Arc Flux	AWS A5.17	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (Lo=5d0)(%)	Impact Strength ISC-V(J)			
					0°C	-20°C	-30°C	-40°C
ELIFLUX BAR	F6AZ-EM12/F6PZ-EM12	400	500	30	60	---	---	---
ELIFLUX BFB	F7 A4-EM 12	460	525	30	---	70	55	50
ELIFLUX BFF	F7 A4-EM 12	410	520	24	---	---	70	60
ELIFLUX BBR-AG	F7 A2 EM12	410	490	32	50	50	50	---
ELIFLUX BMS	F6 A0-EM 12	390	485	30	---	69	---	---
ELIFLUX PIPE	F7 A4-EM 12	460	550	26	---	75	---	50

Chemical Composition of Weld Metal - % (Typical)

Submerged Arc Flux	C	Si	Mn
ELIFLUX BAR	0.07	0.60	1.35
ELIFLUX BFB	0.07	0.35	1.50
ELIFLUX BFF	0.05	0.20	1.00
ELIFLUX BBR-AG	0.10	0.35	1.20
ELIFLUX BMS	0.04	0.45	1.27
ELIFLUX PIPE	0.07	0.40	1.35

Typical Base Material Grades :

* Structural Steels : S 355 JR * Pipe Steels : L360 * Boiler Steels : P 295 GH, P 355 GH

* Ship-Construction Steels : A, B, D, E * Fine-grained Steels : P 355 N, S 355 N

Features and Applications :

* Applicability in welding of steel constructions, pipes, pressure vessels, steam boilers, and plates, and, in submerged welding of general-purpose structural steels of tensile strength values up to 500 N/mm² as well as of unalloyed steels, medium-strength steels.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
302933	1.6	1/16	25	K 435 *BIG PACK
303674	2.0	5/64	25	
303675	2.4	3/32	25	
303676	3.2	1/8	25	
303677	4.0	5/32	25	
303678	5.0	3/16	25	

* Packaging alternatives according to the order ; 30 - 350 - 550 - 1000 Kg

Approvals :

S2 x ELIFLUX BAR : BV, ABS,
CE, DB, SEPRO
S2 : CE, GOST-R, TSE, DB
SEPRO

S2 x ELIFLUX BFB : TL, DNV-GL, BV, ABS, LR, RS, NK, RINA, TÜV, CE, DB
SEPRO
S2 x ELIFLUX BAB-S : ABS, CE, SEPRO

S2 x ELIFLUX BMS : BV, ABS, CE
SEPRO

Submerged Arc Welding Wire



S 2 Si

Standards :

TS EN ISO 14171-A :	S 2 Si
EN ISO 14171-A :	S 2 Si
AWS A5.17 :	EM 12 K

Chemical Composition of Welding Wire-
% (Typical) :

C	Si	Mn	Cu
0,10	0,25	1,0	<0,30

Mechanical Properties :

Sumerged Arc Flux	AWS A5.17	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)			
					0°C	-20°C	-40°C	
ELIFLUX BFB	F7A2-EM12K / F7P2-EM12K	430	530	28	---	80	70	---
ELIFLUX BFF	F7A4-EM12K / F7P4-EM12K	450	540	23	---	---	---	65
ELIFLUX BAB-S	F7 A4 EM12K	440	550	28	---	100	---	65
ELIFLUX BBR-AG	F7 A0 EM12K	420	510	29	---	50	---	---

Chemical Composition of Weld Metal - % (Typical)

Sumerged Arc Flux	C	Si	Mn
ELIFLUX BFB	0.05	0.40	1.25
ELIFLUX BFF	0.06	0.30	1.10
ELIFLUX BAB-S	0.07	0.45	1.60
ELIFLUX BBR-AG	0.07	0.40	1.30

Typical Base Material Grades :

* Structural Steels : S355JR * Pipe Steels : L360 * Boiler Steels : P295GH, P 355 GH

* Ship-Construction Steels : A, B, D, E

Features and Applications :

- * Applicability in submerged arc welding of steel materials with medium or high levels of tensile strength.
- * Usability in manufacture processes of pressure vessels, boilers, pipes, ship and other steel construction purposes.
- * Decreased affinity to oxygen due to high content of silicon.
- * Increased electric conductivity, and increased resistance to corrosion due to copper coating

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
303547	2.0	5/64	25	K 435 *BIG PACK
303549	2.4	3/32	25	
303551	3.2	1/8	25	
303553	4.0	5/32	25	
303555	5.0	3/16	25	

* Packaging alternatives according to the order : 30 - 350 - 550 - 1000 Kg

Approvals :

S2 Si x ELIFLUX BFB : ABS, LR, BV, CE, DB, SEPRO | S2 Si : TSE, CE, GOST-R, SEPRO | S2 Si x ELIFLUX BFF : BV, ABS, CE, SEPRO

1) Copper Coated

Submerged Arc Welding Wire



S 2 Mo

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 14171-A :	S 2 Mo
EN ISO 14171-A :	S 2 Mo
AWS A5.23 :	EA 2

C	Si	Mn	Mo	Cu
0.12	0.10	1.0	0.5	<0.30

Mechanical Properties - (Typical) :

Sumerged Arc Flux	AWS A5.23	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (Lo-5do)(%)	Impact Strength ISO-V(J)		
					-20°C	-30°C	-40°C
ELIFLUX BFB	F8A4-EA2-A2	490	600	26	90	---	60
ELIFLUX BFF	F8A4-EA2-A2 / F8P5-EA2-A2	480	570	27	---	---	70
ELIFLUX BAB-S	F8A4-EA2-A3	500	600	26	---	---	60
ELIFLUX PIPE	F7 A4-EA2-A4	510	640	25	---	---	60

Chemical Composition of Weld Metal - % (Typical)

Sumerged Arc Flux	C	Si	Mn	Mo
ELIFLUX BFB	0.06	0.40	1.40	0.50
ELIFLUX BFF	0.07	0.25	1.15	0.45
ELIFLUX BAB-S	0.07	0.55	1.70	0.50
ELIFLUX PIPE	0.06	0.40	1.40	0.50

Typical Base Material Grades :

* Pipe Steels : L485MB(X70) * Boiler Steels : 16Mo3, P355 GH * Fine-grained Steels : S460N, P460N

Features and Applications :

* Specific applicability in welding high-strength low-alloyed steels and creep-resisting steels.

* Weld metal of 1/2 Mo-alloy with resistance to creep at high-temperature applications.

* Serviceability at temperatures of values up to 500 °C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
303516	2.0	5/64	25	K 435 *BIG PACK
303522	2.4	3/32	25	
303529	3.2	1/8	25	
303682	4.0	5/32	25	
303684	5.0	3/16	25	

* Packaging alternatives according to the order : 30 - 350 - 550 - 1000 Kg

Approvals :

S2Mo X ELIFLUX BFB : BV, ABS, CE, SEPRO

S2Mo : TSE, TUV, CE, GOST-R, DB, SEPRO

S2Mo X ELIFLUX BFF : DNV-GL, BV, ABS, CE, DB, SEPRO

S2Mo X ELIFLUX BAB-S : ABS, CE, SEPRO

1) Copper Coated

Submerged Arc Welding Wire



S 2 Mo TiB

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 26304	:	S Z
EN ISO 26304	:	S Z
AWS A5.23	:	EA2TiB

C	Si	Mn	Mo	B	Ti
0.08	0.15	1.10	0.55	0.015	0.15

Mechanical Properties - (Typical) :

Submerged Arc Flux	AWS A5.23	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
					0°C	-20°C	-30°C
ELIFLUX BFF	F8A0-EG-G	550	650	21	60	45	--
ELIFLUX BFB	F9A2-EG-G	580	660	28	---	---	60

Chemical Composition of Weld Metal - % (Typical)

Submerged Arc Flux	C	Si	Mn	Mo	Ti
ELIFLUX BFF	0.06	0.65	1.85	0.50	0.06
ELIFLUX BFB	0.06	0.50	1.70	0.50	0.06

Typical Base Material Grades :

* Pipe steels: L485MB(X70) * Boiler steels: 16Mo3 * Fine-grained steels: S460N, P460N

Features and Applications :

- * Specific applicability in welding high-strength low-alloyed steels and creep-resisting steels.
- * Serviceability at temperatures of values up to 500 °C.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
	mm	inch		
304737	2.4	3/32	25	K 435 *BIG PACK
304485	3.2	1/8	25	
304486	4.0	5/32	25	

* Packaging alternatives according to the order ; 30 - 350 - 550 - 1000 Kg

Approvals :

S2 Mo TiB : CE, GOST-R, SEPRO

Submerged Arc Welding Wire



S3

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 14171-A	:	S 3
EN ISO 14171-A	:	S 3
AWS A5.17	:	EH 10 K

C	Si	Mn	Cu
0.12	0.20	1.5	<0.30 ¹

Mechanical Properties - (Typical) :

Sumerged Arc Flux	AWS A5.17	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (Lo=5d ₀)(%)	Impact Strength ISO-V(J)		
					0°C	-20°C	-40°C
ELIFLUX BAR	F7A0-EH10K	420	520	min.22	60	47	---
ELIFLUX BFB	F7A4-EH10K	420	500	min.22	120	---	47

Chemical Composition of Weld Metal - % (Typical)

Sumerged Arc Flux	C	Si	Mn
ELIFLUX BAR	0.07	0.30	1.45
ELIFLUX BFB	0.08	0.30	1.50

Typical Base Material Grades :

- * Structural Steels : S355JR
- * Pipe Steels : X42 - X52
- * Boiler Steels : P355GH
- * Ship-Construction Steels : A, B, D, E
- * Fine-grained Steels : P355N, S355N

Features and Applications :

* Applicability in welding general-purpose structural steels ranging to S355JR as well as in welding fine-grained steels with tensile strength values of up to 520 N/mm², steam boilers made of the material 19 Mn 6, in ship welding and pipe welding.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
-	1.6	1/16	25	K 435 *BIG PACK
300855	2.0	5/64	25	
300857	2.4	3/32	25	
300858	3.2	1/8	25	
-	4.0	5/32	25	
-	5.0	3/16	25	

* Packaging alternatives according to the order : 30 - 350 - 550 - 1000 Kg

Approvals :

S3 : TSE, CE, GOST-R, SEPRO

1) Copper Coated

Submerged Arc Welding Wire



S 3 Si

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 14171-A :	S 3 Si
EN ISO 14171-A :	S 3 Si
AWS A5.17 :	EH 12 K

C	Si	Mn	Cu ¹
0.10	0.30	1.70 - 1.80	<0.30

Mechanical Properties - (Typical) :

Sumerged Arc Flux	AWS A5.17	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
					0°C	-20°C	-40°C
ELIFLUX BFF	F7A4-EH 12K	490	580	26	100	---	70
ELIFLUX BFB	F7A4-EH 12K	460	550	27	---	---	60
ELIFLUX BAB-S	F7A4-EH 12K	545	645	26	---	---	60

Chemical Composition of Weld Metal - % (Typical)

Sumerged Arc Flux	C	Si	Mn
ELIFLUX BFF	0.10	0.35	1.65
ELIFLUX BFB	0.07	0.40	1.80
ELIFLUX BAB-S	0.07	0.60	1.70

Typical Base Material Grades :

* Fine-grained Steels : S460N, P460N

Features and Applications :

* Inclusion of high contents of Mn-Si alloy.

* Applicability in submerged arc welding processes of medium- and high-strength structural steels and of steels in offshore structures.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
304436	2.0	5/64	25	K 435 *BIG PACK
303557	2.4	3/32	25	
303559	3.2	1/8	25	
303561	4.0	5/32	25	
304437	5.0	3/16	25	

* Packaging alternatives according to the order ; 30 - 350 - 550 - 1000 Kg

Approvals :

S3 Si x ELIFLUX BFF : BV, ABS, CE, SEPRO

S3 Si : CE, GOST-R, TSE, SEPRO

S3 Si x ELIFLUX BAB-S : ABS, CE, SEPRO

1) Copper Coated

Submerged Arc Welding Wire



S 3 Mo

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 14171-A	:	S 3 Mo
EN ISO 14171-A	:	S 3 Mo
AWS A5.17	:	E A 4

C	Si	Mn	Mo	Cu ¹
0.10	0.15	1.50	0.50	<0.30

¹ : copper-plated

Mechanical Properties - (Typical) :

Sumerged Arc Flux	AWS A5.23	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
					0°C	-20°C	-40°C
ELIFLUX BFF	F8 A4-EA4-A4	540	630	27	110	---	65
ELIFLUX PIPE	F8 A4-EA4-A4	530	620	25	100	---	50

Chemical Composition of Weld Metal - % (Typical)

Sumerged Arc Flux	C	Si	Mn	Mo
ELIFLUX BFF	0.07	0.50	1.75	0.50
ELIFLUX PIPE	0.06	0.40	1.60	0.45

Typical Base Material Grades :

* Fine-grained Steels : S460N, P460N

Features and Applications :

* Suitability to high-quality welding of Mo-alloyed steels, boiler sheet steels, and fine-grained steels.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
305145	2.4	3/32	25	K 435 *BIG PACK
304576	4.0	5/32	25	

* Packaging alternatives according to the order ; 30 - 350 - 550 - 1000 Kg

Approvals :

S3 Mo : TSE, CE, GOST-R, SEPRO

Submerged Arc Welding Wire



S 3 TIB

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 26304-A	:	S Z
EN ISO 26304-A	:	S Z
AWS A5.23	:	E - G

C	Si	Mn	Ti	B
0.08	0.25	1.40	0.14	0.011

Mechanical Properties - (Typical) :

Submerged Arc Flux	AWS A5.23	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (L _o =5d _o)(%)	Impact Strength ISO-V(J)		
					20°C	-20°C	-40°C
ELIFLUX PIPE	F8A0-EG-G	520	630	24	80	50	--

Chemical Composition of Weld Metal - % (Typical)

Submerged Arc Flux	C	Si	Mn
ELIFLUX PIPE	0.06	0.50	1.30

Typical Base Material Grades :

* Pipe Steels : X52, X56, X60, X65, X70, X80,
L360MB, L385M, L415MB, L450MB, L485MB, L555MB

Features and Applications :

* Used in submerged arc welding of pipe steels.

* It is suitable to use for multi and two run technique and applications with high toughness requirements.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
...	1.6	1/16	25	K 435 *DRUM
...	2.0	5/64	25	
...	2.4	3/32	25	
...	3.2	1/8	25	
305792	4.0	5/32	25	
...	5.0	3/16	25	

* Packaging alternatives according to the order ; 400 - 600 Kg

Approvals :

S3 TIB : GOST-R, CE, SEPRO

Submerged Arc Welding Wire



S 3 Mo TiB

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 26304-A :	S Z
EN ISO 26304-A :	S Z
AWS A5.23 :	E A 2 TiB mod.

C	Si	Mn	Mo	Ti	B
0.08	0.25	1.20	0.52	0.14	0.011

Mechanical Properties - (Typical) :

Sumerged Arc Flux	AWS A5.23	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
					20°C	-20°C	-40°C
ELIFLUX PIPE	F8A0-EA2TiB(mod.)-G	545	680	26	100	60	--

Chemical Composition of Weld Metal - % (Typical)

Sumerged Arc Flux	C	Si	Mn	Mo
ELIFLUX PIPE	0.06	0.60	1.50	0.40

Typical Base Material Grades :

* Pipe Steels : X52, X56, X60, X65, X70, X80,
L360MB, L385M, L415MB, L450MB, L485MB, L555MB

Features and Applications :

- * Wire for submerged arc welding of pipeline steels.
- * Optimized for multi-arc welding using two-run technique.
- * For applications with high toughness requirements.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
305133	2.0	5/64	25	K 435 *BIG PACK
305134	2.4	3/32	25	
305135	3.2	1/8	25	
305137	4.0	5/32	25	

* Packaging alternatives according to the order ; 30 - 350 - 550 - 1000 Kg

Approvals :

GOST-R, CE, SEPRO

Submerged Arc Welding Wire



S 3 NiMo 1

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS EN ISO 26304-A :	S3 Ni1Mo
EN ISO 26304-A :	S3 Ni1Mo
AWS A5.23 :	EF3

C	Si	Mn	Mo	Ni
0.12	0.20	1.75	0.55	0.90

Mechanical Properties - % (Typical) :

Sumerged Arc Flux	AWS A5.23	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (Lo=5do)(%)	Impact Strength ISO-VJ		
					0°C	-20°C	-40°C
ELIFLUX BFF	F9 A4-EF3-F3	580	650	21	--	100	60

Chemical Composition of Weld Metal - % (Typical)

Sumerged Arc Flux	C	Si	Mn	Mo	Ni
ELIFLUX BFF	0.09	0.25	1.65	0.55	0.90

Typical Base Material Grades :

- * Pipe Steels : X52, X56, X60, X65, X70, X80,
L360MB, L385M, L415MB, L450MB, L485MB, L555MB
- * Fine-grained Steels : S550QL1 S380N, S500N, S380NL, S500NL
- * Pressure Steels : 20 MnMoNi5-5

Features and Applications :

- * S3NiMo 1 is a nickel-molybdenum-alloyed, copper-coated wire designed for submerged arc welding of structural steels and higher tensile steels.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
305139	2.0	5/64	25	K 435 *BIG PACK
305140	2.4	3/32	25	
305141	3.2	1/8	25	
305143	4.0	5/32	25	

* Packaging alternatives according to the order ; 30 - 350 - 550 - 1000 Kg

Approvals :

GOST-R, CE, SEPRO

Submerged Arc Welding Wire



S 3 NiCrMo 2.5

Standards :

TS EN ISO 26304-A	:	S 3 Ni2.5CrMo
EN ISO 26304-A	:	S 3 Ni2.5CrMo
AWS A5.23	:	EM4 (mod.)

Chemical Composition of Welding Wire-
% (Typical) :

C	Si	Mn	Mo	Ni	Cr
0.11	0.17	1.40	0.55	2.40	0.70

Mechanical Properties - % (Typical) :

Sumerged Arc Flux	AWS A5.23	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
					-20°C	-40°C	-60°C
ELIFLUX BFF	F11A8-EM4(mod.)-M4	740	850	20	90	85	min.27
ELIFLUX BAB-S	F11A4-EM4(mod.)-M4	735	855	18	70	60	--

Chemical Composition of Weld Metal - % (Typical)

Sumerged Arc Flux	C	Si	Mn	Mo	Ni	Cr
ELIFLUX BFF	0,06	0,30	1.50	0.50	2.20	0.50
ELIFLUX BAB-S	0,05	0,65	1.80	0.48	2.05	0,35

Typical Base Material Grades :

* Fine-grained steels: S550QL1, S690QL1

Features and Applications :

* S3NiCrMo 2.5 is a CrNiMo alloyed, copper-coated wire designed for submerged arc welding of high strength quenched, tempered structural steels and extra high tensile steels.

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight Kg	Package Type
...	1.6	1/16	25	K 435 *BIG PACK
...	2.0	5/64	25	
304545	2.4	3/32	25	
304200	3.2	1/8	25	
304201	4.0	5/32	25	
...	5.0	3/16	25	

* Packaging alternatives according to the order ; 30 - 350 - 550 - 1000 Kg

Approvals :

S 3 NiCrMo 2.5 : GOST-R, CE, SEPRO

S 3 NiCrMo 2.5 x ELIFLUX BFF : ABS

Mechanical Properties Welding Metal (Typical) : _____

Submerged Arc Welding Wire	Submerged Arc Welding Wire Flux	Standarts (AWS A5.9)	Tensile Strength N/mm ²	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
					0°C	-110°C	-196°C
ELOX UP 307	ELIFLUX BSS-A	ER 307	---	---	---	---	---
ELOX UP 308 L	ELIFLUX BSS-A	ER 308L	555	42	72	48	41
ELOX UP 309 L	ELIFLUX BSS-A	ER 309L	545	36	---	---	---
ELOX UP 316 L	ELIFLUX BSS-A	ER 316L	570	39	63	52	40
ELOX UP 2209	ELIFLUX BSS-D	ER 2209	830	32	---	---	---
ELOX UP 410	ELIFLUX BSS-F	ER 410	530	25	---	---	---
ELOX UP 430	ELIFLUX BSS-F	ER 430	460	20	---	---	---

Chemical Composition of Welding Metal % (Typical) :

Product	Dust Under Dust	C	Si	Mn	Mo	Cr	Ni	P	S
ELOX UP 308L	ELIFLUX BSS-A	0.030	0.53	1.55	---	19.25	9.36	0.015	0.008
ELOX UP 309L	ELIFLUX BSS-A	0.028	0.42	1.65	0.55	24.25	13.16	0.014	0.009
ELOX UP 316L	ELIFLUX BSS-A	0.030	0.40	1.75	2.15	19.10	11.30	0.018	0.010
ELOX UP 2209	ELIFLUX BSS-D	0.030	0.90	1.85	3.15	21.85	8.50	0.018	0.008
ELOX UP 410	ELIFLUX BSS-F	0.110	0.31	0.39	0.13	13.20	0.37	0.028	0.010
ELOX UP 430	ELIFLUX BSS-F	0.040	0.40	0.50	0.20	16.50	0.18	0.020	0.010

Package Type :

Product	Product Code	Diameter (mm)	Weight (kg)
ELOX UP 307	607593	2.40	25
ELOX UP 308L	603452	2.40	25
	603453	3.20	
ELOX UP 309L	605235	2.40	25
	603456	3.20	
	603457	4.00	
ELOX UP 316L	603458	2.40	25
	603459	3.20	
ELOX UP 2209	608138	2.40	25
	608139	3.20	
ELOX UP 410	603384	4.00	25
ELOX UP 430	604384	4.00	25

Approvals : _____

GOST-R, CE, SEPRO

GeKa ELOX UP 2209 x 'GeKa ELIFLUX BSS-D : CE, Class NK

Submerged Arc Welding Flux



ELIFLUX BAR

Standards :

TS EN ISO 14174 : SA AR 1 77 AC
EN ISO 14174 : SA AR 1 77 AC
AWS A5.17 : F6AZ-EL12 / F7AZ-EM12

Basicity 0,7

Mechanical Properties - % (Typical) : _____

SAW Wire	AWS A5.17	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (Lo=do)(%)	Impact Strength ISO-V(J)		
					0°C		
S1	F6AZ-EL 12	360	460	26	47		
S2	F7AZ-EM 12	400	500	30	60		

Chemical Composition of Welding Metal % (Typical) : _____

SAW Wire	C	Si	Mn
S1	0.07	0.50	1.10
S2	0.07	0.60	1.35

Features and Applications : _____

- * A type of SAW rutile flux structured from agglomerated aluminate.
- * Applicability in single-pass joint welding and fillet welding of particularly spiral welded pipes, LPG cylinders, general-purpose construction steels, boiler sheet, and shipbuilding steels.
- * Low consumption of flux. Basicity : 0.7
- * Straight and nonporous welding beads.
- * Formation of very easily-removed slag.
- * Requirement of re-drying at 250-350 °C for 2 hours.

Operating Data : _____

Product Code	Package Weight (Kg)	Package Type
304616	25	Kraft Package

Approvals : _____

S1 x ELIFLUX BAR : BV, DNV-GL, TL, ABS, LR, CE, SEPRO
ELIFLUX BAR : GOST-R, CE, SEPRO

S2 x ELIFLUX BAR : BV, ABS, CE, DB
SEPRO

Standards :

TS EN ISO 14174 : SA AB 1 67 AC
EN ISO 14174 : SA AB 1 67 AC
AWS A5.17 : F7 A5-EM12 / F7A5-EM12K

Basicity 1.60

Mechanical Properties - % (Typical) : _____

SAW Wire	AWS A5.17	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation (Lo=d0)(%)	Impact Strength ISO-V(J)		
					-30°C	-40°C	-45°C
S2	F7A5-EM 12	430	520	30	110	75	>47
S2Si	F7A5-EM 12 K	465	570	30	100	85	>47

Chemical Composition of Welding Metal % (Typical) : _____

SAW Wire	C	Si	Mn
S2	0.05	0.30	1.40
S2Si	0.06	0.40	1.40

Features and Applications : _____

- * SAW flux type composed of agglomerated Aluminate-basic.
- * Basicity: 1.6 (According to Boniszewski formula).
- * Applicability in single and multi-pass welding of general-purpose construction steels.
- * Formation of easily-removed slag.
- * Requirement of re-drying at 300 - 350 °C for 2 hours.

Operating Data : _____

Product Code	Package Weight (Kg)	Package Type
306351	25	Kraft Package

Approvals : _____
CE, SEPRO

Submerged Arc Welding Flux



ELIFLUX BBR-AG

Standards :

TS EN ISO 14174	:	SA AB 1 67 AC H5
EN ISO 14174	:	SA AB 1 67 AC H5
AWS A5.17	:	F6AZ-EL12 / F7A0-EM12 F7A0-EM12K

Basicity
1.1

Mechanical Properties - % (Typical) :

SAW Wire	AWS A5.17	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)	
					0°C	-20°C
S 1	F6AZ-EL12	370	480	30	55	---
S 2	F7A0-EM12	410	490	32	---	50
S 2 Si	F7A0-EM12K	420	510	29	---	50

Chemical Composition of Weld Metal % (Typical) :

SAW Wire	C	Si	Mn
S 1	0.06	0.30	0.90
S 2	0.10	0.35	1.20
S 2 Si	0.07	0.40	1.30

Features and Applications :

- * Agglomerated aluminate-basic type welding flux.
- * Especially suitable for singlepass joining and fillet welding of LPG cylinders, welded spiral pipes (with S2 combination up to XS2 pipe), general constructions, steels, boilerplates and ship plates.
- * The weld bead looks more like a rutile type weld bead.
- * Easy removable slag.
- * Before using : The welding flux should be dried 2h between 300 - 350 °C.

Operating Data :

Product Code	Weight (Kg)	Packaging
305068	25	Kraft Bag

Approvals :

GOST-R, CE, SEPRO

Standards :

TS EN ISO 14174	: SA AB 1 68 AC H5
EN ISO 14174	: SA AB 1 68 AC H5
AWS A5.17	: F6A2-EL12 / F7A4-EM12 / F7A2-EM12K / F7A4-EH12K
AWS A5.23	: F8A4-EA2-A2

Basicity
1.4

Mechanical Properties - % (Typical) :

SAW wire	AWS A5.17 / AWS A5.23	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
					-20°C	-30°C	-40°C
S1	F6A2-EL12	380	480	28	55	47	---
S2	F7A4-EM 12	460	525	30	70	55	50
S2 Si	F7A2-EM12K	430	530	28	80	70	---
S3 Si	F7A4-EH12K	460	550	27	---	---	60
S2 Mo	F8A4-EA2-A2	490	600	26	90	---	60

Chemical Composition of Weld Metal % (Typical) :

SAW wire	C	Si	Mn	Mo
S1	0.06	0.25	1.20	---
S2	0.07	0.35	1.50	---
S2 Si	0.05	0.40	1.25	---
S3 Si	0.07	0.40	1.80	---
S2 Mo	0.06	0.40	1.40	0.50

Features and Applications :

- * A type of submerged welding (SAW) basic flux structured from agglomerated aluminate.
- * Applicability in single-and multi-pass (butt-) joint welding and fillet welding of general-purpose construction steels, shipbuilding stell, boiler sheet, heat-resisting steels, and fine-grained steels.
- * Low consumption of flux.
- * Basicity : 1.4
- * High toughness of weld metal at low temperatures.
- * Formation of easily-removed slag.
- * Requirement of re-drying at 300-350°C for 2 hours.

Operating Data :

Product Code	Weight (Kg)	Packaging
304614	25	Kraft Bag

Approvals :

S2 X ELIFLUX BFB : TL, DNV-GL, BV, ABS, LR, RS, NK, RINA, CE, DB, SEPRO
 S2 Si X ELIFLUX BFB : ABS, LR, CE, DB, SEPRO
 S2 Mo X ELIFLUX BFB : BV, ABS, CE, SEPRO
 ELIFLUX BFB : GOST-R, CE, SEPRO

Standards :

TS EN ISO 14174	: SA AB 1 78 AC H5
EN ISO 14174	: SA AB 1 78 AC H5
AWS A5.17	: F7A4-EM12
AWS A5.23	: F7A4-EA2-A2 / F8A4-EA4-A4

Basicity
1.7

Mechanical Properties - % (Typical) :

SAW Wire	AWS A5.17 / AWS A5.23	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
					0°C	-20°C	-40°C
S2	F7A4-EM 12	460	550	26	--	75	50
S2 Mo	F7A4 EA2-A2	510	640	25	--	--	60
S3 Mo	F8A4-EA4-A4	530	620	25	100	--	50

Chemical Composition of Weld Metal % (Typical) :

SAW Wire	C	Si	Mn	Mo
S2	0.05	0.40	1.35	--
S2 Mo	0.06	0.40	1.40	0.50
S3 Mo	0.06	0.40	1.60	0.45

Features and Applications :

- * SAW flux type composed of agglomerated aluminate Basic.
- * Basicity of the flux According to Boniszewski Formula is 1.7
- * Excellent removal of slags of weld beads formed at high temperatures
- * Suitability for use in both bilateral and tandem (AC/DC) welding operations.
- * Sufficiently high toughness of weld metals obtained particularly by 2-pass welding operations.
- * Suitability for use in welding of high-strength steels.
- * Process requirement of re-drying at 300 - 350 °C for 2 hours.

Operating Data :

Product Code	Weight (Kg)	Packaging
304617	25	Kraft Bag

Approvals :

CE, GOST-R, SEPRO

Submerged Arc Welding Flux



ELIFLUX BAB-S

Standards :

TS EN ISO 14174	: SA AB 1 68 AC H5
EN ISO 14174	: SA AB 1 68 AC H5
AWS A5.17	: F7A4-EH12K / F7A4-EM12 F7A4-EM12K
AWS A5.23	: F8A4-EA2-A3 / F11A4-EM4(mod)-M4 Total

Basicity 2.1

Mechanical Properties - % (Typical) :

SAW Wire	AWS A5.17 / AWS A5.23	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
					-20°C	-30°C	-40°C
S2	F7A4-EM12	430	525	29	---	---	60
S2 Si	F7A4-EM12K	440	550	28	100	---	65
S2 Mo	F8A4-EA2-A3	500	600	26	---	---	60
S3 Si	F7A4-EH12K	545	645	26	---	---	60
S3 NiCrMo 2.5	F11A4-EM(mod)-M4	735	855	18	---	70	60

Chemical Composition of Weld Metal % (Typical) :

SAW Wire	C	Si	Mn	Mo	Ni	Cr
S2	0.08	0.40	1.50	---	---	---
S2 Si	0.07	0.45	1.60	---	---	---
S2 Mo	0.07	0.55	1.70	0.50	---	---
S3 Si	0.07	0.60	1.70	---	---	---
S3 NiCrMo 2.5	0.05	0.65	1.80	0.48	2.05	0.35

Features and Applications :

- * SAW Flux type is composed of agglomerated Aluminate Basic.
- * Weld beads of excellent surface appearance.
- * Slag can be removed easily.
- * This product has high current carrying capacity.
- * GeKa ELIFLUX BAB-S is suitable for multipass and tandem welding especially for manufacturing of spiral pipe.
- * It has suitable of high working speed.
- * Suitable for the use of welding of high strength steels.
- * Process requirement of re-drying at 300 – 350° C for 2 hours.

Operating Data :

Product Code	Weight (Kg)	Packaging
305103	25	Kraft Bag

Approvals :

S2 X ELIFLUX BAB-S : ABS, SEPRO S3NiCrMo2.5 X ELIFLUX BAB-S : ABS, SEPRO S3Si X ELIFLUX BAB-S : ABS, SEPRO
S2Mo X ELIFLUX BAB-S : ABS, SEPRO ELIFLUX BAB-S : CE GOST-R, SEPRO

Submerged Arc Welding Flux



ELIFLUX BFPP

Standards :

TS EN ISO 14174	: SA AB 1 66 AC H5
EN ISO 14174	: SA AB 1 66 AC H5
AWS A5.17	: F7A2-EM12/F7A2-EM12K
AWS A5.23	: F8A4-EA2-A2

Basicity
1.6

Mechanical Properties - % (Typical) :

SAW Wire	AWS A5.17 / AWS A5.23	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)	
					-30°C	-40°C
S2	F7A4-EM 12	430	520	29	60	
S2 Si	F7A2 EM12K	440	515	30	65	
S2 Mo	F8A4-EA2-A2	490	595	26		60

Chemical Composition of Weld Metal % (Typical) :

SAW Wire	C	Si	Mn	Mo
S2	0.06	0.35	1.20	
S2 Si	0.07	0.40	1.25	
S2 Mo	0.07	0.40	1.30	0.50

Features and Applications :

* GeKa ELIFLUX BFPP, is agglomerated aluminate basic flux for submerged arc welding. It features high impact toughness and low hydrogen content. It is suitable for double wire welding and narrow gap welding of thick steel plates and spiral welded pipes. With suitable wires, also can be used for welding of pressure vessels. Flux should be re-dried before use for 2 hours at 300-350 0C.

Operating Data :

Product Code	Weight (Kg)	Packaging
607332	25	Kraft Bag

Approvals :

SEPRO

Submerged Arc Welding Flux



ELIFLUX BFPV

Standards :

TS EN ISO 14174	: SA FB 1 66 AC H5
EN ISO 14174	: SA FB 1 66 AC H5
AWS A5.17	: F7A2-EM12/F7A2-EM12K
AWS A5.23	: F8A4-EA2-A2/F8A5-EA4-A3/ F11A8-EM4(mod)-M4

Basicity 2.8

Mechanical Properties - % (Typical) :

SAW Wire	AWS A5.17 / AWS A5.23	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)			
					-30°C	-40°C	-50°C	-60°C
S2	F7A2-EM12	430	520	29	60			
S2 Si	F7A2-EM12K	440	515	30	65			
S2 Mo	F8A4-EA2-A2	490	595	26		60		
S3 Si	F8A5-EA4-A3	500	588	27		100	80	
S3 NiCrMo 2.5	F11A8-EM4(mod)-M4	700	775	23		55	45	min.27

Chemical Composition of Weld Metal % (Typical) :

SAW Wire	C	Si	Mn	Mo	Cr	Ni
S2	0.06	0.35	1.20		---	---
S2 Si	0.07	0.40	1.25		---	---
S2 Mo	0.07	0.40	1.30	0.50	---	---
S3 Si	0.05	0.30	1.75	0.50	---	---
S3 NiCrMo 2.5	0.06	0.40	1.75	0.50	0.40	2.10

Features and Applications :

* GeKa ELIFLUX BFPV, high basic, is agglomerated fluoride basic flux for submerged arc welding. It features high impact toughness and low hydrogen content. It is suitable for double wire welding and narrow gap welding of thick steel plates, pressure vessels.
Flux should be re-dried before use for 2 hours at 300-350°C.

Operating Data :

Product Code	Weight (Kg)	Packaging
607355	25	Kraft Bag

Approvals :

SEPRO

Submerged Arc Welding Flux



ELIFLUX BFF

Standards :

TS EN ISO 14174	: SA FB 1 65 DC H5
EN ISO 14174	: SA FB 1 65 DC H5
AWS A5.17	: F7A4-EM12 / F7A4-EM12K / F7A4-EH12K
AWS A5.23	: F8A4-EA2-A2 / F9A4-EF3(mod)-F3 / F11A8-EM4(mod)-M4

Basicity 3.0

Mechanical Properties - % (Typical) :

SAW Wire	AWS A5.17 / AWS A5.23	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)			
					-20°C	-30°C	-40°C	-60°C
S2	F7A4-EM12	410	520	24	---	70	60	---
S2 Si	F7A4-EM12K	450	540	23	---	---	65	---
S2 Mo	F8A4-EA2-A2	480	570	27	---	---	70	---
S3 Si	F7A4-EH12K	490	580	26	---	---	60	---
S3 NiMo 1	F9A4-EF3(mod)-F3	580	650	21	100	---	60	---
S3 NiCrMo 2.5	F11A8-EM4(mod)-M4	740	850	20	90	---	85	min.27

Chemical Composition of Weld Metal % (Typical) :

SAW Wire	C	Si	Mn	Mo	Ni	Cr
S2	0.05	0.20	1.00	---	---	---
S2 Si	0.06	0.30	1.10	---	---	---
S2 Mo	0.07	0.25	1.15	0.45	---	---
S3 Si	0.10	0.60	1.70	---	---	---
S3 NiMo 1	0.09	0.25	1.65	0.55	0.90	---
S3 NiCrMo 2.5	0.06	0.30	1.50	0.50	2.20	0.50

Features and Applications :

* This is fluoride-Basic agglomerated flux. * This flux is suitable for welding high strength low alloy steels. * Prefable to use with wire electrodes having higher manganese level. * Recommended for multi-pass welding, in particular when there are high toughness requirement. * Process requirement of re-drying at 300 - 350 °C for 2 hours.

Operating Data :

Product Code	Weight (Kg)	Packaging
304633	25	Kraft Bag

Approvals :

S2Si X ELIFLUX BFF : BV, ABS, CE, SEPRO

S2Mo X ELIFLUX BFF : DNV-GL, BV, ABS, CE, SEPRO

S3Si X ELIFLUX BFF : BV, ABS, CE, SEPRO

ELIFLUX BFF : GOST-R, CE, SEPRO

S3NiCrMo 2.5 X ELIFLUX BFF : ABS, CE, SEPRO

Submerged Arc Welding Flux



ELIFLUX BMS

Standards :

TS EN ISO 14174	: SA CS/MS 1 68 AC
EN ISO 14174	: SA CS/MS 1 68 AC
AWS A5.17	: F6A0-EM12 / F6AZ-EL12

Basicity 1.0

Mechanical Properties - % (Typical) : _____

SAW Wire	AWS A5.17	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
					0°C	-20°C	-30°C
S1	F6AZ-EL12	395	475	24	38	---	---
S2	F6A0-EM12	390	485	30	---	69	---

Chemical Composition of Weld Metal % (Typical) : _____

SAW Wire	C	Si	Mn
S1	0.05	0.80	1.10
S2	0.04	0.45	1.27

Features and Applications : _____

- * A type of SAW flux structured from agglomerated manganese silicate and calcium silicate.
- * Basicity of the flux according to Boniszewski formula is 1.0.
- * Weld beads of excellent surface appearance and with easily removed slags.
- * High resistance to porosity caused by oil and rust.
- * High capacity of current flow.
- * Suitability for use in 2-pass welding operations on thick materials (best choice for base metals in thicknesses of 10-40 mm).
- * Requirement of re-drying at 250-350 °C for 2 hours.

Operating Data : _____

Product Code	Weight (Kg)	Packaging
304632	25	Kraft Bag

Approvals : _____

S2 / ELIFLUX BMS : BV, ABS, CE, SEPRO

ELIFLUX BMS : GOST-R, CE, SEPRO

Submerged Arc Welding Flux



ELIFLUX BSS-A

Standards :

TS EN ISO 14174	:	SA FB 2 65 DC
EN ISO 14174	:	SA FB 2 65 DC

Basicity 2.45

Mechanical Properties - % (Typical) :

SAW Wire	Standards	Tensile Strength (N/mm ²)	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
				0°C	-110°C	-196°C
ELOX UP 307	AWS A5.9 : ER 307	---	---	---	---	---
ELOX UP 308L	AWS A5.9 : ER 308 L	550	41	70	50	40
ELOX UP 309L	AWS A5.9 : ER 309 L	540	35	---	---	---
ELOX UP 316 L	AWS A5.9 : ER 316 L	570	39	60	50	40

Chemical Composition of Weld Metal % (Typical) :

SAW Wire	C	Si	Mn	Mo	Cr	Ni	P	S
ELOX UP 307	---	---	---	---	---	---	---	---
ELOX UP 308 L	0.03	0.54	1.57	---	19.20	9.30	0.018	0.009
ELOX UP 309 L	0.03	0.40	1.63	0.50	24.20	13.10	0.017	0.008
ELOX UP 316 L	0.03	0.40	1.73	2.13	19.00	11.20	0.025	0.008

Features and Applications :

- * A type of fluoride basic flux for SAW. * General use in submerged welding of stainless steel materials.
- * Very high corrosion resistance. * Very good mechanical properties. * Formation of easily-removable slags.
- * Requirement of re-drying at 300-350 °C for 2 hours.

Operating Data :

Product Code	Weight (Kg)	Packaging
603461	25	Kraft Bag

Approvals :

CE, SEPRO

Standards :

TS EN ISO 14174 : SA FB 2 65 DC
EN ISO 14174 : SA FB 2 65 DC

Basicity 2.45

Mechanical Properties - % (Typical) :

SAW	AWS A5.9	Tensile Strength (N/mm ²)	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
				0°C	-110°C	-196°C
ELOX UP 2209	ER 2209	830	32	---	---	---

Chemical Composition of Weld Metal % (Typical) :

SAW Wire	C	Si	Mn	Mo	Cr	Ni	P	S
ELOX UP 2209	0.030	0.90	1.85	3.15	21.15	8.50	0.018	0.008

Features and Applications :

* A type of Fluoride basic flux for SAW. General use in submerged welding of stainless steel materials.
* The corrosion resistance and mechanical properties are good. Formation of easily-removable slags. * Requirement of re-drying at 250-350 OC for 2 hours.

Operating Data :

Product Code	Weight (Kg)	Packaging
608226	25	Kraft Bag

Approvals :

GeKa ELIFLUX BSS-D; CE, GOST-R, SEPRO
GeKa ELOX UP 2209 x ELIFLUX BSS-D; CE, CLASS NK, SEPRO

Submerged Arc Welding Flux



ELIFLUX BSS-F

Standards :

TS EN ISO 14174 : SA FB 2 SA FB 3
EN ISO 14174 : SA FB 2 SA FB 3

Basicity
2.50

Mechanical Properties - % (Typical) :

SAW Wire	Standards	Tensile Strength (N/mm ²)	Elongation (Lo=5do)(%)	Impact Strength ISO-V(J)		
				0°C	-110°C	-196°C
ELOX UP 410	AWS A5.9 : ER 410	530	25	---	---	---
ELOX UP 430	AWS A5.9 : ER 430	460	20	---	---	---

SAW Wire	Standards	Hardness (HB)	
		Single Pass	Three Pass
SUBCOR 41 NiMo - LH	AWS A5.22 : ~ EC 410 NiMo	350	400
SUBCOR 41 NiMo - MH	AWS A5.22 : ~ EC 410 NiMo	400	450
SUBCOR 430	AWS A5.9 : ER 430	---	200

Chemical Composition of Weld Metal % (Typical) :

SAW Wire	C	Si	Mn	Mo	Cr	Ni
ELOX UP 410	0.09	0.31	0.35	---	13.30	0.37
ELOX UP 430	0.04	0.40	0.50	0.20	16.50	0.18
SUBCOR 41 NiMo - LH	0.07	0.35	1.50	1.00	12.50	2.20
SUBCOR 41 NiMo - MH	0.13	1.00	2.00	1.00	12.50	2.50
SUBCOR 430	0.05	0.70	2.00	---	17.00	---

Features and Applications :

- * Non-alloyed, fluoride - basic agglomerated flux.
- * Used in hardfacing cladding for ferritic stainless steel with SUBCOR 430, SUBCOR 41 NiMo-LH, SUBCOR 41 NiMo-MH. Also suitable for joint welding.*
- * All the properties of the wire is transferred to weld pool. Hardness will very depending on it.
- * Suitable for overlay welding with oscillation and single/multi-pass welding.
- * Formation of easilly removable slag.
- * Re-drying at 300-350 °C/2h

Operating Data :

Product Code	Weight (Kg)	Packaging
306239	25	Kraft Bag

Approvals :

CE, SEPRO

Standards :

TS EN ISO 14174	: S A CS 3 69 C Cr DC
EN ISO 14174	: S A CS 3 69 C Cr DC

Mechanical Properties - % (Typical) : _____

SAW	Hardness (HB)
S1	350

Chemical Composition of Welding Metal % (Typical) : _____

Submerged Arc Welding Flux	C	Si	Mn	Cr	Fe
S1	0.10 - 0.30	0.50 - 1.00	1.00 - 1.80	1.60 - 3.00	Rest

Features and Applications : _____

- * A type of SAW flux structured from agglomerated calcium silicate.
- * This submerged arc welding powder and wire specification is used for hardfacing of steels
- * Requirement of re-drying at 250-350 °C for 2 hours.

Operating Data : _____

Product Code	Weight (Kg)	Packaging
304652	25	Kraft Bag
601268	25	Kraft Bag

Approvals : _____

ELIFLUX 350 : GOST-R, CE, SEPRO

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS 3623 EN 12536	:	O I
EN 12536	:	O I
AWS A5.2	:	R 45

C	Si	Mn
0.07	0.1	0.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 245	340 - 440	min. 35 J	min. 14

Features and Applications :

* Oxy-acetylene / gas welding rod to be used for flame welding of all types of machinery parts made of unalloyed steels.

* Body, exhaust, thin sheet pipe welding.

* Neutral flame should be used.

Welding Positions :



Flame Adjustment :

Neutral Flame

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (kg)	Package Type
303776	1.20 x 1000		5	Carton Box
303663	1.60 x 1000	1/16 x 39"	5	
303665	2.00 x 1000	5/64 x 39"	5	
303667	2.40 x 1000	3/32 x 39"	5	
303669	3.20 x 1000	1/8 x 39"	5	
303671	4.00 x 1000	5/32 x 39"	5	

Approvals :

CE, GOST-R, SEPRO



ELIGAS 2

Standards :

Chemical Composition of Welding Wire-
% (Typical) :

TS 3623 EN 12536	:	O Z
EN 12536	:	O Z
AWS A5.2	:	R 60

C	Si	Mn
0.07	0.15	1.0

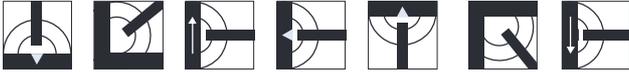
Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 295	440 - 540	min. 39 J	min. 22

Features and Applications :

- * High quality welding of unalloyed or Mo-alloyed steels used in the production of boilers, pipe lines and constructions.
- * Mo-alloyed oxy-acetylene / gas welding with flame welding technique.
- * Excellent yield and welding properties.
- * Ideal welding rod for plumbers.
- * Neutral flame should be used.

Welding Positions :



Flame Adjustment :

Neutral Flame

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (kg)	Package Type
304986	1.60 x 1000	1/16 x 39"	5	Carton Box
304987	2.00 x 1000	5/64 x 39"	5	
304988	2.40 x 1000	3/32 x 39"	5	
304989	3.20 x 1000	1/8 x 39"	5	
304990	4.00 x 1000	5/32 x 39"	5	
304991	5.00 x 1000	3/16 x 39"	5	

Approvals :

CE, GOST-R, SEPRO

Standards :

TS 3623 EN 12536	:	O IV
EN 12536	:	O IV
AWS A5.2	:	R 60-G

Chemical Composition of Welding Wire-
% (Typical) :

C	Si	Mo	Mn
0.07	0.15	0.5	1.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 295	440 - 540	min. 39 J	min. 22

Features and Applications :

- * High quality welding of unalloyed or Mo-alloyed steels used in the production of boilers, pipe lines and constructions.
- * Mo-alloyed oxy-acetylene / gas welding with flame welding technique.
- * Excellent yield and welding properties.
- * Ideal welding rod for plumbers.
- * Neutral flame should be used.

Welding Positions :



Flame Adjustment :

Neutral Flame

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (kg)	Package Type
303515	1.60 x 1000	1/16 x 39"	5	Carton Box
303679	2.00 x 1000	5/64 x 39"	5	
303680	2.40 x 1000	3/32 x 39"	5	
303681	3.20 x 1000	1/8 x 39"	5	
303683	4.00 x 1000	5/32 x 39"	5	

Approvals :

CE, GOST-R, SEPRO

Special Welding Products



Features and Applications :

- * Gouging and removal of old, worn or cracked parts and correction of casting defects.
- * Cleaning defective surfaces and removing faulty welding deposits.
- * Gouging and chamfering all industry metals.
- * Easy striking and restriking , high gouging speed .
- * It burns up impurities, degasses metal, leaving it metalurgically clean operates at all positions , even overhead.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300775	3.20 x 350	1/8 x 14"	180 - 240	5	3820
300776	4.00 x 350	5/32 x 14"	250 - 320	5	5620
300777	5.00 x 350	3/16 x 14"	350 - 450	5	8230

Approvals :

GOST-R , SEPRO

Features and Applications :

- * Cleaning defective surfaces, removing faulty weld deposits, bevelling, gouging, elimination of tears, cutting metal parts to required size.
- * Made of copper-plated graphite. Used along with compressed air.
- * Special-type electrode holder is required.
- * Should be held horizontally to work.
- * Able to operate at all positions.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm)	Pcs/ Box	Welding Current (A)
631658	6.00 x 305	50	300 - 400
631656	8.00 x 305	50	350 - 450
602289	10.00 x 305	50	450 - 600
605477	12.00 x 305	50	800 - 1000

Approvals :

GOST-R , SEPRO

Standards :

TS 9463 EN ISO 1071	:	E C Z Fe-1
EN ISO 1071	:	E C Z Fe-1
AWS A5.15	:	E St

Mechanical Properties : _____

Hardness (cast iron) (HRC)
55

Features and Applications : _____

- * Electrode with steel core.
- * Uses in surfacing of particularly high-hardness zones in cast iron materials.
- * High hardness, allowing direct application without a buffer layer on cast irons.
- * Specific applicability in surfacing of cast iron moulds used in the automotive industry, at radii, of deep drawing dies, and of casting edges.
- * Excellent results obtained in surfacing of launders for sphero- casting as well as in hardfacing applications of cast iron materials.
- * Steady behavior of welding and arc start with almost no spattering.

Welding Positions : _____



Current Type : _____

D.C.(+)
AC

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
302607	2.50 x 350	3/32 x 14"	70-100	5	1852
302499	3.20 x 350	1/8 x 14"	80-130	5	3100

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS 9463 EN ISO 1071	:	E C Ni-CI 1
EN ISO 1071	:	E C Ni-CI 1
AWS A5.15	:	E Ni-CI

Mechanical Properties :

Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
240-300	min. 5	~170 HB

Features and Applications :

* Low-heat-input manual electrode for joining old cast iron . * Electrode with pure nickel core for assembly and surfacing of broken or worn parts made of grey cast iron , also for reclamation of casting defects and for welding grey cast iron to steel . * Ni-cast electrode can be machinable by cutting tools. * Before welding large sections , preheating is usefull . * Depending on quality of cast iron postweld may be needed . * Ensure that all areas to be welded are free from contaminant, remove casting defects such as sand inclusions , oil , damages of fatigue base material . * Controllable weld pool , excellent bonding , easy slag removal, dense, homogeneous and porosity-free deposit.

Welding Positions :



Current Type :

D.C.(-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300778	2.50 x 300	3/32 x 12"	60 - 90	5	1830
300779	3.20 x 300	1/8 x 12"	90 - 120	5	2840
300781	4.00 x 350	5/32 x 14"	120 - 150	5	5150

Approvals :

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS 9483 EN ISO 1071	:	E C Ni-CI 1
EN ISO 1071	:	E C Ni-CI 1
AWS A5.15	:	E Ni-CI

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
285	335	min. 5	~180

Features and Applications :

- * Barium free (contain minimal emission for the environment), Non-conductive (better safety), basic graphite coated electrode with a nickel core wire.
- * Repair welding of problematic cast iron parts of irregular shapes.
- * Joint welding of cast iron parts and cast iron parts to steel parts.
- * Pre-heating to 200°C is recommended for thick-walled components.
- * Welding in short runs and preening are required.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
305770	3.20 x 300	1/8 x 12"	100 - 130	2840

Approvals :

CE, SEPRO

Standards :

TS 9463 EN ISO 1071	: E C NiFe-CI 1
EN ISO 1071	: E C NiFe-CI 1
AWS A5.15	: E NiFe-CI

Mechanical Properties :

Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
450	min. 10	~190 HB

Features and Applications :

- * Include machine bases , pump casing , gear housing , gear boxes , engine blocks , compressors , machine frames , dies , flanges , tables , levers and generators .
- * Low-heat-input manuel electrode for repair and maintenance of cast iron and for joining cast iron with steels or copper alloys. Its excellent weldability makes it easy to use in position.
- * It also suitable for joining and building cast irons .
- * Weld deposit can be machinable by cutting tools .
- * It has high tensile strength and ductility and nodular graphite deposit resists to cracking .
- * For semi-hot and cold welding techniqe of parts made of grey cast iron , malleable cast iron or nodular graphite cast iron , some nickel and copper alloys such as housing and frames of machinery , subject to dynamic and heavy load.

Welding Positions :

MIG & TIG Wire :



GeKaTec NiFe SG

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300773	3,20 x 350	1/8 x 14"	80 - 120	5	3100
300774	4,00 x 350	5/32 x 14"	120 - 150	5	4530

Approvals :

CE, GOST-R, SEPRO

Standards :

TS 9463 EN ISO 1071	: E C NiFe-CI 1
EN ISO 1071	: E C NiFe-CI 1
AWS A5.15	: E NiFe-CI

Mechanical Properties :

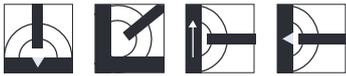
Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
450	min. 10	~190 HB

Features and Applications :

- * Include machine bases , pump casing , gear housing , gear boxes , engine blocks , compressors , machine frames, dies , flanges , tables , levers and generators .
- * Low-heat-input manuel electrode for repair and maintenance of cast iron and for joining cast iron with steels or copper alloys. Its excellent weldability makes it easy to use in position.
- * It also suitable for joining and building cast irons .
- * Weld deposit can be machinable by cutting tools.
- * It has high tensile strength and ductility and nodular graphite deposit resists to cracking .
- * For semi-hot and cold welding technique of parts made of grey cast iron , malleable cast iron or nodular graphite cast iron , some nickel and copper alloys such as housing and frames of machinery , subject to dynamic and heavy load.
- * Weld metal recovery is more than 100 %.

Welding Positions :

MIG & TIG Wire :



GeKaTec NiFe SG

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g / 100 pcs
301054	3,20 x 350	1/8 x 14"	80 - 120	5	3100
301055	4,00 x 350	5/32 x 14"	120 - 150	5	4530

Approvals :

CE, GOST-R, SEPRO

Standards :

TS EN ISO 14172	: E Ni 6182 (mod.) (NiCr15Fe6Mn)
EN ISO 14172	: E Ni 6182 (mod.) (NiCr15Fe6Mn)
AWS A5.11	: ~E NiCrFe-3

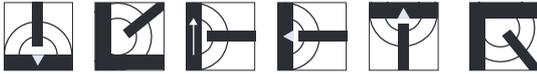
Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _c =5d ₀)(%)	Hardness (HB)
min. 360	660 - 715	40 - 45	200 HB

Features and Applications :

- * A high-alloyed nickel based electrode giving weld metal of Inconel-type resistant to cracking and impact at low temperatures.
- * Excellent result in the production of welding bead subject to various corrosive media and temperatures from -196 to 1000°C. * Mechanical properties of weld is not affected by heat treatment.
- * High resistance to heat , oxidation , and corrosion, also suitable for nickel alloys such as Inconel and Incoloy. * Joint welding of different steels with each other. * Also include cement kiln rings , blast furnace components , chemical containers and liquid gas installations .
- * It is also used in crack repairing and joint welding .

Welding Positions :



Current Type :

D.C.(+)

MIG & TIG Wire :

GeKaTec 7015 SG

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300753	2,50 x 250	3/32 x 10''	50-60	4	1600
300754	3,20 x 300	1/8 x 12''	70-95	5	2850
300755	4,00 x 350	5/32 x 14''	90-120	5	5000
305183	5,00 x 350	3/16 x 14''	130-160	5	---

Approvals :

CE, GOST-R, SEPRO

Standards :

AWS A5.11 : ~E NiCrFe-3

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Impact Strength (ISO-V/+20C)	Impact Strength (ISO-V/-196C)
min. 380	min. 550	min. 30	min. 70 J	min. 50 J

Features and Applications :

- * Nickel based basic type electrode
- * Applicability in welding high-temperature steels and low-temperature alloyed or unalloyed steels, Nickel & Ni-alloys, casting steels.* Also include cement kiln rings , blast furnace components , chemical containers and liquid gas installations .
- * Used for the materials which are difficult to welding.
- * Electrode has a stabil arc.
- * The weld metal is resistant to cracking (cracking test results are suitable).
- * Weldability in all position expecially for vertical upward position (PF)

Welding Positions :



Current Type :

D.C.(+)

Diameter, Current & Weight

Product Code	Ø x l (mm)	Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
306180	2,50 x 250	70-100	5	2640
306234	3,20 x 300	80-130	5	4620
306181	4,00 x 350	130-160	5	5420

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 3581 - A	:	E 29 9 R 12
EN ISO 3581 - A	:	E 29 9 R 12
AWS A5.4	:	~E 312-16

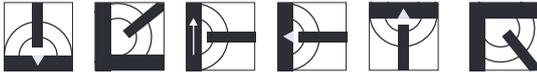
Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L _c =5d ₀)(%)	Hardness (HB)
min. 450	790 - 860	20 - 25	250 - 300

Features and Applications :

- * Include rebuilding gear teeth, repairing cracks in casing , buffering layers and repairs on earthmoving and drilling equipment and rebuilding worn shafts .
- * Materials of low weldability such as unalloyed high carbon steels, low and high alloyed steels, tool steels, high speed steels, manganese hardening steels , rail steels and iron based cast materials .
- * It is also extremely usefull for repairs where the base metal is unknown grade steels .
- * High alloyed special manual electrode for joining a broad range of difficult-to-weld metals including special , austenitic-manganese, air hardening materials for dissimilar joining .
- * Rutile type austenitic-ferritic electrode containing 29 9 Cr-Ni-Cobalt.
- * Weld metal hardness increases by work hardening and cold forming . * Depending on the ferrit content suitable for designed for joining difficult-to-weld steels , welding of dissimilar joints and rebuilding or buffering before hardsurfacing.

Welding Positions :



Current Type :

D.C.(+)/AC

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300748	2.50 x 250	3/32 x 10"	40-70	4	1350
300749	3.20 x 350	1/8 x 14"	70-100	5	3350
300750	4.00 x 350	5/32 x 14"	90-140	5	4500

Approvals :

CE, GOST-R, SEPRO

Standards :

TS EN ISO 3581 - A	:	E 29 9 R 52
EN ISO 3581 - A	:	E 29 9 R 52
AWS A5.4	:	~E 312-26

Mechanical Properties :

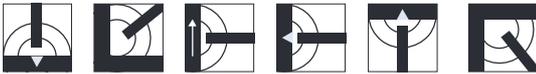
Tensile Strength (N/mm ²)	Elongation (L _c =5d ₀)(%)	Hardness (HB)
790 - 830	min. 20	220 - 300

Features and Applications :

* It is also used for joining difficult-to-weld steels ,building thick machine parts, bridge building materials , low and high alloyed structural steels ,cast steels, roller presses , extruder screws , cuppling boxes and sleeves , joining mechanically welded parts and coating turbine components, seats of super heater steam valves and heat exchangers, etc..

* Rutile electrode with high deposition rate containing 29 9 Cr-Ni-Cobalt. Suitable for joining and build up welding of materials have tendency to cracking due to their high tensile and impact strength .

Welding Positions :



Current Type :

D.C.(+)/AC

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300746	3,20 x 350	1/8 x 14''	100-160	5	5100
300747	4,00 x 350	5/32 x 14''	140-200	5	7600

Approvals :

CE, GOST-R, SEPRO

Standards :

TS EN ISO 3581 - A	: E Z 18 9 Mn Mo R 53
EN ISO 3581 - A	: E Z 18 9 Mn Mo R 53
AWS A5.4	: ~E 307-26

Mechanical Properties :

Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)	
		As Welded	After Working
600 - 700	min. 40	200	410

Features and Applications :

- * Rebuilding or buffering before hardsurfacing and surfacing of rails and railway equipments.
- * Welding 12-14 % Manganese steels, armour and hard to weld steels.
- * In cement industry for welding buffer layer of mill hammers, rollers, and friction plates of crushers etc.
- * Rutile type austenitic electrode containing 18 Cr / 8 Ni with manganese.
- * The corrosion resistant weld metal is also resistant to impact, pressure, cavitation and thermal shocks.
- * Weld metal hardness increases by cold forming and work hardening.

Welding Positions :



Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300790	3.20 x 350	1/8 x 14"	90-130	5	5050
300791	4.00 x 350	5/32 x 14"	130-160	5	7500
300792	5.00 x 350	3/16 x 14"	160-190	5	11500

Approvals :

CE, GOST-R, SEPRO

Standards :

TS EN ISO 3581 - A :	E Z 13 B 62
EN ISO 3581 - A :	E Z 13 B 62
AWS A5.4 :	E 410 - 25 (mod.)

Mechanical Properties : _____

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)
740	950 - 1100	min. 15

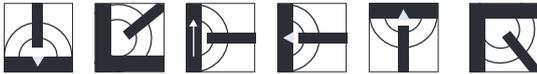
Features and Applications : _____

* The application, of cavitation resistancy, build up welding on parts working in water, stream and seawater, Hydroelectric power plants and turbine blades, propellers parts.

* Basic type high recovery electrode for use in joint welding and build up welding application to 12-14 % Cr ferritic-martensitic stainless steel and cast steels.

* It is for build up welding on impermeable surfaces of gas, water and steam armatures of unalloyed and low alloyed steels for service temperatures up to 450° C.

Welding Positions : _____



Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
304853	2.50 x 350	3/32 x 14 ^{1/2}	60-90	4	2510
300808	3.20 x 350	1/8 x 14 ^{1/2}	90-120	5	3700
300809	4.00 x 350	5/32 x 14 ^{1/2}	110-160	5	5540
304753	5.00 x 350	3/16 x 14 ^{1/2}	150-190	5	6970

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 1
EN 14700	:	E Fe 1
DIN 8555	:	E 1 - UM - 300

Mechanical Properties : _____

Hardness (HB)
325 - 350

Features and Applications : _____

- * Weld metal has high machinability and high efficiency.
- * Risk of cracking is very low.
- * Used in joining of high tensile strength steels, some parts exposed to impact and abrasion as a buffering and filler electrode.
- * Rails, switches and crossings, ladles, gear parts, crane wheels are typical application areas of this electrode.

Welding Positions : _____

Flux Cored Wire : _____



GeKa HARDCOR 300 G
GeKa HARDCOR 300 O

Current Type : _____

D.C.(+) / AC

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300766	3.20 x 350	1/8 x 14"	100-140	5	3645
300767	4.00 x 350	5/32 x 14"	140-180	5	5300

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 9
EN 14700	:	E Fe 9
DIN 8555	:	E 7-UM-250KP

Mechanical Properties : _____

Hardness (HB)	
As Welded	After Working
250	550

Features and Applications : _____

- * Suitability for uses in hardfacing of high-manganese steels.
- * Most common applications in hardfacing of various equipment parts that are exposed to deep impacts, pressure and wearing in cement, mining and earth-moving industries.
- * High resistance to impact and to friction.
- * Increasing hardness of weld metal after operations including its exposure to impact and friction.
- * High toughness.
- * Requirement of electrode holding in perpendicular direction to work piece, by maintaining short and uniformly-exposed arc.
- * Requirement of two-pass buffer-layering with the electrode GeKaTec 660 HD for providing good connection and crack protection in case of thick-layer hardfacing operations.
- * Requirement of re-drying at 300 °C for 2 hours.

Welding Positions : _____ Flux Cored Wire : _____



GeKa HARDCOR 660 O

Current Type : _____

D.C.(+) / AC

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
302594	3.20 x 350	1/8 x 14"	110-140	5	4790
302596	4.00 x 350	5/32 x 14"	150-180	5	7320

Approvals : _____

CE, GOST-R, SEPRO

Mechanical Properties : _____

Hardness As Welded	After Working
250 - 300 (HB)	400 - 450 (HB)

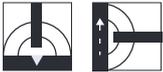
Features and Applications : _____

* Kavtam is Cobalt, Chromium, Manganese and Silicon alloyed manual stick electrode and used for hardfacing work pieces which are subjects to severe cavitation and erosion. The weld deposit is also resistant to corrosion, cavitation and erosion at high temperatures. Main applications are hardfacing of hydraulic turbines, pumps, valves, casings, rotors.

The hardness after welding is 250-300HB and after workhardened is approximately 450HB.

Re-dry for 2 hours at 300 °C.

Welding Positions : _____



Current Type : _____

D.C.(+) / AC

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
304457	3.20 x 350	1/8 x 14"	90 - 130	4930

Approvals : _____

GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 7
EN 14700	:	E Fe 7
DIN 8555	:	E 6-UM-55 GRP

Mechanical Properties : _____

Hardness (HRC)
55

Features and Applications : _____

- * Applications include shear blades, moulds and related parts for pressure casting, rollers, crusher jaws and other parts which are required to resist the wear under high impact with abrasion, also excavator digger parts made of carbon steel with unalloyed core, all types of alloyed steels or manganese hardened steels.
- * Heavy coated high alloy hardfacing electrode for parts requiring extremely hard surface.
- * Excellent resistance to wear caused by high pressure shocks, abrasion and cracking.
- * It has high deposition rate, easy striking and contact weldability and allows super imposed multi-pass coatings.

Welding Positions : _____ Flux Cored Wire : _____



GeKa HARDCOR 600 G

MAG Wire : _____

GeKaTec 600 G

Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
304121	2,50 x 350	3/32 x 14 ¹¹	90 -120	5	2800
300816	3,20 x 350	1/8 x 14 ¹¹	125-160	5	4400
300817	4,00 x 350	5/32 x 14 ¹¹	160-220	5	7000
300818	5,00 x 350	3/16 x 14 ¹¹	220-250	5	11600

Approvals : _____

GOST-R, CE, SEPRO

Standards :

TS EN 14700	:	E Z Fe 14
EN 14700	:	E Z Fe 14
AWS A5.13	:	~E FeCr-A8
DIN 8555	:	E 10-UM-60 GRZ

Mechanical Properties : _____

Hardness (HRC)
62 - 64

Features and Applications : _____

*Application includes dredger bucket edges , mixer blades,sand pumps,conveyor screws and chains , hammers ,crushers,guide plates used in brick and earth,mine,cement industries.

*Required hardness obtainable in single run.

*Heavy coted electrode with high deposition rate particularly for hardfacing parts subjected to heavy abrasion together with medium impact. It is used for hardfacing of all unalloyed carbon steels and 12-14% manganese steels .

Welding Positions : _____ Flux Cored Wire : _____



GeKa HARDCOR 63 O

Current Type : _____

D.C.(+/-)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300769	3.20 x 350	1/8 x 14"	100 - 130	5	4980
300770	4.00 x 350	5/32 x 14"	130 - 160	5	7710
300771	5.00 x 350	3/16 x 14"	160 - 190	5	11970

Approvals : _____

GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 16
EN 14700	:	E Fe 16
DIN 8555	:	E 10-UM-65 R

Mechanical Properties :

Hardness (HRC)	
Pass 1	Pass 2
61 - 65	64 - 68

Features and Applications :

* A special kind of electrode basically containing Chromium-boron carbide alloy. * Applicability in hardfacing of parts that are exports to wearing in mines or quarries, in soil or cement industries, and in similar fields. * Uses in hardfacing of all wear-resistant parts such as buckets or their teeth of heavy construction equipments, drill bits, twists used in brickworks, mud pumps, mixer blades, agricultural machines, crusher jaws and rolls as well as springs. * Very high resistance to wear. * High fusibility. * High recovery of weld metal. * Machinability by grinding only. * Recommended buffer layering through a more basic type of electrode or through the GeKaTec electrode 660 HD. * Holding required in perpendicular direction to that of the welding work.

Welding Positions :



Current Type :

D.C.(+) / AC

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
302586	3.20 x 350	1/8 x 14"	110 - 150	5	5200
302435	4.00 x 350	5/32 x 14"	140 - 200	5	7160

Approvals :

GOST-R, CE, SEPRO

Standards :

TS EN 14700 :	E Co 1
DIN 8555 :	E 20-UM-300-CKTL

Chemical Composition of Weld Metal-
% (Typical) :

C	Mo	Co	Cr	Ni
0.3	5.6	Rest	26.0	3.0

Mechanical Properties : _____

Hardness (HRC)	
After Welding	After Working
30 - 32	45

Features and Applications : _____

- * It is used for hardfacing of materials subject to impact, pressure, abrasion, corrosion and high temperature or combination of these.
- * Die molds, extruder, screws, hot cutting and working boiler steels, shafts, pumps, valves and seats.
- * Weld metal has work hardening ability under impact and friction.
- * Before welding, it must be buffering with 307 and 309 electrodes.

Welding Positions : _____



Current Type : _____

- D.C.(+)
- A.C.

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
305214	3.20 x 350	1/8 x 14"	90 - 120	5	3500

Approvals : _____

GOST-R, CE, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	E Co 2
EN 14700	:	E Co 2
AWS A5.13	:	E CoCr A
DIN 8555	:	E 20-UM-45 CTZ

C	Cr	W	Co
1.1	28	4	rest

Mechanical Properties :

Hardness (HRC)
42

Features and Applications :

- * Valve shutters and caps, wood working tools, saw chains and slide ways, hot shear blades, pump components, hot pressing tools, valve seats, ingot tong ends, conveyor screws, for chemical and food processing industries.
- * GEKATEC Cobalt6 is a versatile cobalt containing alloy with high mechanical impact and high temperature resistance.
- * It is used primarily on workpieces exposed to high alternating temperatures and corrosion.
- * GEKATEC Cobalt6 deposit is especially suited for carbon steels, stainless steel, nickel, monel and manganese steels.

Welding Positions :



Flux Cored Wire :

GeKa HARDCOR COBALT 6

TIG Wire :

GeKaTec COBALT 6 TIG

Current Type :

D.C.(+) / AC

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300761	3.20 x 350	1/8 x 14"	90 - 120	5	3500
300762	4.00 x 350	5/32 x 14"	135 - 160	5	5200

Approvals :

GOST-R, CE, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	E Co 3
EN 14700	:	E Co 3
AWS A5.13	:	E CoCr B
DIN 8555	:	E 20-UM-50 CTZ

C	Cr	W	Co
1.4	29	8	Rest

Mechanical Properties : _____

Hardness (HRC)
48 - 52

Features and Applications : _____

- * Include tools to cut paper, cardboard, floor covering, roofing, wood, screw conveyors for chemical and food industries.
- * Electrode with Co-Cr-W alloyed core wire.
- * Hard surfacing of parts subjected to either the single or combined effect of heavy to metal wear abrasion, high temperatures (ranging from 500 to 800 °C occasionally up to 1100 °C) and corrosive environments.
- * 307 and 309 stainless steel electrode can be used as buffering.

Welding Positions : _____

Flux Cored Wire : _____



GeKa HARDCOR COBALT 12

TIG Wire : _____

GeKaTec COBALT 12 TIG

Current Type : _____

D.C.(+) / AC

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300758	3.20 x 350	1/8 x 14"	90 - 120	5	3530
302254	4.00 x 350	5/32 x 14"	130 - 160	5	5390

Approvals : _____

CE, GOST-R, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	E Co 3
EN 14700	:	E Co 3
AWS A5.13	:	E CoCr C
DIN 8555	:	E 20-UM-55 CTZ

C	Cr	W	Co
2.1	31	13	rest

Mechanical Properties : _____

Hardness (HRC)
50 - 57

Features and Applications : _____

* GEKATEC COBALT 1 is cobalt based hard facing electrode.

* It is used for hard facing of valves and fittings which requires resistance to high temperature, pressure and corrosion, sliding stressing metal-to-metal and is recommended in welding of cutter tools, screw conveyors, wear rings and guide rails.

Welding Positions : _____

Flux Cored Wire : _____



GeKa HARDCOR COBALT 1

TIG Wire : _____

GeKaTec COBALT 1 TIG

Current Type : _____

D.C.(+) / AC

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
302251	3.20 x 250	1/8 x 14"	90 - 120	5	3660
302252	4.00 x 350	5/32 x 14"	130 - 160	5	5200

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Z Fe 8
EN 14700	:	E Z Fe 8
DIN 8555	:	E 3-UM-50 GTZ

Mechanical Properties : _____

Hardness (HRC)	
As Welded	After Heat Treatment
45 - 50	48 - 54

Features and Applications : _____

- * Include spining rotors, for glass-wool production, draw plates, stamping trimming dies, klin parts, pump shafts, chucks etc.
- * Manuel electrode for anti-wear protective coatings on tool-steel parts working under very hot or cold conditions.
- * Electrode with Co, Cr, Mo alloys gives excellent metal / metal friction resistance at high temperatures.
- * Ideal for use as surfacing with no risk of cracking.

Welding Positions : _____

Flux Cored Wire : _____



GeKa HARDCOR 50 G

Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300782	2.50 x 250	3/32 x 10"	75	4	1600
300783	3.20 x 350	1/8 x 14"	110	5	3680

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700 :	E Ni 2
EN 14700 :	E Ni 2
DIN 8555 :	~E 23-UM-250 CKPZ

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Hardness		
		As Welded	After Heating 800°C/4h	After Working
min. 660	min. 740	270 - 320 HB	380 - 450 HB	~550 HV

Features and Applications :

- * Dies, mandrels, rad for hot extrusion of profiles, continious casting guide tables, feed rolls, blades for hot shearing, furnace components, rolling vil inlet guides.
- * Electrode highly alloyed with chromium, cobalt, nickel, molybdenum and tungsten.
- * It is used for anti-wear protective coatings on low and high alloy steels, nickel alloys and refractory steels.
- * It gives high strength and high creep resistance and temperatures up to 1200 °C also resistance to thermal cycling shocks and abrasion.
- * It has work hardenable deposit which is high mechanical pressures and very high resistance to strong oxidising agents, mixture of acids, chlorinated chemicals.

Welding Positions :



Current Type :

D.C.(+) / AC

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
300788	3.20 x 300	1/8 x 12''	120 - 170	5	3600

Approvals :

CE, GOST-R, SEPRO

Standards :

TS EN 14700 :	E Fe 7
EN 14700 :	E Fe 7
DIN 8555 :	E5-UM-400

Mechanical Properties : _____

Weld Metal Hardness (HB)
440 - 460

Features and Applications : _____

- * Rutile type electrode with high recovery.
- * Welding for stainless of similar chemical compositions or cast steels having Cr of ~12%.
- * Used of surfacing of carbon steels to resist corrosion, erosion and abrasion.
- * Used in Chemical Industry, Steel Industry and also at continuous casting rolls and surfacing steel mill rolls.
- * A specified hardness value can be obtained in one or two passes depending on carbon content of the base material

Welding Positions : _____



Current Type : _____

D.C.(+) / AC

Operating Data : _____

Product Code	Diameter x Length (mm)	Welding Current (A)	Weight g /100 pcs
306136	3.20 x 350	100 - 140	4175
306138	4.00 x 450	140 - 180	8750

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Z Fe 8
EN 14700	:	E Z Fe 8
DIN 8555	:	E3-UM-40 PT

Mechanical Properties : _____

Hardness (HB)
~400

Features and Applications : _____

- * Resistant to heat as well as to abrasion, due to its technical features also resistant to high temperature and pressure.
- * This especially used for the worn out parts of tool steels of surfacing jobs.
- * Main application fields are hardfacing of hot cutting blades, hammers, grinders, forming moulds, casting moulds, bravely and cylinder surfaces.
- * Also provides economical solutions as it is used on any kind of steel for surfacing without the use of a special tool steel.
- * Basic coated, chrome-molly alloyed, calm arc, synthetic electrode with deep penetration.
- * Weld metal efficiency is - 120%.
- * It is recommended that the base metal should be pre-heated up to 400 °C and after welding is completed.
- * It should be cooled down slowly.
- * Electrode should be baked for 2 hours at 300°C temperature.

Welding Positions : _____ MIG Wire : _____



GeKaTec TOOL 40 SG

Current Type : _____

D.C.(+) / AC

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
301201	2.50 x 350	3/32 x 14''	60 - 90	5	2100
300785	3.20 x 350	1/8 x 14''	100 - 140	5	3760
300786	4.00 x 350	5/32 x 14''	130 - 180	5	5600

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Z Fe 8
EN 14700	:	E Z Fe 8
DIN 8555	:	E 3-UM-60 ST

Mechanical Properties : _____

Hardness (after working) (HRC)
58

Features and Applications : _____

- * A special kind of rutile-coated electrode for hardfacing of hot- and cold-work tool steels.
- * Suitability for uses in hardfacing of hot- or cold-work steels, edges of cutting dies, blades of hot-shearing machines, punching tools, rolls and impact punches, machinery tools for die-casting; at temperatures up to 550 °C.
- * Applicability in hardfacing of steel materials such as ST50, ST60, ST70 as well as in re-manufacturing of tools.
- * Requirements of pre-annealing at 400 °C of the base metal, welding through hammering, not exceeding the pre-annealing temperature by welding, and of very slow cooling of weld metal.
- * Variability of weld metal's hardness through heat treatment.
- * Requirement of re-drying of the electrode at 300 °C for 2 hours.

Welding Positions : _____ MIG Wire : _____



GeKaTec TOOL 55 SG

Current Type : _____

D.C.(-) / AC

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
305336	2.50 x 350	3/32 x 14"	50 - 70	4	2070
302339	3.20 x 350	1/8 x 14"	90 - 120	5	3270

Approvals : _____

CE, GOST-R, SEPRO

Standards :

TS EN 14700	:	E Fe 4
EN 14700	:	E Fe 4
AWS A5.13	:	E Fe 5-A
DIN 8555	:	E 4-UM-60 S

Mechanical Properties : _____

Hardness (after working) (HRC)
60 - 62

Features and Applications : _____

- * The weld deposit is the similar to the high speed steel so it is used for reconditioning the surface and cutting edges of hot working tool steels and tools made from unalloyed steels.
- * Main applications are the tools exposed to heat, adhesion and impact wears.
- * It is recommended that preheating to 400 °C before the welding of high carbon steels and tool steels.
- * Re-dry for 2 hours at 300-350 °C.

Welding Positions : _____

MIG Wire : _____

GeKaTec TOOL 60 SG



Current Type : _____

D.C.(+) / AC

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)	Weight g /100 pcs
302447	3.20 x 350	1/8 x 14"	90 - 120	5	3290

Approvals : _____

CE, GOST-R , SEPRO

Standards :

TS EN 14700	:	E Fe 7
EN 14700	:	E Fe 7
DIN 8555	:	E5-UM-400

Mechanical Properties : _____

Hardness (HRC)
54 - 57

Features and Applications : _____

- * For hot work tool steels with high welding efficiency.
- * Especiality used in repair welding of molds and hot work tool steels.
- * No cracking in the weld metal after welding.
- * Re-drying: 300 °C / 2h.

Welding Positions : _____



Current Type : _____

D.C.(+) / AC

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Weight g /100 pcs
306306	4.00 x 450	5/32 x 18''	150 - 190	7930
306193	5.00 x 450	3/16 x 18''	180 - 240	12600

Approvals : _____

SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

AWS A5.6 : E Cu

Cu
min.99

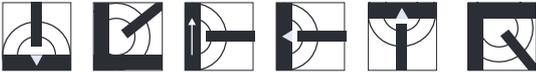
Mechanical Properties :

Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
min. 200	min. 25	55

Features and Applications :

- * Electrode made of pure copper.
- * Uses in joint-welding and surfacing operations on pure copper or on copper alloys.
- * Applicability in joint-welding of boilers, heat exchangers, or, of copper tubes, copper busbars used in electrotechnics, copper busbars as well as in copper surfacing on steel materials.
- * Requirement of applying as high current as possible in joint-welding.
- * Pre-heating requirement of base materials of copper or copper alloys at temperatures of 400-450 °C for all welding applications on them.

Welding Positions :



Current Type :

MIG Wire :

GeKa R1 L

D.C.(+) / AC

TIG Wire :

GeKaTec S1 L

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)
602469	3.20 x 350	1/8 x 14"	90 - 120	5
605238	4.00 x 350	5/32 x 14"	120 - 150	5

Approvals :

GOST-R, SEPRO

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

AWS A5.6 : E CuSn - C

Sn	Cu
7.0-9.0	rest

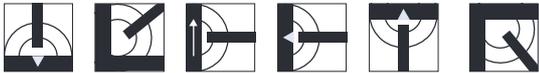
Mechanical Properties :

Tensile Strength (N/mm ²)	Elongation (L _c =5d ₀)(%)	Hardness (HB)
min. 420	min. 25	155

Features and Applications :

- * Tin bronze electrode for coating and repairing parts made of copper, bronze, brass and for joining of these to steels, cast iron, nickel, nickel alloys.
- * Good resistance to corrosion, particularly attack by acetone and dry ammonia, industrial atmospheres and salty air, seawater and acids.
- * It is also resistant to metal / metal friction.
- * Applications include joining welding of machinery components made of copper and its alloys, steels and cast steels a grey cast iron, such as piston arms, sprockets, guides, turbine and centrifugal, blades, fans, ship's screw propellers, motor collector and valve seats, for the application of braze surfacing on this materials.

Welding Positions :



Current Type :

MIG Wire :

GeKa R4 L

D.C.(+) / AC

TIG Wire :

GeKaTec S4 L

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)
602467	3.20 x 350	1/8 x 14"	80 - 120	5
602468	4.00 x 350	5/32 x 14"	120 - 150	5

Approvals :

GOST-R, SEPRO

Aluminium Bronze Electrode



ALBRONZE

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

AWS A5.6 : E CuAl - A2 (E CuAl8)

Fe	Al	Cu
0,5-5,0	6,5-9,5	rest

Mechanical Properties :

Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
min. 650	min. 20	205

Features and Applications :

- * It is used for safely repairs all grades of aluminum bronzes and overlays on cast irons, steels and copper which are subject to corrosion, cavitation, erosion, and metal to metal wears.
- * Joining and surfacing parts subject to service in marine environments and seawater.

Welding Positions :



Current Type :

MIG Wire :

GeKa R4 AL

D.C.(+) / AC

TIG Wire :

GeKaTec S4 AL

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)
604895	3.20 x 350	1/8 x 14"	70 - 110	5

Approvals :

GOST-R, SEPRO

Aluminium Bronze Electrode



ALUWELD-Si

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS 9604	:	EL-AISi 5
AWS A5.3	:	E 4043

Si	Al
4.5-5.5	rest

Mechanical Properties :

Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
160 - 190	min. 10	50

Features and Applications :

*Include also engine blocks , gear cases , engine gear box unit , miscellaneous components in light alloys , stroge tanks , containers , vessels , repair works on various kind of aluminium materials .

* Manuel welding electrode recommended for production and maintenance applications including repair of cracks , casting defects and building up sections also broken parts . Suitable for made of aluminium applications. Before welding on thick section preheat at about 200 C is recommended .

Welding Positions :



Current Type :

MIG Wire :

GeKa AlSi 5

D.C.(+)

TIG Wire :

GeKa AlSi 5 TIG

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)
602164	2.50 x 350	3/32 x 14"	50 - 80	2
637929	3.20 x 350	1/8 x 14"	70 - 100	2
604870	4.00 x 350	5/32 x 14"	90 - 130	2

Approvals :

GOST-R, SEPRO

Aluminium Bronze Electrode



ALUWELD 12 Si

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS 9604 : EL-ALSi 12

Si	Al
11.0-13.5	rest

Mechanical Properties :

Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
160 - 200	5 - 10	55 - 60

Features and Applications :

Low-heat-input manual electrode for joining cast aluminium alloys, plus repair and maintenance of sheet aluminium and aluminium casting, including rebuilding, filling cracks, breaks, shrink holes and missing bits.

Excellent welding properties, good arc striking, clean flat flow, dense poreless seams. Thanks to these characteristics it enables perfect joining on plates up to 2 mm thick. The electrode is hardly hygroscopic and therefore stores well.

Welding Positions :



Current Type : _____ MIG Wire : _____

GeKa AlSi 12

D.C.(+) _____ TIG Wire : _____

GeKa AlSi 12 TIG

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)
600056	2.50 x 350	3/32 x 14 ^{1/2}	70 - 80	2
600057	3.20 x 350	1/8 x 14 ^{1/2}	90 - 100	2
600058	4.00 x 350	5/32 x 14 ^{1/2}	110 - 130	2

Approvals : _____

GOST-R, SEPRO

Aluminium Bronze Electrode



ALUWELD 99 Al

Standards :

TS 9604	:	EL-AI 99.5
AWS A5.3	:	E 1100

Mechanical Properties :

Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
70 - 100	min. 30	30 - 80

Features and Applications :

- * Include pipes, vessels, hoppers, vats, containers heat exchangers, air conditioning, decorative panels, slideways where electrolytic treatment or anodisation is foreseen.
- * Excellent welding properties, excellent resistance to salt-water and industrial corrosion, good arc striking, clean flat flow, dense poreless seams.
- * Low-heat-input manual electrode for joining through aluminium alloys.
- * Electrode with special coating for joining and repairing of pure aluminium, Al-mg-mn, Al-mg alloys and

Welding Positions :



Current Type :

MIG Wire :

GeKa Al 99.5

D.C.(+)

TIG Wire :

GeKa Al 99.5 TIG

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Welding Current (A)	Package Weight (kg)
600059	2.50 x 350	3/32 x 14"	60 - 80	2
600060	3.20 x 350	1/8 x 14"	80 - 100	2
600061	4.00 x 350	5/32 x 14"	110 - 130	2

Approvals :

GOST-R, SEPRO

Standards : _____

**Chemical Composition of Welding Wire-
% (Typical) :**

AWS A5.14 : ER - Ni 1

Ni	C	Si	Mn	Ti
rest	0.02	0.4	0.4	3.0

Mechanical Properties : _____

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
min. 300	min. 500	min. 250 J	min. 30

Typical Base Material Grades : _____

* 2.4061, 2.4116, 2.4170 as well as copper and its combinations with steel (casting)s

Features and Applications : _____

- * Use in various applications of joint-welding of the materials Nickel 200/201 or stainless steels. *
- Suitability for use in welding of carbon steels or of high-alloyed nickel or nickel-copper alloys. .
- * Required use of Ar (I1) as shielding gas in TIG welding.

Welding Positions : _____



Current Type : _____

TIG D.C.(-)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Package Weight (kg)
	Diameter	Length	
606447	1.20	0,047"	15
603764	2,4 x 1000	3/32 x 39"	5

Approvals : _____

GOST-R, SEPRO

Nickel Alloyed Welding Rod



NiCu 30 SG

Standards :

TS EN ISO 18274 :	S Ni 4060 (NiCu 30 Mn 3 Ti)
EN ISO 18274 :	S Ni 4060 (NiCu 30 Mn 3 Ti)
AWS A5.14 :	ER NiCu 7

Chemical Composition of Welding Wire- % (Typical) :

Al	Si	Cu	C
1.25	1.25	rest	0.15
Ni	Mn	Fe	Ti
65	3,5	2,5	2,0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
300	500	120 J	35

Typical Base Material Grades :

* NiCu 30 Fe (2.4360) - NiCu 30 Al (2.4375) - UNS N04400, N05500 - Alloy 400 ASTM B 127, B 165, MONEL 400, MONEL 405, 2.4377

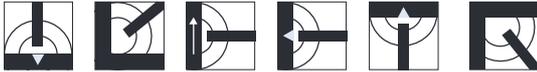
Features and Applications :

* It is used for welding of Nickel Copper alloys to steels and copper alloys to steel, gray iron to steels and stainless steels.

* Weld metal has perfect stainless properties, used in sea water applications, chemical and petrochemical industry and ship equipments.

* Shielding Gas : MIG : Argon / TIG : Argon

Welding Positions :



Current Type :

MIG D.C. (+)

TIG D.C. (-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
606448	1.00	0,040"	15
602774	1.20	0,047"	15
603765	2,4 x 1000	3/32 x 39"	5

Approvals :

GOST-R, SEPRO

Nickel Alloyed Welding Wire&Rod



625 SG

Standards :

TS EN ISO 18274	:	S Ni 6625 (NiCr 22 Mo 9 Nb)
EN ISO 18274	:	S Ni 6625 (NiCr 22 Mo 9 Nb)
AWS A5.14	:	ER NiCrMo 3

Chemical Composition of Welding Wire-Rod % (Typical) :

Ni	C	Cr	Mn
rest	0.02	22.0	0.20
Fe	Mo	Nb	
1.0	9.0	3.50	

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength		Elongation (L ₀ =5d ₀)(%)
		(ISO-V/+20°C)	(ISO-V/-196°C)	
540	800	140 J	75 J	38

Typical Base Material Grades :

* 1.4583 X10CrNiMoNb18-12, 1.4876 X10NiCrAlTi32-20, 1.4529 X1NiCrMoCuN25-20-7, X2CrNiMoCuN20-18-6, 2.4641 NiCr 21 Mo 6 Cu, 2.4856 NiCr 22 Mo 9 Nb, 2.4858 NiCr 21 Mo, 2.4816 NiCr 15 Fe
Welding of Joining : P265GH, P285NH, P295GH, 16Mo3, S355N, X8Ni9 (Inconel 600), (Inconel 625), (Incoloy 800)

Features and Applications :

* Applicability in joint welding of steels with high Mo-contents to steels with Ni-based alloy steels, joint welding of different types of steels, and in welding of low-alloyed problematic steels * Suitability for use in manufacture processes of pressure vessels with service temperatures between -196 °C and +550 °C * High resistance to creep, to high temperatures, and to low temperatures (cryogenic applications) * Resistance to formation of oxide layers at temperatures up to 1200 °C * Loss of elasticity at temperatures between 600-800 °C.
* High strength against hot cracking. * General tendency towards diffusion of carbon at high temperatures or towards heat treatments of different materials. * Very high resistance to stress corrosion and to pitting corrosion (PREN 52). * Resistance to thermal shocks * Austenitic-structured stainless material with low coefficient of thermal expansion. * Very excellent performance in TIG welding. * Use of Ar or Ar-He mix as shielding gas.

Welding Positions :



Current Type :

MIG : D.C. (+)

TIG : D.C. (-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
603652	1,00	0,040"	15
603653	1,20	0,047"	15
603654	1,6 x 1000	1/16 x 39"	5
603655	2,0 x 1000	5/64 x 39"	5
603656	2,4 x 1000	3/32 x 39"	5

Approvals :

GOST-R, SEPRO

Nickel Alloyed Welding Wire



7015 SG

Standards :

TS EN ISO 18274	:	S Ni 6082
EN ISO 18274	:	S Ni 6082
AWS A5.14	:	ER NiCr-3

Chemical Composition of Welding Wire-Rod % (Typical) :

Ni	C	Cr
rest	0.02	20.0
Mn	Fe	Nb
3.0	4.0	2.5

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Impact Strength (ISO-V/+20°C)	Elongation (L ₀ =5d ₀)(%)
400	650	150 J	40

Typical Base Material Grades :

* 2.4816 - 2.4817 - 2.4806 - Alloy 600 - 1.4876 - 1.5662 - 1.5680,2.4951,2.4961,1.4981,1.4985

Features and Applications :

* Especially in welding of Nickel based alloys high temperature and creep resistant steels, problematic steels and dissimilar joints.

* Weld metal mechanical properties are resistant to heat treating.

*Shielding gas :Ar(MIG and TIG)

Welding Positions :



Current Type :

MIG D.C. (+)
TIG D.C. (-)

Welding Electrode :

GeKaTec ANTI-CRACK 7015

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
603106	1,00	0,040"	15
603093	1,20	0,047"	15
605054	1,6 x 1000	1/16 x 39"	5
605055	2,0 x 1000	5/64 x 39"	5
605056	2,4 x 1000	3/32 x 39"	5

Approvals :

GOST-R, SEPRO

Cast Iron MIG-TIG Welding Wire-Rod



NiFe SG

Standards :

TS 9463 EN ISO 1071	:	S C NiFe-1
EN ISO 1071	:	S C NiFe-1

Chemical Composition of Welding Wire- % (Typical) :

C	Cu	Mn
0.05	0.35	0.60
Fe		Ni
44-46.0		min. 53.0

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Hardness (HB)	Elongation (L _e =5d ₀)(%)
min. 290	min. 425	200	min. 8

Features and Applications :

- * NiFe SG MIG-TIG wire is used for joining and build-up of all types of cast irons (gray, tempered, sfero) and cast iron to non alloyed and high alloyed steels, copper and nickel based alloys.
- * Especially it is suitable for building up cast moulds in automotive industry and iron and steel sector.
- * Machinability is easy and weld metal surface must be clean and pre-heat at 150-250°C.
- * Shielding gas : Ar (MIG and TIG)

Welding Positions :



Current Type :

MIG D.C. (+)
TIG D.C. (-)

Welding Electrode :

GeKaTec Fe-CAST
GeKaTec Fe-CAST HD

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
602466	1.20	0.047"	15
602782	1.6 x 1000	1/16 x 39"	5
602783	2.0 x 1000	5/64 x 39"	5
603766	2.4 x 1000	3/32 x 39"	5

Approvals :

GOST-R, CE, SEPRO

Titanium TIG Welding Rod



Ti SG

Standards :

**Chemical Composition of Welding Wire-
% (Typical) :**

AWS A5.16 : ER Ti 2

C	Fe	H	Ti
<0.03	<0.025	<0.008	rest

Mechanical Properties :

Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Hardness (HB)	Elongation (L ₀ =5d ₀)(%)
275	395 - 540	180	20

Features and Applications :

- * Suitability for uses in TIG welding of pure titanium and of titanium alloys.
- * Usability with red-coloured tungsten tips containing thorium alloy in the ratio of 2%, according to TS EN ISO 6848.
- * Medium-strength wire with high percentage of elongation.
- * Requirement of pure Ar as shielding gas in TIG welding.

Welding Positions :



Current Type :

TIG D.C.(-)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight(kg)	Package Type
603341	2.0 x 1000	5/64 x 39"	5	Carton Box

Approvals :

GOST-R, SEPRO

Hardfacing MAG Welding Wire



250 G

Standards :

**Chemical Composition of Welding Wire-
% (Typical) :**

DIN 8555 : MSG 1-GZ-250

C	Si	Mn	Cr	Mo
0.09	0.55	1.00	3.00	1.00

Mechanical Properties :

Hardness (After Welding)
HRC

22 - 27

Features and Applications :

- * Cr-Mo alloyed steels (1.5%-0.5%) resistant to high temperature, wear, pressure and shocks.
- * Good resistance to cracking and to the attack of sulphures agents.
- * Guide rollers, excavators, screw conveyers, gears, moulds, rolling surfaces, etc.
- * Before the application of welding, it is recommended pre-heating of 300°C.
- * If necessary, post-weld stress relief should be made at 690°C.
- * Shielding Gas : Ar+CO₂ mix gases can be used.

Welding Positions :



Current Type :

MAG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
606765	1.20	0.047"	15	BS 300 Spool

Approvals :

SEPRO

Hardfacing MAG Welding Wire



350 G

Standards :

**Chemical Composition of Welding Wire-
% (Typical) :**

DIN 8555 : MSG 5-GZ-350

C	Si	Mn	Cr	Mo
0.50	0.55	0.90	6.00	0.90

Mechanical Properties :

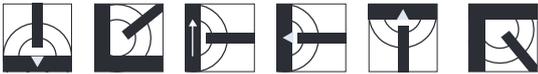
Hardness (After Welding)
HRC

36 - 40

Features and Applications :

- * Cr-Mo alloyed steels (2.5%-1.0%) resistant to high temperature, wear, pressure and shocks.
- * Good resistance to cracking and to the attack of sulphures agents.
- * Guide rollers, excavators, screw conveyers, gears, moulds, rolling surfaces, etc.
- * Before the application of welding, it is recommended pre-heating of 200°C.
- * If necessary, post-weld stress relief should be made at 660°C.
- * Shielding Gas : Ar+CO₂ mix gases can be used.

Welding Positions :



Current Type :

MAG D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
606758	1.20	0.047"	15	BS 300 Spool

Approvals :

SEPRO

Hardfacing MAG Welding Wire-Rod



500 G

Standards :

**Chemical Composition of Welding Wire-
% (Typical) :**

EN 14700	:	S Fe 2
DIN 8555	:	MSG / WSG 2-GZ-50

C	Si	Mn	Cr	Ti
1.10	0.50	1.90	1.80	0.20

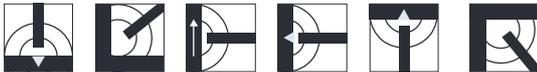
Mechanical Properties : _____

Hardness (After Welding) HRC
47 - 52

Features and Applications : _____

- * Excellent resistance to wear and shocks.
- * Parts of excavators, mordan bucket theeth, drilling and percussion bits, shaping machines, screw conveyors, crushers, moulds, guide rollers, etc.
- * Before the application of welding, it is recommended pre-heating of 300°C.
- * If necessary, post-weld stress relief should be made at 690°C.
- * Shielding Gas : MAG; Ar+CO₂ mix gases & TIG ; % 100 Ar gas can be used.

Welding Positions : _____



Current Type : _____

MAG D.C.(+)
TIG D.C. (-)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Weight (Kg)	Package Type
606767	1.20	0.047"	15	BS 300 Spool
606770	2.00 x 1.000	5/64 x 39"	5	Carton Box

Approvals : _____

CE, SEPRO

Hardfacing Welding Wire-Rod



600 G

Standards :

TS EN 14700	:	S Fe 8
EN 14700	:	S Fe 8
DIN 8555	:	MSG 6 GZ 60

Chemical Composition of Welding Wire- % (Typical) :

C	Mn	Cr	Si
0.45	0.040	9.20	3.0

Mechanical Properties :

Hardness			
As Welded	Softening (800°C)	1000°C - Oil	Single Pass in unalloyed steel
55 - 60 HRC	~250 HB	62 HRC	~53 HRC

Features and Applications :

- * It is used in welding of alloyed and non alloyed metal parts of mining and earth machines, pulsed run drilling and crushing machines.
- * Build up cutting tool edges and hard manganese steels cover pass.
- * It can be machined by grinding.
- * Shielding gas : MAG; Ar+CO₂ mix gases and TIG; %100 Ar gas can be used.

Welding Positions :



Current Type :

MAG D.C. (+)
TIG D.C. (-)

Welding Electrode :

GeKaTec FAZER 55 HD

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight(kg)
	mm	inch	
606759	1.00	0.040"	15
638308	1.20	0.047"	15
606768	2.00 x 1.000	5/64 x 39"	5
606769	2.40 x 1.000	3/32 x 39"	5

Approvals :

GOST-R, CE, SEPRO

Hardfacing MAG-TIG Welding Wire-Rod



TOOL 40 SG

Standards :

**Chemical Composition of Welding Wire-
% (Typical) :**

DIN 8555	:	MSG 3-GZ-40-PT
	:	WSG 3-GZ-40-PT

C	Si	Cr	Mo	Mn
0.010	0.40	6.00	3.00	0.60

Mechanical Properties :

Hardness (as welded) (HRC)
37 - 42

Typical Base Material Grades: 1.2367-1.2365-1.274-1.2344-1.2343-1.2083

Features and Applications :

- * Used in build up materials exposed to impact, pressure and abrasion, hot work tool steels for filler metals.
- * Application range is forging dies, hammers, v-beds, cast steels, continuous casting rollers etc.
- * The weld metal has wear resistance and high toughness at high temperatures.
- * 400°C Pre-heat temperature must be done before welding.
- * Shielding gas : MAG : Ar+CO₂
TIG : Ar

Welding Positions :



Current Type :

MAG D.C.(+)
TIG D.C.(-)

Welding Electrode :

~GeKaTec THERMO RESIST

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Type	
			MAG	TIG
606772	1.00	0.40"	K 300 15 Kg	Carton Box 5 Kg
602510	1.20	0.047"		
602511	1.6 x 1000	1/16 x 39"		
602512	2.0 x 1000	5/64 x 39"		
602513	2.4 x 1000	3/32 x 39"		

Approvals :

GOST-R, SEPRO

Hardfacing MAG-TIG Welding Wire-Rod



TOOL 45 SG

Standards :

DIN 8555	:MSG 3-GZ-50-ST
	:WSG 3-GZ-50-ST

**Chemical Composition of Welding Wire-
% (Typical) :**

C	Si	Mn	Cr	Ti	Mo
0.30	0.50	0.70	5.00	0.70	3.60

Mechanical Properties :

Hardness (as welded) (HRC)
45 - 48

Typical Base Material Grades: 1.2367-1.2365-1.274-1.2344-1.2343-1.2083

Features and Applications :

- * Generally are used in build-up for hot work tool steels.
- * Application areas forging dies, gravures, hot cutting tools, de-burring tools, punches, aluminum casting moulds, repair of 2344 hot work tool steels.
- * Used in steel casting and mold applications with 45-48 HRC strength of hardfacing welds.
- * Weld metal has wear and impact resistance at high temperatures.
- * 400°C pre-heat must be done before welding.
- * It has wear and impact resistance at high temperatures.
- * Shielding gas : MAG : Ar + CO₂
TIG : Ar

Welding Positions :

Current Type :

 MAG D.C.(+)
TIG D.C.(-)

Welding Electrode :

~GeKaTec THERMO DUR

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Type	
			MAG	TIG
606771	1.00	0.040"	K 300 15 Kg	Carton Box 5 Kg
602506	1.20	0.047"		
602507	1.6 x 1000	1/16 x 39"		
602508	2.0 x 1000	5/64 x 39"		
602509	2.4 x 1000	3/32 x 39"		

Approvals :

GOST-R, SEPRO

Hardfacing MAG-TIG Welding Wire



TOOL 55 SG

Standards :

DIN 8555	:	MSG 3-GZ-55-T
	:	WSG 3-GZ-55-T

Chemical Composition of Welding Wire- % (Typical) :

C	Si	Mn	Cr	Mo
0.35	0.40	1.00	7.00	1.10

Mechanical Properties :

Hardness (as welded) (HRC)
53 - 58

Typical Base Material Grades: 1.2510-1.2363-1.2721-1.2379-1.2842-1.1730-1.2990

Features and Applications :

* Application areas are cold and hot work tool steels which are used in machine parts, cold and hot cutting blades, extrusion dies, rollers, steel castings and moulds.

* It is hard facing wire which has high abrasion resistance and keep hardness at high temperatures.

* 400°C pre-heat temperature must be done before welding if it is needed, stress relieving must be done at 550°C after welding.

* Shielding gas : MAG : Ar + CO₂

TIG : Ar

Welding Positions :



Current Type :

MAG D.C.(+)
TIG D.C.(-)

Welding Electrode :

GeKaTec TOOL 58 S

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Type	
			MAG	TIG
606773	1.00	0.040"	K 300	Carton Box
602501	1.20	0.047"		
602502	1.6 x 1000	1/16 x 39"	15 Kg	5 Kg
602503	2.0 x 1000	5/64 x 39"		
602505	2.4 x 1000	3/32 x 39"		

Approvals :

GOST-R, SEPRO

Hardfacing Flux Cored TIG Welding Rod



TOOL 55 FC TIG

Standards :

TS EN 14700	: T Fe8
EN 14700	: T Fe8
DIN 8555	: TIG 6-GF-55-T

Chemical Composition of Welding Wire- % (Typical) :

C	Si	Mn	Cr	Mo
0.55	0.7	1.0	7.0	2.0

Mechanical Properties :

Hardness (as welded)
(HRC)

53 - 56

Features and Applications :

- * It is hardfacing TIG wire which has high abrasion resistance and keep hardness at high temperatures.
- * Application range is cold and hot work tool steels which are used in machine parts, cold and hot cutting blades, extrusion dies, rollers, steel castings, moulds, tools and metal-to-metal friction applications.
- * Weld metal is machinable by grinding.
- * It is recommended that pre-heating at 400°C before welding and very slow cooling after welding.
- * If necessary, it is recommended the stress relief annealing at 550°C after welding.
- * Shielding Gas : Argon

Welding Positions :



Current Type :

TIG D.C. (-)

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight (Kg)	Package Type
305865	2.40 x 1000	3/32 x 39"	5	Carton Box

Approvals :

CE, SEPRO

Hardfacing Flux Cored TIG Welding Wire



TOOL 60 FC TIG

Standards :

TS EN 14700	: T Fe4
EN 14700	: T Fe4
DIN 8555	: TIG 3-GF-60-T

Chemical Composition of Welding Wire- % (Typical) :

C	Si	Mn	Cr	Mo	W
0.55	0.5	0.4	4.0	8.0	1.60

Mechanical Properties :

Hardness (as welded)
(HRC)

56 - 60

Features and Applications :

- * It is hardfacing TIG wire which has high abrasion resistance and keep hardness at high temperatures.
- * Application range is cold and hot work tool steels which are used in machine parts, cold and hot cutting blades, extrusion dies, rollers, steel castings, moulds, tools and metal-to-metal friction applications.
- * Weld metal is machinable by grinding.
- * It is recommended that pre-heating at 400°C before welding and very slow cooling after welding.
- * If necessary, it is recommended the stress relief annealing at 550°C after welding.
- * Shielding Gas : Argon

Welding Positions :



Current Type :

TIG D.C. (-)

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight (Kg)	Package Type
306040	2.40 x 1000	3/32 x 39"	5	Carton Box

Approvals :

CE, SEPRO

Hardfacing MAG-TIG Welding Wire-Rod



TOOL 58 SG

Standards : _____

**Chemical Composition of Welding Wire-
% (Typical) :**

DIN 8555 : M / WSG 3-GZ-60-T

C	Si	Mn	Cr	Mo	V	W
0.37	1.1	0.4	5.2	1.4	0.35	1.3

Mechanical Properties : _____

Hardness (after welding)
(HRC)

57 - 60

Features and Applications : _____

- * High adhesive wear and impact-resistant, cold work tool steels require filling from strength, high temperature, abrasion and impact resistance that requires welding of hot-work tool steels are used.
- * The construction of non-alloy steel cutting edge, cutting and stripping tool steels used in the regions.
- * Tool steels can be given 300° to 400° C pre-heating source.
- * Shielding Gas : MAG; Ar+CO₂ mix gases
TIG; Ar

Welding Positions : _____



Current Type : _____

MAG D.C.(+)
TIG D.C.(-)

Welding Electrode : _____

GeKaTec TOOL 58 S

Operating Data : _____

Product Code	Diameter x Length		Package Weight(kg)
	(mm)	(inch)	
605939	1.20	0.047"	15
605940	1.6x1000	1/16 x 39"	5
605941	2.0x1000	5/64 x 39"	5
605942	2.4x1000	3/32 x 39"	5

Approvals : _____

GOST-R, SEPRO

Standards :

DIN 8555 : M/WSG 4-60-S

**Chemical Composition of Welding Wire-
% (Typical) :**

C	Si	Mn	Cr	Mo	V	W
1,0	0,3	0,3	4,0	8,3	1,9	1,8

Mechanical Properties :

Hardness (as welded)
(HRC)

60 - 62

Typical Base Material Grades: 1.2436-1.3241-1.3344-1.3207

Features and Applications :

- * Application range is production of cutting edges of mild steels, hard facing of cutting edges of cutting dies.
- * It is hard facing wire.
- * Weld metal structure is similar to high speed steel and has abrasion, wear and pressure resistance.
- * Shielding gas : TIG : Ar

Welding Positions :



Current Type :

TIG D.C.(-)

Welding Electrode :

GeKaTec TOOL 60

Operating Data :

Product Code	Diameter x Length		Package Weight(kg)
	(mm)	(inch)	
602775	1.6 x 1000	1/16 x 39"	5
602776	2.0 x 1000	5/64 x 39"	5
602777	2.4 x 1000	3/32 x 39"	5

Approvals :

GOST-R, SEPRO

GeKaTec COBALT BASED TIG WELDING RODS

COBALT 6 TIG

AWS A5.21 : E.R.Co Cr-A

This wire is suitable for hardfacing of parts subjected to a combination of pressure, impact, abrasion, corrosion, erosion, cavitation and high heat up to 900°C, such as tight surfaces of fittings, valve seats and cones for combustion engines, gliding surfaces of fittings, valve seats and cones for combustion engines, gliding surfaces of fittings, valve seats and cones for combustion engines, gliding surfaces metal to metal, highly stressed hot working tools without thermal shock, milling, mixing and drilling tools. Excellent gliding characteristics, very good polishability, high toughness, non magnetic. Machinable by grinding and with tungsten carbide tools.

Chemical Composition % C: 1.1, Cr: 28, W: 4, Co: Rest

Hardness: TIG: 40 HRC Oxy-acetylene: 40 HRC

Dimensions: 3.20 - 4.0 - 5.0 x 1000 mm

Welding Electrode : GeKaTec COBALT 6

Flux Cored Wire : GeKa HARDCOR COBALT 6

COBALT 12 TIG

AWS A5.21 : E.R.Co Cr-B

This wire is suitable for highly wear resistant hardfacing of parts subjected to a combination of pressure, abrasion, corrosion, erosion, cavitation and high heat up to 900°C, such as a running sealing and gliding faces of fittings and pumps, valve seats and cones for combustion engines tools for the wood, paper and plastic industry, gliding surfaces metal to metal, milling, mixing and drilling tools, heavy-duty hot working tools without thermal shock. Excellent gliding characteristics, very good polishability, high toughness, non magnetic. Machinable by grinding and with tungsten carbide tools.

Chemical Composition % C: 1.4, Cr: 29, W: 8, Co: Rest

Hardness: TIG: 47 HRC Oxy-acetylene: 48 HRC

Dimensions: 3.20 - 4.0 - 5.0 x 1000 mm

Welding Electrode : GeKaTec COBALT 12

Flux Cored Wire : GeKa HARDCOR COBALT 12

COBALT 1 TIG

AWS A5.21 : E.R.Co Cr-C

This wire is suitable for highly wear resistant hardfacing of parts subjected to a combination of abrasion, corrosion and high heat up to 900°C, such as working parts in the chemical industry running and sealing faces of fittings, valve seats and cones for combustion engines, cutting shearing tools, milling, mixing, drilling tools, heavy-duty hot working tools without thermal shock. Excellent gliding characteristics, good polishability, slightly magnetic. Machinable by grinding and with tungsten carbide tools.

Chemical Composition % C: 2.5, Cr: 30, W: 12, Co: Rest

Hardness: TIG: 54 HRC Oxy-acetylene: 53 HRC

Dimensions: 3.20 - 4.0 - 5.0 x 1000 mm

Welding Electrode : GeKaTec COBALT 1

Flux Cored Wire : GeKa HARDCOR COBALT 1

Operating Data :

Product	Product Code	Diameter (mm)	Diameter (inch)	Package Weight(kg)
COBALT 6 TIG	600309	3.2 x 1000	1/8 x 39"	10
COBALT 6 TIG	600308	4.0 x 1000	5/32 x 39"	10
COBALT 12 TIG	600312	3.2 x 1000	1/8 x 39"	10
COBALT 12 TIG	600311	4.0 x 1000	5/32 x 39"	10
COBALT 1 TIG	600315	3.2 x 1000	1/8 x 39"	10
COBALT 1 TIG	600314	4.0 x 1000	5/32 x 39"	10

Approvals :

GOST-R, SEPRO

GeKaTec TUNGSTEN ELECTRODES

Applications of Tungsten Electrodes :

Product Name	AWS Norm / Colour	Current Type	Applications
GeKaTec TUNGSTEN Red	EWTh-2	AC	- Unalloyed & High alloyed steels - Titanium alloys - Nickel alloys - Copper alloys
GeKaTec TUNGSTEN Green	EWP	AC	- Aluminium alloys - Magnesium alloys
GeKaTec TUNGSTEN Gold	EWLa-1.5	AC/DC	- Non-alloyed & low alloyed steels - Stainless Steels - Aluminium Alloys - Magnesium Alloys - Titanium Alloys - Nickel Alloys - Copper Alloys
GeKaTec TUNGSTEN Blue	EWLa-2	AC/DC	- Non-alloyed & low alloyed steels - Stainless Steels - Aluminium Alloys - Magnesium Alloys - Titanium Alloys - Nickel Alloys - Copper Alloys
GeKaTec TUNGSTEN Gray	EWCe-2	AC/DC	- Unalloyed & High alloyed steels - Titanium alloys - Nickel alloys - Copper alloys - Aluminium alloys - Stainless Steels - Magnesium Alloys

Operating Data :

Product	Product Code	Diameter x Length (mm)	Diameter x Length (inch)	Pcs / Package
Tungsten Red	602063	1.6 x 175	1/16 x 7"	10
Tungsten Red	602450	2.0 x 175	5/64 x 7"	10
Tungsten Red	602062	2.4 x 175	3/32 x 7"	10
Tungsten Red	602060	3.2 x 175	1/8 x 7"	10
Tungsten Green	602834	1.6 x 175	1/16 x 7"	10
Tungsten Green	602835	2.0 x 175	5/64 x 7"	10
Tungsten Green	602451	2.4 x 175	3/32 x 7"	10
Tungsten Green	602066	3.2 x 175	1/8 x 7"	10
Tungsten Gold	606706	2.0 x 175	5/64 x 7"	10
Tungsten Gold	606707	2.4 x 175	3/32 x 7"	10
Tungsten Blue	607090	1.6 x 175	1/16 x 7"	10
Tungsten Blue	606708	2.0 x 175	5/64 x 7"	10
Tungsten Blue	606709	2.4 x 175	3/32 x 7"	10
Tungsten Blue	607091	3.2 x 175	1/8 x 7"	10
Tungsten Gray	607625	1.6 x 175	1/16 x 7"	10
Tungsten Gray	605204	2.4 x 175	3/32 x 7"	10

Flux Cored Wire for Hardfacing



HARDCOR 300 G

Standards :

TS EN 14700	:	T Fe 1
EN 14700	:	T Fe 1
DIN 8555	:	MF 1-GF-300 P

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Fe
0.13	0.30	1.00	2.0	rest

Mechanical Properties - (Typical) : _____

Hardness (as welded) (HB)
300

Typical Base Material Grades : _____

* Steel mill rolls, shafts, steel hammers, gear teeth, shovel pads, conveyor chains, crane wheels, rail track-changers, gear wheels, sprockets as well as carrying rollers.

Features and Applications : _____

* Suitable for uses in buffer-layer welding before hardfacing applications on parts exposed to high impact/pressure/wear. Alloy group is low alloy steel. Low alloy wire designed for build-up on carbon steels. Slag removal is very good. 300 G has excellent compressive strength and resistance to cracking. Machinability is very good. Requirement of cleaning of base material's surface and of heating of the base material at approximately 150 °C.

Welding Positions : _____



Operating Data : _____

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.20	170 - 190	17.0 - 19.0	25.0 - 30.0

Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
304548	1.20	0.047''	15

Approvals : _____

GOST-R, CE, SEPRO

Flux Cored Wire for Hardfacing (Open Arc)



HARDCOR 300 O

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	T Fe 1
EN 14700	:	T Fe 1
DIN 8555	:	MF 1-GF-300 P

C	Si	Mn	Cr	Fe
0,13	0,30	2,50	1,25	rest

Mechanical Properties - (Typical) : _____

Hardness (as welded) (HB)
300

Typical Base Material Grades : _____

* Steel mill rolls, shafts, steel hammers, gear teeth, shovel pads, conveyor chains, crane wheels, rail track-changers, gear wheels, sprockets as well as carrying rollers.

Features and Applications : _____

* Suitable for uses in buffer-layer welding before hardfacing applications on parts exposed to high impact/pressure/wear. Alloy group is low alloy steel. Low alloy wire designed for build-up on carbon steels. Slag removal is very good. 300 O has excellent compressive strength and resistance to cracking. Machinability is very good. Requirement of cleaning of base material's surface and of heating of the base material at approximately 150 °C. Build up is generally unlimited with proper heat treatment procedures. Shielding Gas : Open Arc

Welding Positions : _____



Operating Data : _____

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.60	180 - 200	26.0 - 30.0	25.0 - 30.0
2.80	300 - 500	23.0 - 31.0	25.0 - 30.0

Current Type : _____

MIG D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
603402	1.60	1/16	15
602491	2.80	7/64	25

Approvals : _____

GOST-R, CE, SEPRO

Flux Cored Wire for Hardfacing



HARDCOR 41 NiMo G

Standards :

TS EN 14700	:	T Fe 7
EN 14700	:	T Fe 7
DIN 8555	:	MF 5-45-PRT

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Ni	Mo	Nb	V	Fe
0.14	1.0	1.0	13.0	3.5	1.2	0.2	0.1	rest

Mechanical Properties - (Typical) :

Hardness (as welded) (HRC)
43-45

Typical Base Material Grades :

* Casting rollers particularly at iron-steel production plants,
relays, valves, valves used in gas/water/steam environments, flanges, compressors,

Features and Applications :

* Suitability for use in welding of martensitic-ferritic materials used as tools for rolling, forging and steel casting operations.. Welding bead's hardness value of approximately 40 HRC, which the weld maintains at high temperatures.

High resistance to corrosion.

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.60	150 - 250	20 - 31	20 - 25

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
603615	1.60	0.062"	15

Approvals :

GOST-R, CE, SEPRO

Flux Cored Wire for Hardfacing



HARDCOR 414

Standards :

TS EN 14700	:	T Fe 7
EN 14700	:	T Fe 7
TS EN ISO 17633-A	:	T 13 4 M M 3
EN ISO 17633-A	:	T 13 4 M M 3
AWS A5.22	:	E C 410NiMo (mod.)

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Ni	Mo
0,05	0,35	0,70	12,0	4,0	0,60

Mechanical Properties - (Typical) :

Hardness (as welded) (HB)
400

Typical Base Material Grades :

* Steel mill rolls, rollers, pumps and 410 stainless valves.

Features and Applications :

* Cr-Ni alloyed metal flux cored wire for hardfacing applications.

* Can be used joint welding.

* Shielding gas : M21

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.60	180 - 210	26.0 - 31.0	25.0 - 30.0

Current Type :

FCAW

D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
305639	1.60	0.062"	15

Approvals :

GOST-R, CE, SEPRO

Flux Cored Wire for Hardfacing



HARDCOR 600 G

Standards :

TS EN 14700	: T Fe 6
EN 14700	: T Fe 6
DIN 8555	: MF 6-GF-60-GP

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Fe
0.40	0.70	0.60	9.0	rest

Mechanical Properties - (Typical) :

Hardness (as welded) (HB)
600

Typical Base Material Grades :

* Hardfacing of parts of earth and mineral mining machines, impact drilling and crushing devices, guide springs, edges of cutting tools, hard bucket edges and teeth, all of which are made of alloyed or unalloyed steels, as well as in other materials required to have high resistance to wear, debarking knives, agricultural tillage tools, earth moving bucket lips.

Features and Applications :

* High resistance to wear and to impact. Alloy group is martensitic tool steel. Weld metals of high hardness and high toughness. Machinability of metal through grinding only. It is excellent choice for components that are required to maintain a sharp edge.

Shielding Gas : CO₂

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.20	140 - 200	26.0 - 30.0	30.0 - 35.0
1.60	180 - 200	26.0 - 30.0	30.0 - 35.0

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
304467	1.20	0.047''	15
304504	1.60	0.062''	15

Approvals :

GOST-R, CE, SEPRO

Flux Cored Wire for Hardfacing



HARDCOR M 600 G

Standards :

DIN 8555 : MF 6-GF-60-GP

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Fe
0.40	2.00	0.60	9.0	rest

Mechanical Properties - (Typical) :

Hardness (as welded)
(HB)

600

Typical Base Material Grades :

* Hardfacing of parts of earth and mineral mining machines, impact drilling and crushing devices, guide springs, edges of cutting tools, hard bucket edges and teeth, all of which are made of alloyed or unalloyed steels, as well as in other materials required to have high resistance to wear, debarking knives, agricultural tillage tools, earth moving bucket lips.

Features and Applications :

* HARDCOR 600 M is metal cored flux-cored wire for hardfacing. High resistance to wear and to impact. Alloy group is martensitic tool steel. Weld metals of high hardness and high toughness. Machinability of metal through grinding only. It is excellent choice for components that are required to maintain a sharp edge. Shielding Gas : CO₂ (M 21)

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.20	170 - 200	27.0 - 30.0	20.0 - 25.0
1.60	180 - 220	26.0 - 31.0	20.0 - 25.0

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
305051	1.20	0.047''	15
305226	1.60	0.062''	15

Approvals :

CE, SEPRO

Flux Cored Wire for Hardfacing



HARDCOR 600 GS

Standards :

TS EN 14700	:	T Fe 6
EN 14700	:	T Fe 6
DIN 8555	:	MF 6 GF 60 GR

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Mo	Nb
0.60	0.60	0.65	8.2	0.12	0.15

Mechanical Properties - (Typical) :

Hardness (as welded) (HRC)
56

Typical Base Material Grades :

* Hardfacing of parts of earth and mineral mining machines, impact drilling and crushing devices, guide springs, edges of cutting tools, hard bucket edges and teeth, all of which are made of alloyed or unalloyed steels, as well as in order materials required to have high resistance to wear, debraking knives, agricultural tillage tools, earth moving bucket lips.

Features and Applications :

- * Used in hardfacing welding of pieces exposed to high impact and abrasion wear.
- * Weld metal microstructure is martensitic and has excellent resistance to friction metal to metal.
- * This wire can also be used as a filling for cutting edge welding.
- * Cracking does not observed.
- * Because of the rutile character there is no spatter during welding, weld metal seam is perfect.
- * Shielding gas : CO₂

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.20	170 - 200	27.0 - 30.0	25.0 - 30.0
1.60	130 - 220	26.0 - 31.0	25.0 - 30.0

Current Type :

FCAW
D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
305933	1.20	0.047''	15
305929	1.60	0.062''	15

Approvals :

CE, SEPRO

Flux Cored Wire for Hardfacing (Open Arc)



HARDCOR 600 0

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

DIN 8555 : MF 6-GF-60-GP

C	Si	Mn	Cr	Fe
0.80	1.20	1.40	8.0	rest

Mechanical Properties - (Typical) :

Hardness (as welded) (HRC)
58

Typical Base Material Grades :

* Hardfacing of parts of earth and mineral mining machines, impact drilling and crushing devices, guide springs, edges of cutting tools, hard bucket edges and teeth, all of which are made of alloyed or unalloyed steels, as well as in other materials required to have high resistance to wear, debarking knives, agricultural tillage tools, earth moving bucket lips.

Features and Applications :

* High resistance to wear and to impact. Alloy group is martensitic tool steel. Weld metals of high hardness and high toughness. Machinability of metal through grinding only. It is excellent choice for components that are required to maintain a sharp edge. 58 HRC offers high hardness with good balance between abrasion and impact resistance. Shielding Gas : Open Arc

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.60	180 - 200	26.0 - 30.0	20.0 - 25.0
2.80	325 - 450	26.0 - 30.0	20.0 - 25.0

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
603406	1.60	1/16	15
603407	2.80	7/64	15

Approvals :

GOST-R, SEPRO

Flux Cored Wire for Hardfacing (Open Arc)



HARDCOR 660 O

Standards :

TS EN 14700	:	T Fe 9
EN 14700	:	T Fe 9
DIN 8555	:	~MF 7-GF-200 KP

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Fe
0.40	0.75	15.0	15.0	rest

Mechanical Properties - (Typical) :

Hardness (as welded) (HRC)	Hardness (after working) (HRC)
18 - 24	45 - 52

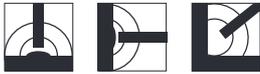
Typical Base Material Grades :

* Manganese rock crushing hammers and rolls,
impactor bars, gyratory mantles, dredge components.

Features and Applications :

* Applicability in buffer layer and surfacing of carbon- and manganese-steels. High resistance to impact and friction. Most common applications in hardfacing of various equipment parts that are exposed to deep impacts, pressure and wearing in cement, mining and earth-moving industries. Build up depth is generally unlimited. Weld metal hardness increases by work hardening. Shielding Gas : Open Arc

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.60	130 - 220	26.0 - 31.0	25.0 - 30.0
2.80	300 - 500	25.0 - 31.0	25.0 - 30.0

Current Type :

FCAW
D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
603401	1.60	1/16	15
602486	2.80	7/64	25

Approvals :

GOST-R, CE, SEPRO

Flux Cored Wire for Hardfacing



HARDCOR 14Mn G

Standards :

TS EN 14700	:	T Fe 9
EN 14700	:	T Fe 9
DIN 8555	:	MF 7-GF-200 KP

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Ni	Fe
0.55	0.1	12.8	2.5	rest

Mechanical Properties - (Typical) :

Hardness (as welded) (HB)	Hardness (after working) (HB)
170 - 200	~500

Typical Base Material Grades :

* Flux cored wire contains %12Mn.

* Weld metal microstructure is austenitic therefore has excellent impact resistance

Features and Applications :

* Hardcor 14Mn G is used for joining and buildups of work pieces made of hard austenitic manganese steels subjected to impact and abrasion wears. Weld deposit ensures workhardening under impact and shock because of fully austenitic structure. Used in crusher cylinders, crusher hammers and jaws made of %12 - 14 Mn Steels.

* Shielding Gas : CO₂ (M 21)

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.20	170 - 200	27.0 - 30.0	25.0 - 30.0
1.60	180 - 220	26.0 - 31.0	25.0 - 30.0

Current Type :

FCAW
D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
304848	1.20	0.047''	15
305054	1.60	0.062''	15

Approvals :

GOST-R, CE, SEPRO

Flux Cored Wire for Hardfacing



HARDCOR 14Mn O

Standards :

TS EN 14700	:	T Fe 9-250-KNP
EN 14700	:	T Fe 9-250-KNP
DIN 8555	:	MF 7-250 KNP

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Ni	Cr
1.1	0.3	14.0	0.6	4.0

Mechanical Properties - (Typical) :

Hardness (as welded) (HB)	Hardness (after working) (HB)
170 - 200	~500

Typical Base Material Grades :

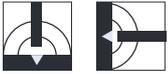
* Flux cored wire contains %14 Mn, weld metal microstructure is austenitic therefore has excellent impact resistance.

Features and Applications :

* Used in crusher, cylinders, crusher hammers and jaws etc. made of %14 Mn steels.

* Shielding gas : Open Arc.

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.60	180 - 220	26.0 - 30.0	25.0 - 30.0

Current Type :

FCAW
D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
605202	1.60	0.062''	15

Approvals :

CE, SEPRO

Flux Cored Wire for Hardfacing



HARDCOR 50 G

Standards :

TS EN 14700	:	T Z Fe 8
EN 14700	:	T Z Fe 8
DIN 8555	:	MF 3-50-CKTZW

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Ni	Mo	Co	Fe
0.1	0.7	0.4	15.0	+	3.2	14	rest

Mechanical Properties - % (Typical) :

Hardness (as welded) (HRC)	Hardness (after working) (HRC)
48 - 50	53

Typical Base Material Grades :

* Hardfacing of hot-work tool steels, forging dies, hot-shearing tools, punch tools, punch tools, rollers, hot hardening treatment, steel mill rolls Continuous casting driving rolls, dies, mandrels, forming tools, pumps

Features and Applications :

* Applicability in hardfacing for protection against wear of steels working at temperature sup to 650 °C. Existence of high amounts of Cr, Co, Mo alloys in weld metal. High resistance to cracking. Oxidation-and creep-resistant behaviours at high temperatures. High resistance against sliding wear of metallic object. High resistance to thermal shock. Shielding Gas : M 21 (Ar +1 %O₂)

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.20	170 - 200	27 - 30	15 - 25

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
603419	1.20	0.047"	15

Approvals :

GOST-R, CE, SEPRO

Flux Cored Wire for Hardfacing (Open Arc)



HARDCOR 55 0

Standards :

TS EN 14700	:	T Fe 15
EN 14700	:	T Fe 15
DIN 8555	:	MF 10-GF-55 G

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Fe
4.80	1.20	1.20	27.0	rest

Mechanical Properties - (Typical) :

Hardness (as welded) (HRC)
58 - 62

Typical Base Material Grades :

* Hardfacing of bucket teeth, excavator buckets, brick pres spring, fan blades, drills, mixer and blades, grinding/pulverizing rolls and table segments, wear plates, clad pipe, dredge pump shells and related components, hammers.

Features and Applications :

- * Open arc, hardfacing flux cored wire with Cr-Carbides.
- * Used in hardfacing welding of parts exposed to high abrasive wear.
- * It is common to have transverse cracks on weld seam.
- * Weld metal can be machined by grinding.
- * Max. two passes can be weld with this wire.

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
2.80	300 - 500	25.0 - 31.0	25.0 - 30.0

Current Type :

FCAW
D.C. (+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
602490	2.80	7/64	25

Approvals :

GOST-R, CE, SEPRO

Flux Cored Wire for Hardfacing



HARDCOR M 55

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	T Fe 8
EN 14700	:	T Fe 8
DIN 8555	:	MF 6 GF 55 GT

C	Si	Mn	Cr	Mo	W	V
0.65	0.50	1.55	7.20	1.00	1.60	0.10

Mechanical Properties - (Typical) : _____

Hardness (as welded) (HRC)
53 - 56

Features and Applications : _____

- * This hardfacing flux cored wire has excellent wear resistance and keeps its strength at high temperatures.
- * Used in cold and hot work tool steels, hot shape knives, extrusion die and steel casting and dies.
- * Shielding gas : m21

Welding Positions : _____



Operating Data : _____

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.20	150 - 220	26 - 30	20 - 25

Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
305876	1.20	0.047"	15

Approvals : _____

CE, SEPRO

Flux Cored Wire for Hardfacing (Open Arc)



HARDCOR 58 TIC 0

Standards :

TS EN 14700	:	T Fe 8
EN 14700	:	T Fe 8
DIN 8555	:	MF 10-GF-60-GP

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Mo	Ti	Fe
1.80	1.50	2.0	7.0	1.4	5.0	rest

Mechanical Properties - (Typical) :

Hardness (as welded) (HRC)
58

Typical Base Material Grades :

* Roller presses, grinding/pulverizing rolls, dredge pump shells, rock crushing hammers, shredders, asphalt, kneaders, crushing hard materials, vertical shaft impact crusher rotors, roller presses.

Features and Applications :

* FC wire containing C, Cr, Ti and Mo alloys. Weld metals with martensitic microstructure including titanium-carbide. High resistance to wear and to impact. Machinability of weld metal through grinding. Best suited for applications involving extreme wear under high pressure.

* Shielding Gas : Open Arc

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.60	180 - 200	26.0 - 30.0	25.0 - 30.0
2.80	300 - 500	26.0 - 30.0	25.0 - 30.0

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
603408	1.60	1/16	15
603409	2.80	7/64	25

Approvals :

GOST-R, CE, SEPRO

Flux Cored Wire for Hardfacing (Open Arc)



HARDCOR 63 0

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	T Z Fe 15
EN 14700	:	T Fe 15
DIN 8555	:	MF 10-Gr-60 G

C	Si	Mn	Cr	Fe
5.0	1.5	1.3	27.0	rest

Mechanical Properties :

Hardness (as welded) (HRC)
60 - 64

Typical Base Material Grades :

* Ventilators, wear plates, crushers for soft materials, shredders, chemical and food processing industries.

Features and Applications :

- * Open arc, hardfacing flux cored wire with Cr-Carbides.
- * It is suitable for low alloyed steel and carbon steels.
- * Weld metal is very hard and it is common to have transverse cracks on weld seam.
- * Max. two passes can be weld with this wire.

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.60	130 - 220	26.0 - 31.0	20.0 - 25.0
2.80	300 - 500	25.0 - 31.0	20.0 - 25.0

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
604935	1.60	1/16	15
602488	2.80	7/64	25

Approvals :

GOST-R, CE, SEPRO

Flux Cored Wire for Hardfacing (Open Arc)



HARDCOR 63 OB

Standards :

TS EN 14700	:	T Fe 15
EN 14700	:	T Fe 15
DIN 8555	:	MF 10 GF-65-G

Chemical Composition of Weld Metal-
% (Typical) :

C	Si	Mn	Cr	Nb	Fe	B
5.2	1.3	0.4	22.0	7.0	rest	1.0

Mechanical Properties :

Hardness (as welded) (HRC)
62 - 65

Typical Base Material Grades :

* Hardfacing of mining equipments, augers, impellers, dredgers, drills, gearwheels and parts. Fan blades, excavator scoops, bucket lips and wear plates.

Features and Applications :

* Extremely high hardness with specially-proportioned chemical composition including high amounts of C, Cr, Nb, B. High strength to abrasion provided by the special chemical composition.
Shielding Gas : Open Arc

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.60	130 - 220	26.0 - 31.0	25.0 - 30.0

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
604109	1.60	1/16	15

Approvals :

GOST-R, CE, SEPRO

Flux Cored Wire for Hardfacing (Open Arc)



HARDCOR 65 0

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	T Fe 16
EN 14700	:	T Fe 16
DIN 8555	:	MF 10 GF 65 GT

C	Mn	Si	Cr	Nb	Mo	W	V	Fe
5.2	0.4	1.0	21.0	7.0	7.0	2.0	1.0	rest

Mechanical Properties :

Hardness (as welded) (HRC)
63 - 65

Typical Base Material Grades :

* Clad wear plate, slurry pipe, cement furnace components, sinter plant parts, fan blades, mixer blades, screws

Features and Applications :

* It is self shielded flux cored hardfacing welding wire composed of a high density of primary chromium with multiple secondary carbides. Because of the high content of C, Cr, Mo, Nb, W, V and their hard carbides, Hardness at the temperatures can be established. Designed specifically for single and double pass applications in high temperature environments. Weld deposit contains stress relief cracks, but this does not impair wear resistance.

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.60	130 - 220	26.0 - 31.0	25.0 - 30.0
2.40	250 - 300	26.0 - 30.0	25.0 - 30.0
2.80	325 - 450	25.0 - 31.0	25.0 - 30.0

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
603410	1.60	1/16	15
603411	2.40	3/32	25
603412	2.80	7/64	25

Approvals :

GOST-R, CE, SEPRO

Seamless Flux Cored Wire for Hardfacing



HARDCOR M 67

Standards :

TS EN 14700	:	T Z Fe 16
EN 14700	:	T Z Fe 16
DIN 8555	:	MF 10 GF 65 G

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	Cr	B
~2.00	0.5	0.5	7.5	4.5

Mechanical Properties :

Hardness (as welded) (HRC)
65 - 67

Typical Base Material Grades :

* Repair of equipment used in mining and steel mills. Hardfacing equipment and tools used in the construction and agriculture industries, highway constructure equipment, and conveyor chains, mixing paddles, cement pumps components, etc.

Features and Applications :

* High-alloy metal powder flux-cored wire without slag for hardfacing preferred without shielding gas. Use with CO₂ and Ar-CO₂ mix possible. The weld metal characteristics and structure is similar to hard chrome alloys. Excellent resistance to abrasion from sand and minerals. The weld metal is machinable only by grinding. Stringer bead technique is recommended. The hardsurfacing contains check cracks, but this does not impair wear resistance.

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)	Stick-out (mm)
1.60	180 - 350	25.0 - 32.0	20.0 - 25.0

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
305835	1.60	1/16	15

Approvals :

CE, SEPRO

Cobalt Based Flux Cored Wire for Hardfacing



HARDCOR COBALT 1

Standards :

Chemical Composition of Weld Metal-
% (Typical) :

TS EN 14700	:	T Co3
EN 14700	:	T Co3
DIN 8555	:	MF 20-55-CTZ

C	Mn	Si	W	Fe	Cr	Co
2.4	0.4	0.7	11.0	< 3.0	29.0	rest

Mechanical Properties - % (Typical) : _____

Hardness (as welded) (HRC)
54 - 56

Typical Base Material Grades : _____

* Best used on wear pads, rotary seal rings, pump sleeves and centerless grinder work rests. Thermal shock resistant, abrasion, erosion, corrosion, cavitation at high temperature, bearing surfaces, chemical industry, hot shear blades, valves.

Features and Applications : _____

* HARDCORE COBALT 1 deposits a cobalt-based alloy with an austenitic-ferrocarbide structure. This is the hardest of the standard cobalt-based alloys. It has a high resistance to corrosion especially to reducing acids, extreme wear and temperature shocks. The deposit is only machinable by grinding.
Shielding Gas : M13 (Ar +1 %O₂)

Welding Positions : _____



Operating Data : _____

Diameter (mm)	Welding Current (A)	Voltage (V)
1.60	180 - 300	26.0 - 30.0

Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
603396	1.60	1/16	15

Approvals : _____

GOST-R, CE, SEPRO

Cobalt Based Flux Cored Wire for Hardfacing



HARDCOR COBALT 6

Standards :

TS EN 14700	:	T Co2
EN 14700	:	T Co2
DIN 8555	:	MF 20-45-CTZ

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	W	Fe	Cr	Co
1.1	0.6	1.0	4.5	< 3.0	28.0	rest

Mechanical Properties - % (Typical) : _____

Hardness (as welded) (HRC)
40 - 43

Typical Base Material Grades : _____

* Best used on steam and chemical valves and on equipment handling hot steel, such as tong bits, hot steel-shear blades, etc. Thermal shock resistant, abrasion, erosion, corrosion, cavitation at high temperature, bearing surfaces, chemical industry, hot shear blades, valves.

Features and Applications : _____

* Cobalt-based alloys with an austenitic-ferrocarbide structure containing chrome and tungsten carbides. These alloys are resistant against high corrosion and abrasion, high impact stress and extreme temperature shocks. The deposit is machinable by hard metal tools.

Shielding Gas : M13 (Ar +1 %O₂)

Welding Positions : _____



Operating Data : _____

Diameter (mm)	Welding Current (A)	Voltage (V)
1.20	140 - 200	26.0 - 30.0

Current Type : _____

D.C.(+)

Operating Data : _____

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
603397	1.20	0.047"	15

Approvals : _____

GOST-R, CE, SEPRO

Cobalt Based Flux Cored Wire for Hardfacing



HARDCOR COBALT 12

Standards :

TS EN 14700	: T Co3
EN 14700	: T Co3
DIN 8555	: MF 20-50-CTZ

Chemical Composition of Weld Metal-
% (Typical) :

C	Mn	Si	W	Fe	Cr	Co
1.4	0.8	1.0	8.0	< 3.0	29.0	rest

Mechanical Properties :

Hardness (as welded) (HRC)
48 - 50

Typical Base Material Grades :

* Thermal shock resistant, abrasion, erosion, corrosion, cavitation at high temperature, bearing surfaces, chemical industry, hot shear blades, valves.

Features and Applications :

* Cobalt based-alloy with high resistance against abrasion, temperature shocks and corrosion. This alloy is suitable for hardfacing cutting edges of long knives and other tools used in the wood, plastic, paper and chemical industries.

Shielding Gas : M13 (Ar +1 %O₂)

Welding Positions :



Operating Data :

Diameter (mm)	Welding Current (A)	Voltage (V)
1.20	140 - 200	26.0 - 30.0

Current Type :

D.C.(+)

Operating Data :

Product Code	Diameter x Length (mm) / (inch)		Package Weight (Kg)
603398	1.20	0,047''	15

Approvals :

GOST-R, CE, SEPRO

Standards :

TS EN ISO 17672	:	Cu 511
EN ISO 17672	:	Cu 511
AWS A5.7	:	ER Cu

**Chemical Composition of Weld Metal-
% (Typical) :**

Sn	Si	Mn	Cu
0.8	0.3	0.3	rest

Mechanical Properties :

Tensile Strength (N/mm ²)	Impact Strength (J)	Elongation (Lo=5do)(%)	Hardness (HB)	Melting Range (°C)	Electrical Conductivity (20°C)(Sm/mm ²)	Thermal Conductivity (W/m.K)	Density (kg/dm ³)
200	70	30	60	1020-1050	15-20	120-170	8.9

Features and Applications :

- * Used in joining and filler welds of blister copper.
- * The weld metal has strength to the overheat.
- * Electrode holders, blast furnace tuyeres, some copper parts of radiator and oil coolers are the primary application area of this consumable.
- * 300°C pre-heat must be done to the copper plates thinner than 3 mm.
- * Used for steel and nickel brazing.
- * Shielding gas : TIG (Ar or %75 Ar+ %25He)

Welding Method :

Gas Welding - TIG Welding

Current Type	MIG Wire	Electrode	Welding Positions		
			TIG D.C.(-)	GekaTec R1 L	GeKaTec Cu-WELD

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
	600422	2.0 x 1000	

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 17672	:	Cu 681
EN ISO 17672	:	Cu 681

**Chemical Composition of Weld Metal-
% (Typical) :**

Cu	Sn	Si	Zn
59.0	1.8	0.2	rest

Mechanical Properties :

Melting Range (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Hardness (HB)
870 - 890	8.4	430	30	110

Features and Applications :

- * Used in joining and coating of brass, bronze copper, steel and cast iron materials with using Flux F-SH2.
- * Normal flame must be choosen for steel and copper, oxidizing flame must be choosen for brass, bronze, galvanized materials.

Welding Method :

Gas Welding

Other Brazing Rods	Welding Positions
S21, S3	

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
300850	2.0 x 1000	5/64 x 39"	5
300852	3.0 x 1000	0.118" x 39"	5
300853	4.0 x 1000	5/32 x 39"	5

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 17672 : Cu 470
EN ISO 17672 : Cu 470

**Chemical Composition of Weld Metal-
% (Typical) :**

Cu	Sn	Si	Zn
60.0	0.5	0.2	rest

Mechanical Properties :

Melting Range (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Hardness (HB)
875 - 895	8.4	400	30	100

Features and Applications :

* Used in joining and coating of brass, bronze copper, steel and cast iron materials with using Flux F-SH2.
* Normal flame must be choosen for steel and copper, oxidizing flame must be choosen for brass, bronze, galvanized materials.

Welding Method :

Gas Welding

Other Brazing Rods	Welding Positions
S2, S3	

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
303503	1.5 x 1000	0.059" x 39"	5
300860	2.0 x 1000	5/64 x 39"	5
300861	2.5 x 1000	3/32 x 39"	5
300862	3.0 x 1000	0.118" x 39"	5
300863	4.0 x 1000	5/32 x 39"	5
300864	5.0 x 1000	3/16 x 39"	5

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 17672 : ~Cu 773
EN ISO 17672 : ~Cu 773

**Chemical Composition of Weld Metal-
% (Typical) :**

Cu	Ni	Si	Zn
52.0	7.0	0.3	rest

Mechanical Properties :

Working Temperatures (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Hardness (HB)
890 - 920	8.7	690 - 785	15	130

Features and Applications :

- * Brass brazing rods with silver and nickel alloyed consumable.
- * Corrosion resistance, wear resistance, mechanical properties are very good.
- * Used in joining of steels, cast iron, nickel and nickel alloys.
- * This consumable can used with Flux F-SH2.
- * Normal flame must be choosen.

Welding Method :

Gas Welding

Other Brazing Rods	Welding Positions
S2,S21	

Operating Data :

Product Code	Diameter (mm)	Length (inch)	Package Weight(kg)
300855	2.0	5/64 x 39"	5
300857	3.0	0.118" x 39"	5
300858	4.0	5/32 x 39"	5

Approvals :

GOST-R, SEPRO

Standards :

EN ISO 17672	:	Cu 922
AWS A5.7	:	ER CuSn-A

**Chemical Composition of Weld Metal-
% (Typical) :**

Cu	Sn	P
rest	6.0	0.20

Mechanical Properties :

Melting Range (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Yield Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Hardness (HB)
910 - 1040	8.7	300	150	20	80

Features and Applications :

- * Highly wear resistant, good anti-friction properties suitable for joining copper-zinc alloys and coating of cast irons and steel materials and dissimilar materials like as steel and bronze.
- * Applications include bearing faces, art bronze, axle bearing.
- * Shielding Gas for TIG Welding : Ar.
- * Normal flame must be choosen.
- * 100 - 250°C pre-heat temperature must be done thicker than 10 mm materials.

Welding Method :

TIG Welding, Gas Welding

Current Type	MIG Wire	Electrode	Welding Positions
			TIG D.C.(-)

Operating Data :

Product Code	Diameter x Length		Package Weight(kg)
	(mm)	(inch)	
600435	2.0	1000	5
	5/64	39"	

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 17672 :	~Cu 565
EN ISO 17672 :	~Cu 565
AWS A5.7 :	~ER CuAl-A1

Chemical Composition of Weld Metal- % (Typical) :

Al	Fe	Mn	Ni	Cu
7.5-10	0.5-1.5	<1.0	<1.0	rest

Mechanical Properties :

Working Temperatures (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Hardness (HB)
1030 - 1040	7,5	580	20	130

Features and Applications :

- * Weld metal is resistance to sea water, corrosion and cavitation.
- * Used in joining of steels, copper to copper alloys.
- * Resistant to deformation at elevated temperatures and corrosion resistant for armouring parts of machinery.
- * Applications include propellers, thrust plates, picking bails.
- * Shielding Gas for TIG Welding : Ar.

Welding Method :

TIG Welding

Current Type	MIG Wire	Electrode	Welding Positions	
			TIG D.C.(-)	GeKa R4 AL

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
	605304	2.0 x 1000	

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 17672 : Cu P 180
EN ISO 17672 : Cu P 180
AWS A 5.8 : B Cu P-2

**Chemical Composition of Weld Metal-
% (Typical) :**

Cu	P
93.0	7.0

Mechanical Properties :

Working Temperatures (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Melting Range (°C)
720	8.1	250	5	710 - 820

Features and Applications :

- * Used in brazing of copper and copper alloys, bronze and casting brass. materials, has high liquidity properties.
- * This consumables do not use in brazing of nickel and steel materials.
- * There is no need flux for joining of copper to copper.
- * Reducing flame must be used.

Welding Method :

Brazing

Welding Positions



Operating Data :

Product Code	Diameter x Length		Package Weight(kg)
	(mm)	(inch)	
600282	1.5 x 500	0.059" x 20"	1
600281	2.0 x 500	5/64 x 20"	1
600280	3.0 x 500	0.118" x 20"	1

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 17672 : Cu P 279
EN ISO 17672 : Cu P 279

**Chemical Composition of Weld Metal-
% (Typical) :**

Cu	P	Ag
91.8	6.2	2.0

Mechanical Properties :

Working Temperatures (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Melting Range (°C)
710	8.1	250	5	650 - 810

Features and Applications :

- * Used in copper and copper alloys, casting brass and bronze brazing.
- * It is not used in nickel and steel materials brazing.
- * FLUX F-SH1 can used and normal flame must be choosen.

Welding Method :

Brazing

Other Copper-Silver-Phosphor Brazing Rods	Welding Positions
GeKaTec L-Ag5P, L-Ag15P	

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
600259	1.5 x 500	0.059" x 20"	1
600258	2.0 x 500	5/64 x 20"	1
602109	3.0 x 500	0.118" x 20"	1

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 17672	: Cu P 281
EN ISO 17672	: Cu P 281
AWS A5.8	: B CuP-3

**Chemical Composition of Weld Metal-
% (Typical) :**

Ag	P	Cu
5.0	6.0	89.0

Mechanical Properties :

Working Temperature (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Melting Range (°C)
710	8,2	250	8	650 - 810

Features and Applications :

- * Used in copper and copper alloys, casting brass and bronze brazing.
- * This consumable has higher creep properties according to the L-Ag 2P.
- * It is not used in brazing nickel and steel materials.
- * Flux F-SH1 can be used and normal flame must be chosen.

Welding Method :

Brazing

Other Copper-Silver-Phosphor Brazing Rods	Welding Positions
GeKaTec L-Ag5P, L-Ag15P	

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
603233	2.0 x 500	5/64 x 20"	1

Approvals :

GOST-R, SEPRO

Standards :

**Chemical Composition of Weld Metal-
% (Typical) :**

TS EN ISO 17672	: Cu P284
EN ISO 17672	: Cu P284
AWS A5.8	: B CuP-5

Ag	P	Cu
15.0	5.0	80.0

Mechanical Properties :

Working Temperature (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Melting Range (°C)
710	8.4	250	10	650 - 800

Features and Applications :

- * Used in copper and copper alloys, casting brass and bronze brazing.
- * This consumable has higher creep properties according to the L-Ag5P
- * It is not used in brazing of nickel and steel materials.
- * Flux F-SH1 can be used and normal flame must be chosen.

Welding Method :

Brazing

Other Copper-Silver-Phosphor Brazing Rods	Welding Positions
GeKaTec L-Ag5P, L-Ag15P	

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
	mm	inch	
600283	2.0 x 500	5/64 x 20"	1
607618	3.0 x 500	0.118" x 20"	1
607619	4.0 x 500	5/32 x 20"	1

Approvals :

GOST-R, SEPRO

Standards :

EN 1044 : B-Cu 40 ZnAgCd(~AG 309)

**Chemical Composition of Weld Metal-
% (Typical) :**

Ag	Cu	Si	Cd	Zn
20.0	40.0	0.2	15.0	rest

Mechanical Properties :

Working Temperature (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Melting Range (°C)
750	8.8	350 - 430	25	605 - 765

Features and Applications :

* Used in copper and copper alloy, steel, stainless steel and nickel and nickel alloys brazing and joining of these materials each others.

* Flux F-SH1 can be used and reducing flame must be choosen.

Welding Method :

Brazing

Other Silver Alloyed Brazing Rods	Welding Positions
GeKaTec L-Ag20FC, L-Ag30, L-Ag30FC, L-Ag40, L-Ag40FC, L-Ag55, L-Ag55FC	

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
600305	1.5 x 500	0.059" x 20"	1
600304	2.0 x 500	5/64 x 20"	1
600303	3.0 x 500	0.118" x 20"	1

Approvals :

GOST-R, SEPRO

Standards :

EN 1044 : B-Cu 40 ZnAgCd(~AG 309)

**Chemical Composition of Weld Metal-
% (Typical) :**

Ag	Cu	Si	Cd	Zn
20.0	40.0	0.2	15.0	rest

Mechanical Properties :

Working Temperatures (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Melting Range (°C)
750	8.8	350 - 430	25	605 - 765

Features and Applications :

* Used in copper and copper alloys, nickel and nickel alloys, cast iron, steel, stainless brazing and joining of these materials each others.

* L-Ag20FC is a kind of flux coated brazing rods with %20Ag.

* Reducing flame must be choosen.

Welding Method :

Brazing

Other Silver Alloyed Brazing Rods	Welding Positions
GeKaTec L-Ag20, L-Ag30, L-Ag30FC, L-Ag40, L-Ag40FC, L-Ag55, L-Ag55FC	

Operating Data :

Product Code	Diameter x Length		Package Weight(kg)
	(mm)	(inch)	
600302	1.5 x 500	0.059" x 20"	1
600301	2.0 x 500	5/64 x 20"	1
600300	3.0 x 500	0.118" x 20"	1

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 17672	:	Ag 330
EN ISO 17672	:	Ag 330

**Chemical Composition of Weld Metal-
% (Typical) :**

Ag	Cu	Zn	Si	Cd
30.0	28.0	rest	0.5	21.0

Mechanical Properties :

Working Temperature (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Melting Range (°C)
680	9,2	380 - 470	30	600 - 690

Features and Applications :

* Used in copper and copper alloy, steel, stainless steel and nickel and nickel alloys brazing and joining of these materials each others.

* Flux F-SH1 can be used and reducing flame must be choosen.

Welding Method :

Brazing

Other Silver Alloyed Brazing Rods	Welding Positions
GeKaTec L-Ag20, L-Ag20FC, L-Ag30FC, L-Ag40, L-Ag40FC, L-Ag55, L-Ag55FC	

Operating Data :

Product Code	Diameter x Length		Package Weight(kg)
	(mm)	(inch)	
600299	1.5 x 500	0.059" x 20"	1
600298	2.0 x 500	5/64 x 20"	1
603108	3.0 x 500	0.118" x 20"	1

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 17672	: Ag 330
EN ISO 17672	: Ag 330

**Chemical Composition of Weld Metal-
% (Typical) :**

Ag	Cu	Zn	Si	Cd
30.0	28.0	rest	0.5	21.0

Mechanical Properties :

Working Temperatures (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Melting Range (°C)
680	9.2	380 - 470	30	600 - 690

Features and Applications :

* Used in copper and copper alloy, nickel and nickel alloys, cast iron, steel, stainless brazing and joining of these materials each others.

* L-Ag 30FC is a kind of flux coated brazing rods with %30 Ag.

Welding Method :

Brazing

Other Silver Alloyed Brazing Rods	Welding Positions
GeKaTec L-Ag20, L-Ag20FC, L-Ag30, L-Ag40, L-Ag40FC, L-Ag55, L-Ag55FC	

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
	mm	inch	
603110	1.5 x 500	0.059" x 20"	1
600297	2.0 x 500	5/64 x 20"	1
603109	3.0 x 500	0.118" x 20"	1

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 17672	: Ag 340
EN ISO 17672	: Ag 340

**Chemical Composition of Weld Metal-
% (Typical) :**

Cu	Ag	Cd	Si	Zn
20.0	40.0	21.0	0.5	rest

Mechanical Properties :

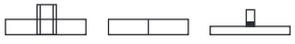
Working Temperatures (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Melting Range (°C)
610	9,3	410 - 510	25	595 - 630

Features and Applications :

- * Used in copper and copper alloy, steel, stainless steel and nickel and nickel alloys brazing and joining of these materials each others.
- * Flux F-SH1 can be used and reducing flame must be choosen.

Welding Method :

Brazing

Other Silver Alloyed Brazing Rods	Welding Positions
GeKaTec L-Ag20, L-Ag20FC, L-Ag30, L-Ag30FC, L-Ag40FC, L-Ag55, L-Ag55FC	

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
600295	1.5 x 500	0.059" x 20"	1
600294	2.0 x 500	5/64 x 20"	1
600293	3.0 x 500	0.118" x 20"	1

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 17672	: Ag 340
EN ISO 17672	: Ag 340

**Chemical Composition of Weld Metal-
% (Typical) :**

Cu	Ag	Cd	Si	Zn
20.0	40.0	21.0	0.5	rest

Mechanical Properties : _____

Working Temperatures (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Melting Range (°C)
610	9.3	410 - 510	25	595 - 630

Features and Applications : _____

* Used in copper and copper alloyed, cast irons, steels, stainless steels brazing and joining of these all materials each others.

* L-Ag40FC is flux coated brazing rods with % 40 Ag.

* Reducing flame must be choosen.

Welding Method : _____

Brazing

Other Silver Alloyed Brazing Rods	Welding Positions
GeKaTec L-Ag20, L-Ag20FC, L-Ag30, L-Ag30FC, L-Ag40, L-Ag55, L-Ag55FC	

Operating Data : _____

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
600292	1.5 x 500	0.059" x 20"	1
600291	2.0 x 500	5/64 x 20"	1

Approvals : _____

GOST-R, SEPRO

Standards :

TS EN ISO 17672	: Ag 155
EN ISO 17672	: Ag 155

**Chemical Composition of Weld Metal-
% (Typical) :**

Ag	Cu	Zn	Sn
55.0	21.0	22.0	2.0

Mechanical Properties :

Working Temperatures (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L _o =5d _o)(%)	Melting Range (°C)
650	9,4	330 - 430	25	620 - 660

Features and Applications :

- * It is a kind of brazing rods does not contain cadmium.
- * It is resistance to sea water and corrosion.
- * Used in medikits and food sectors and also used copper and copper alloys, nickel and nickel alloys, cast irons, steel, stainless steels brazing and joining each others.
- * Flux F-SH1 can be used and reducing flame must be choosen.

Welding Method :

Brazing

Other Silver Alloyed Brazing Rods	Welding Positions
GeKaTec L-Ag20, L-Ag20FC, L-Ag30, L-Ag30FC, L-Ag40, L-Ag40FC, L-Ag55FC	

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
	mm	inch	
607020	1.5 x 500	0.059" x 20"	1
600288	2.0 x 500	5/64" x 20"	1
600287	3.0 x 500	0.118" x 20"	1

Approvals :

GOST-R, SEPRO

Standards :

TS EN ISO 17672	: Ag 155
EN ISO 17672	: Ag 155

**Chemical Composition of Weld Metal-
% (Typical) :**

Ag	Cu	Zn	Sn
55.0	21.0	22.0	2.0

Mechanical Properties :

Working Temperatures (°C)	Density (kg/dm ³)	Tensile Strength (N/mm ²)	Elongation (L ₀ =5d ₀)(%)	Melting Range (°C)
650	9.4	330 - 430	25	620 - 660

Features and Applications :

- * It is a kind of brazing rods does not contain cadmium.
- * It has resistance to sea water and corrosion.
- * Used in medikits and food sectors and also used in copper and copper alloys, nickel and nickel alloys, cast irons, steel, stainless steel brazing and joining each others.
- * L-Ag 55 FC is a kind of flux coated brazing rod with %55 Ag.

Welding Method :

Brazing

Other Silver Alloyed Brazing Rods	Welding Positions
GeKaTec L-Ag20, L-Ag20FC, L-Ag30, L-Ag30FC, L-Ag40, L-Ag40FC, L-Ag55	

Operating Data :

Product Code	Diameter x Length (mm) (inch)		Package Weight(kg)
600286	1.5 x 500	0.059" x 20"	1
600285	2.0 x 500	5/64 x 20"	1
600284	3.0 x 500	0.118" x 20"	1

Approvals :

GOST-R, SEPRO

GeKaTec BRAZING FLUXES

FLUX F-SH1 TS EN 1045 : FH 10

This flux is flour based and used with application of silver alloyed brazing materials. Working temperature is between 550 and 750°C. This flux is used on all base metals except aluminium and aluminium alloys. This product is sold as both powder and paste form.

FLUX F-LH1

This is a flour based flux used for welding and brazing applications of aluminium and aluminium alloyed materials. Working temperature is between 500 and 650°C and sold in powder form.

Operating Data :

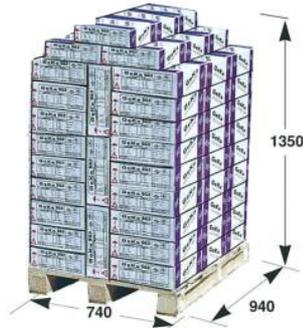
Product	Product Code	Application Materials	Package Weight(kg)
FLUX F-SH1(powder)	607149	Silver	1
FLUX F-LH1(powder)	606999	Aluminium	2

Packaging Information

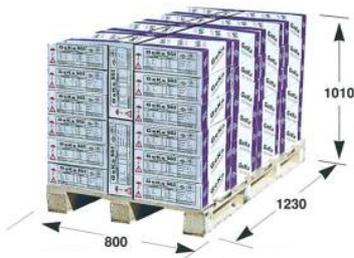
PACKAGING OF WELDING WIRES



1 Pallet
72 Spools-1080 kg.



1 Pallet
72 Spools-1080 kg. 1 Container
18 Pallet-19.440 kg.



1 Pallet
56 Spools - 840 kg.
56 Spools - 1.850 lb.

1 Container
22 Pallet - 18.480 kg.
22 Pallet - 40.405 lb.

72 Spools - 1080 kg.
72 Spools - 2319 lb.

22 Pallet - 23.760 kg.
22 Pallet - 52.335 lb.

PACKAGING OF WELDING WIRES

BIG PACK



For Gas Shielded Arc Welding Wires

250 kg. / 550 lb.

400 kg. / 900 lb.

For Submerged Arc Welding Wires

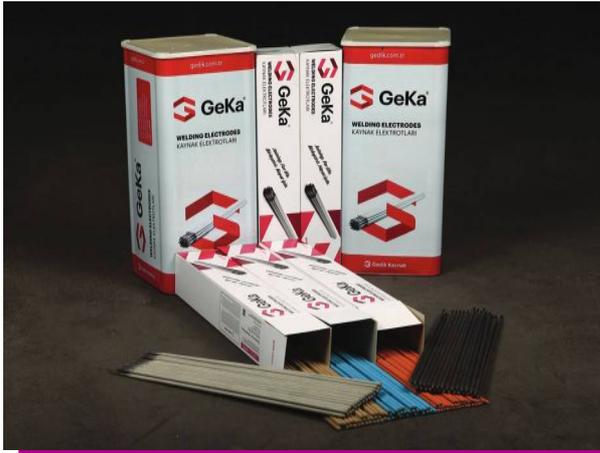
400 kg. / 900 lb.

600 kg. / 1322 lb.

1000 kg. / 2203 lb.

PACKAGING OF WELDING ELECTRODES

Tin Boxes & Carton Boxes



Vacuum Packs



Plastic Boxes







Welding and Cutting Machines

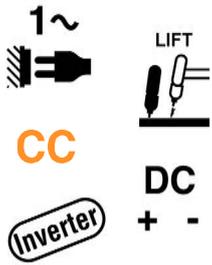


	MMA (Manuel Metal Arc)		Single Phase
	MIG-MAG (Metal Active Gas-Metal Inert Gas)		Three Phase
	TIG (Tungsten Inert gas)		Power Factor Currention
	Plasma Cutting		Inverter
	MIG-MAG Pulse		Step Control
	Submerged Arc Welding		Mechanical Control
	Gouging		Tyristor Control
	Synergic		Spot Timer
	CC: Constant Current/ CV: Constant Voltage		Lift-TIG
	CC: Constant Current		Pulse Welding Mode
	Direct Current (Plus/Minus Pole)		Voltage Reduction Device
	Alternating Current / Direct Current		Hot Start
	Digital Amperemeter / Voltmeter		Arc Force
	Digital Amperemeter		
	Digital Panel		



Features

- Inverter type DC Welding Machine.
- IGBT based technology.
- Excellent welding characteristics with rutile&basic electrodes between $\varnothing 2.0 - \varnothing 3.2$ mm.
- Anti-stick function.
- Thermal protection.
- Overvoltage protection.
- Lift-TIG available.
- Low energy consumption.
- Easy to carry, ergonomic design.
- Electrode antisticking function.
- 1 year guarantee.
- Gedik Welding provides full support for after sales services.



Technical Specs.	PoWer ARC 165	
Input Voltage	V	Mono Phase 230 V, 50/60 Hz
Installed Power	kVA	6,42
Fuse (delayed action)	A	20
Open Circuit Voltage	V	56
Current Range	A	30 - 160
Duty Cycle at (40 °C)	30%	160 A
Standards	EN 60974-1 / EN 60974-10	
Protection Class	IP	23
Insulation Class	H	
Dimensions (L*W*H)	mm	365 / 150 / 240
Weight	kg	7,5

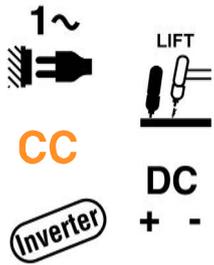
Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	306184		306179		204348		204349
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Features

- Inverter type DC Welding Machine.
- IGBT based technology.
- Excellent welding characteristics between $\varnothing 2.5$ mm - $\varnothing 4.0$ mm rutile&basic electrodes.
- Anti-stick function.
- Thermal protection.
- Overvoltage protection.
- LIFT-TIG available.
- Low energy consumption.
- Easy to carry, ergonomic design.
- 1 year guarantee.
- Gedik Welding provides full support for after sales services.



Technical Specs.	PoWer ARC 205	
Input Voltage	V	Mono Phase, 50/60 Hz 230 V
Installed Power	kVA	8,16
Fuse (delayed action)	A	32
Open Circuit Voltage	V	65
Current Range	A	30-200
Duty Cycle at (40 °C)	20%	200 A
Standards	EN 60974-1 / 60974-10	
Protection Class	IP	23
Insulation Class	H	
Dimensions (L*W*H)	mm	365 / 150 / 240
Weight	kg	7,5

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	306109		306105		204348		204349
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Features

- IGBT based technology.
- Excellent welding characteristics between $\varnothing 2.5$ mm - $\varnothing 5.0$ mm rutile&basic electrodes.
- Electrode antisticking function.
- Thermal protection (microprocessor controlled).
- LIFT-TIG available.
- Low energy consumption.
- Easy to carry, ergonomic design.
- Metallic main structure.
- Shock-proof control panel.
- 1 year guarantee.



CC

DC
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Inverter

Technical Specs.	PoWer ARC 250	
Input Voltage	V	3 Phase, 50/60 Hz 380 V +%10
Installed Power	kVA	11.6
Fuse (delayed action)	A	16
Open Circuit Voltage	V	95
Current Range	A	30-250
Duty Cycle at (40 °C)	100%	180
	60%	200
	45%	250
Standards		EN 60974-1
Protection Class	IP	21
Insulation Class		F
Dimensions (L*W*H)	mm	410/180/350
Weight	kg	15

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	304759	304462	202524	202526
	600926 Optional			



Features

- Digital control of all welding parameters.
- Excellent welding characteristics in MMA with any kind of electrodes, including cellulosic.
- Adjustable HOT START to improve arc striking with the most difficult electrodes, adjustable ARC FORCE to choose the best arc dynamic characteristics.
- Electrode Antisticking function.
- Suitable to be used with main cable lengths over 100 m.
- Automatic compensation for main voltage fluctuations within +/- 20%, ENERGY SAVING function to operate the power source cooling fan only when necessary.
- Possibility of memorizing welding parameters (99 JOB's/programs) STAND BY function on the remote control.
- IP 23 protection class and dust-proof electronic components, thanks to the innovative "Tunnel" fan cooling system, allow operation in the toughest work environments.
- LIFT-TIG available.
- VRD device reduces the open circuit voltage to value below 12 V.



Technical Specs.	PoWer ARC 2800	
Input Voltage	V	3 Phase, 50/60 Hz, 400 V, ±%20
Installed Power	kVA	10
Fuse (delayed action)	A	10
Open Circuit Voltage	V	100
Current Range	A	5-270
Duty Cycle at (40 °C)	100%	200
	60%	220
	30%	270
Standards	EN 60974-1 / EN 60974-10	
Protection Class	IP	23 S
Insulation Class	F	
Dimensions (L*W*H)	mm	430/185/390
Weight	kg	14.5

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	605001	604999	202524	202526
	600926 Optional	600737 Optional		



Features

- Digital control of all welding parameters.
- Excellent welding characteristics in MMA with any kind of electrodes, including cellulosic.
- Adjustable HOT START to improve arc striking with the most difficult electrodes.
- Adjustable ARC FORCE to choose the best arc dynamic characteristics, electrode Antisticking function.
- Quality welds with minimal spatter due to precise controls.
- Suitable to be used with main cable lengths over 100 m.
- Automatic compensation for main voltage fluctuations within +/- 20%.
- ENERGY SAVING function to operate the power source cooling fan only when necessary. Possibility of memorizing welding parameters (99 JOB's/programs).
- IP 23 protection class and dust-proof electronic components, thanks to the innovative "Tunnel" fan cooling system, allow operation in the toughest work environments .
- Lift - TIG available.
- VRD device reduces the open circuit voltage to value below 12 V.



Technical Specs.	PoWer ARC 420	
Input Voltage	V	3 Phase, 50/60 Hz, 400 V, ±%20
Installed Power	kVA	17.4
Fuse (delayed action)	A	16
Open Circuit Voltage	V	100
Current Range	A	5-420
Duty Cycle at (40°C)	100%	270
	60%	340
	40%	420
Standards	EN 60974-1 / EN 60974-10	
Protection Class	IP	23 S
Insulation Class	F	
Dimensions (L*W*H)	mm	500/220/425
Weight	kg	20

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	604766	604773	201640	201641
	600926 Optional	600737 Optional		



Features

- Possible to weld with all electrodes between $\varnothing 2.0$ - $\varnothing 5.0$ mm in diameter.
- Current adjustment using potentiometer with thyristor control.
- Fan-cooling system and thermic protection.
- Strong and durable enough to work under difficult and heavy conditions.
- 1 year guarantee except for torch kit.
- LIFT-TIG available.



Technical Specs.	RKM 350	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	15
Fuse (delayed action)	A	42
Open Circuit Voltage	V	38
Current Range	A	5-300
Duty Cycle at (40 °C)	100%	180
	60%	230
	35%	300
Standards	EN 60974-1 / EN 60974-10	
Protection Class	IP	23
Insulation Class	H	
Dimensions (L*W*H)	mm	680/510/460
Weight	kg	101

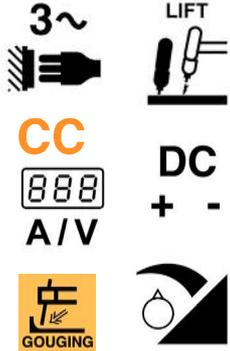
Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	302030	302013	201392	201393
	639135 (1000 A) 607102 (1250 A)	600926 Optional		



Features

- Possible to weld with all electrodes up to $\phi 5.0$ mm.
- Current adjustment using potentiometer with thyristor control.
- Digital current and voltage indicators.
- Fan-cooling system and thermic protection.
- Strong and durable enough to work under difficult and heavy conditions.
- 1 year guarantee except for torch kit.
- LIFT-TIG available.
- Remote control available.



Technical Specs.	RKM 450	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	32
Fuse (delayed action)	A	63
Open Circuit Voltage	V	82
Current Range	A	5-450
Duty Cycle at (40 °C)	100%	270
	60%	350
	35%	450
Standards	EN 60974-1 / EN 60974-10	
Protection Class	IP	23
Insulation Class	H	
Dimensions (L*W*H)	mm	980/760/660
Weight	kg	209

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	302031 	302014 	201640 	201641
	639135 (1000 A) 607102 (1250 A)	600926 Optional 	100731 Optional 	



Features

- Possible to weld with all electrodes up to $\phi 6.0$ mm.
- Possible to weld with cutting and gouging electrodes between $\phi 6.0 - \phi 10.0$ mm.
- Current adjustment using potentiometer with thyristor control.
- Digital current and voltage indicators.
- Fan-cooling system and thermic protection.
- Strong and durable enough to work under difficult and heavy conditions.
- 1 year guarantee except for torch kit.
- LIFT-TIG available.
- Remote control available.



Technical Specs.	RKM 650	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	39
Fuse (delayed action)	A	63
Open Circuit Voltage	V	82
Current Range	A	50-650
Duty Cycle at (40 °C)	100%	390
	60%	500
	35%	650
Standards	EN 60974-1 / EN 60974-10	
Protection Class	IP	23
Insulation Class	H	
Dimensions (L*W*H)	mm	980/760/660
Weight	kg	265

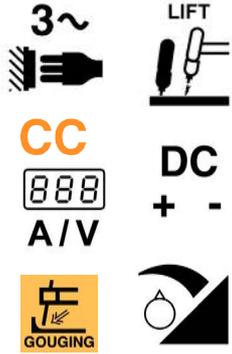
Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	303768 	302105 	201822 	201819
	639135 (1000 A) 607102 (1250 A)	600926 Optional 	100731 Optional 	



Features

- Possible to weld with all electrodes up to $\phi 6.0$ mm.
- Possible to weld with cutting and gouging electrodes between $\phi 6.0 - \phi 12.0$ mm.
- Current adjustment using potentiometer with thyristor control.
- Digital current and voltage indicators.
- Fan-cooling system and thermic protection.
- Strong and durable enough to work under difficult and heavy conditions.
- 1 year guarantee except for torch kit.
- LIFT-TIG available.
- Remote control available.



Technical Specs.	RKM 800	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	51
Fuse (delayed action)	A	80
Open Circuit Voltage	V	85
Current Range	A	5-800
Duty Cycle at (40 °C)	100%	460
	60%	600
	35%	800
Standards	EN 60974-1 / EN 60974-10	
Protection Class	IP	23
Insulation Class	H	
Dimensions (L*W*H)	mm	980/760/660
Weight	kg	297

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	304934	304455	201822	201819
	639135 (1000 A) 607102 (1250 A)	600926 Optional	100731 Optional	



Features

- Possible to weld with all electrodes including cellulosic up to ø6.0 mm.
- Mechanically controlled.
- Fan-cooling system and thermic protection.
- Strong and durable enough to work under difficult conditions.
- 1 year guarantee.
- LIFT-TIG available.



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Technical Specs.	RRM 500	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	32,5
Fuse (delayed action)	A	63
Open Circuit Voltage	V	75
Current Range	A	25-500
Duty Cycle at (40 °C)	100%	300
	60%	380
	35%	500
Standards	EN 60974-1 / EN 60974-10	
Protection Class	IP	23
Insulation Class	H	
Dimensions (L*W*H)	mm	810/610/650
Weight	kg	177

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	 304936	 304487	 201822	 201819
	 600926 Optional	 639135 (100 A) 607102 (250 A)		

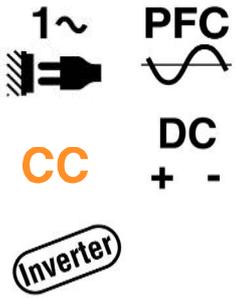


Features

- Precise and efficient TIG arc striking by high frequency.
- Steady, easily targeted arc makes welding easy.
- Low energy consumption and high efficiency.
- Automatic compensation for mains voltage fluctuations within + 15% - 20%.
- Great voltage reserve increases ease of operation.
- High performance on thin metal sheets.
- Shock-proof fibre compound main structure.
- Perform very well in MMA welding.
- Single-Phase network.
- Light weight and a compact size give better reach.

PoWer TIG 170 DC

Technical Specs.	PoWer TIG 170 DC	
	TIG	MMA
Input Voltage	V	1 Phase 50/60 Hz, 220 V
Installed Power	kVA	7.2 / 7.9
Fuse (delayed action)	A	16 / 16
Open Circuit Voltage	V	88 / 88
Current Range	A	5-170 / 5-150
Duty Cycle at (40 °C)	100%	95
	60%	115
	20%	170
Standards	EN 60974-1 / EN 60974-3 / EN 60974-10	
Protection Class	IP	23 S
Insulation Class	F	
Dimensions (L*W*H)	mm	390/135/300
Weight	kg	7



Standard Equipments

This Order Code Covers The Welding Machine and All of The Equipments

604767

604708

602175

202524

638116



Features

- Standard equipped with pulse mode integrated into the control with available "EASY PULSE" facility.
- Precise and efficient TIG arc striking by high frequency.
- Steady, easily targeted arc makes welding easy.
- Low energy consumption and high efficiency.
- Automatic compensation for mains voltage fluctuations within + 15% - 20%, great voltage reserve increases ease of operation.
- Digital control of all the welding parameters with the ability to store 9 personalised programs.
- High performance on thin metal sheets.
- Cycle and Pulse Functions improve welding productivity.
- Perform very well in MMA welding, single-Phase network.
- Light weight and a compact size give better reach.



PoWer TIG 202 DC Pulse

Technical Specs.		TIG	MMA
Input Voltage	V	1 Phase 50/60 Hz, 230 V	
Installed Power	kVA	8.5	9.0
Fuse (delayed action)	A	20	20
Open Circuit Voltage	V	88	88
Current Range	A	5-200	5-160
Duty Cycle at (40 °C)	100%	120	110
	60%	140	130
	25%	200	(%30)160
Standards		EN 60974-1 / EN 60974-3 / EN 60974-10	
Protection Class	IP	23 S	
Insulation Class		F	
Dimensions (L*W*H)	mm	390/135/300	
Weight	kg	7.5	

Standard Equipments

This Order Code Covers The Welding Machine and All of The Equipments

604768

604709

602175

202524

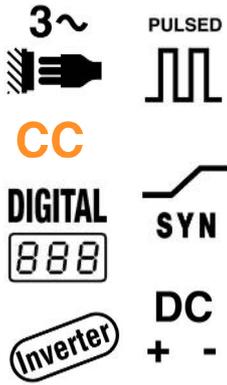
638116



Features

- Digital ammeter and voltmeter with welding current presetting and hold function of the last read value.
- Pulse welding allows a better arc control and less deformation of the workpiece (0,5-2000Hz)
- Welding pulse mode selector switch: Syn=Easy-Fast-Ultra Fast-Slow pulse function.
- 'Energy saving' function to operate the power source cooling fan and the torch water Cooling only when necessary.
- Arc Force-hot start and electrode Antisticking function for best MMA Welding
- Electromagnetic disturbance reduction because of high frequency used at arc striking only.
- Personalised welding program storing and recalling.
- Mains voltage fluctuation automatic compensation within +%20 ve -%20
- Welding mode selector switch: 2T/4T -Cycle-Spot Timer
- Digital adjustment of all the welding parameters.
- VRD device reduces the open circuit voltage to values below 12V, possibility of activating the VRD function.
- Use of special TIG torches will enable the remote control of the welding parameters directly from the torch.

PoWer TIG 2600 DC Pulse



Technical Specs.		TIG	MMA
Input Voltage	V	3 Phase 50/60 Hz, 400 V 15/-20 %	
Installed Power	kVA	7	9.6
Fuse (delayed action)	A	10	10
Open Circuit Voltage	V	60	60
Current Range	A	260	260
Duty Cycle at (40 °C)	100%	200	190
	60%	230	220
	40%	260	250
Standards		EN 60974-1 / EN 60974-3 / EN 60974-10	
Protection Class	IP	23 S	
Insulation Class		H	
Dimensions (L*W*H)	mm	500/220/425	
Weight	kg	17,5	

Standard & Optional Equipments

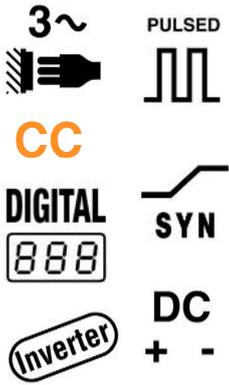
 This Order Code Covers The Welding Machine and All of The Equipments	 604976	 604977	 602175	 202524	 638116
 606826 Optional	 201611 Optional	 603936 Optional	 605838 Optional	 600737 Optional	



Features

- Compact size and light weight.
- Instantaneous arc starts and stable arc.
- User friendly operations.
- Cope with dust and sudden rain.
- Light weight and compact size.
- Automatic compensation for mains voltage fluctuations within +15% -15%.
- Perform very well in MMA welding.
- 3 phase network.
- Current increase and decrease by single / double clicking of the standard torch switch.

PoWer TIG 300 DC Pulse



Technical Specs.		TIG	MMA
Input Voltage	V	3 Phase 50/60 Hz, 400 V ± 15	
Installed Power	kVA	11	9
Fuse (delayed action)	A	32	32
Open Circuit Voltage	V	58	58
Current Range	A	4-300	10-250
Duty Cycle at (40 °C)	100%	190	158
	60%	245	204
	40%	300	250
Standards		EN 60974-1 / EN 60974-3 / EN 60974-10/S	
Protection Class	IP	23 S	
Insulation Class		H	
Dimensions (L*W*H)	mm	640/250/370	
Weight	kg	30	

Standard & Optional Equipments

<p>This Order Code Covers The Welding Machine and All of The Equipments</p> <p>603937</p>	<p>603935</p>	<p>602175</p>	<p>202521</p>	<p>638116</p>
<p>603941 Optional</p>	<p>204183 Optional</p>	<p>603936 Optional</p>		

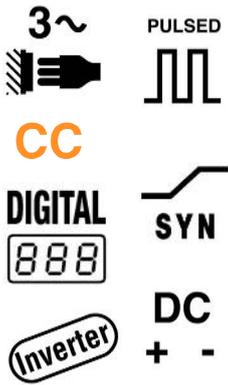


Features

- Digital ammeter and voltmeter with welding current presetting and hold function of the last read value.
- Pulse welding allows a better arc control and less deformation of the workpiece (0,5-2000Hz)
- Welding pulse mode selector switch: Syn=Easy-Fast-Ultra Fast-Slow pulse function.
- 'Energy saving'function to operate the power source cooling fan and the torch water Cooling only when necessary.
- Arc Force-hot start and electrode Antisticking function for best MMA Welding
- Electromagnetic disturbance reduction because of high frequency used at arc striking only.
- Personalised welding program storing and recalling.
- Mains voltage fluctuation automatic compensation within +%20 ve -%20
- Welding mode selector switch: 2T/4T –Cycle-Spot Timer
- Digital adjustment of all the welding parameters.
- VRD device reduces the open circuit voltage to values below 12V, possibility of activating the VRD function.
- Use of special TIG torches will enable the remote control of the welding parameters directly from the torch.



PoWer TIG 3000 DC Pulse



Technical Specs.	TIG		MMA
Input Voltage	V	3 Phase 50/60 Hz, 400 V+15/-20 %	
Installed Power	kVA	9.1	9.8
Fuse (delayed action)	A	10	10
Open Circuit Voltage	V	100	100
Current Range	A	5-300	10-270
Duty Cycle at (40 °C)	100%	210	200
	60%	250	230
	35%	300	270
Standards	EN 60974-1 / EN 60974-3 / EN 60974-10		
Protection Class	IP	23 S	
Insulation Class	H		
Dimensions (L*W*H)	mm	465/185/390	
Weight	kg	17.5	

Standard & Optional Equipments

<p>This Order Code Covers The Welding Machine and All of The Equipments</p> <p>606858</p>	<p>606824</p>	<p>602175</p>	<p>201521</p>	<p>638116</p>
<p>606826 Optional</p>	<p>204184 Optional</p>	<p>603936 Optional</p>	<p>605838 Optional</p>	<p>600737 Optional</p>

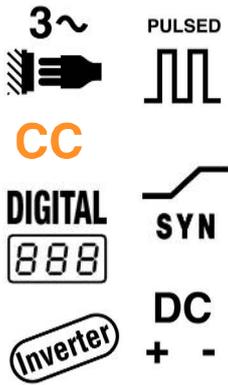


Features

- Standard equipped with pulse mode integrated into the control with available 'EASY PULSE' facility.
- Precise and efficient TIG are striking by high frequency.
- IGBT Inverter technology.
- Digital control of all the welding parameters.
- Low energy consumption and high efficiency.
- Cycle and Pulse functions improve welding productivity.
- Very good MMA welding characteristics with any type of electrodes.
- User friendly.



PoWer TIG 420 DC Pulse



Technical Specs.	TIG		MMA
	Input Voltage	V	3 Phase 50/60 Hz, 400 V+15/-20%
Installed Power	kVA	13.3	13.3
Fuse (delayed action)	A	16	16
Open Circuit Voltage	V	100	100
Current Range	A	5-420	5-420
Duty Cycle at (40 °C)	100%	270	270
	60%	340	340
	40%	420	420
Standards		EN 60974-1 / EN 60974-3 / EN 60974-10	
Protection Class	IP	23 S	
Insulation Class		F	
Dimensions (L*W*H)	mm	560/220/425	
Weight	kg	25	

Standard & Optional Equipments

<p>This Order Code Covers The Welding Machine and All of The Equipments</p>				
<p>Optional</p>	<p>Optional</p>	<p>Optional</p>	<p>Optional</p>	<p>Optional</p>



Features

- Large-capacity 500 A current output achieves high-efficiency welding.
- Current setting can be made in increments of 0.1 A in the current region of 10 A or less, thus making it possible to set ideal welding conditions to ultra thin plates.
- Synergistic function makes automatic setting of welding conditions. (diameter of electrode, material of base metal, shape of weld joint and thickness of base metal)
- Pulse function (0.1-999 Hz) provides high performance in thin materials.
- Ability to store the parameters.
- Easy to adjust parameters such as pre-gas/post-gas, up-slope/down-slope, initial current/final current, crater filling-arc spot time etc.
- Newly developed tunnel protection and due to the revolution control of the cooling fan according to its duty cycle or ambient air temperature, the design prevents dust from entering the area where electronic components are installed.
- Data editing / copying / transferring, using USB via machine front panel.
- Unique wire feeding advantages via three wire straighteners and four feed rollers.
- Easy connection to Automation & Robotic Systems.
- Ease of control of the machine current using a standard torch without the need for highcost torches with special control.
- Optionally, monitoring of welding data from android mobile phone, tablet or PC, graphical welder test, amount of wire consumption, working time, recording of WPS work and print out etc. Technological advantages.
- 1 year warranty GEDIK Welding.



PoWer TIG WB 500 DC Pulse

Technical Specs.	TIG		MMA
Input Voltage	V	3 Phase 50/60 Hz, 400 V % +15/-20	
Installed Power	kVA	19.3	18.2
Fuse (delayed action)	A	32	32
Open Circuit Voltage	V	74	74
Current Range	A	0,1-500	10-400
Duty Cycle at (40 °C)	100%	387	310
	60%	500	500
Standards	EN 60974-1 / EN 60974-3 / EN 60974-10 / S		
Protection Class	IP	IP 23	
Insulation Class	H		
Dimensions (L*W*H)	mm	395/710/592	
Weight	kg	62	



Standard & Optional Equipments

<p>This Order Code Covers The Welding Machine and All of The Equipments</p> <p>608382</p>	<p>608274</p>	<p>600835</p>	<p>201521</p>	<p>638116</p>
<p>607312 Optional</p>	<p>204184 Optional</p>	<p>600840 Optional</p>	<p>605838 Optional</p>	<p>600737 Optional</p>



Features

- Suitable for all weldable materials and all types of current.
- Precise and efficient TIG arc striking by high frequency.
- Standard equipped with pulse mode integrated into the control with available "easy-pulse" facility.
- Low energy consumption and high efficiency.
- Automatic compensation for mains voltage fluctuations within + 15% - 20%.
- High performance on thin metal sheets.
- Very good MMA welding characteristics with any type of electrodes.
- Single-Phase network.



PoWer TIG 2200 AC / DC Pulse

Technical Specs.		TIG	MMA
Input Voltage	V	1 Phase, 50/60 Hz, 220 V	
Installed Power	kVA	5.4	6.3
Fuse (delayed action)	A	16	16
Open Circuit Voltage	V	100	100
Current Range	A	5-220	5-180
Duty Cycle at (40 °C)	100%	140	120
	60%	180	150
	30%	220	180
Standards		EN 60974-1 / EN 60974-3 / EN 60974-10 / S	
Protection Class	IP	23 S	
Insulation Class		H	
Dimensions (L*W*H)	mm	465/185/390	
Weight	kg	15.5	

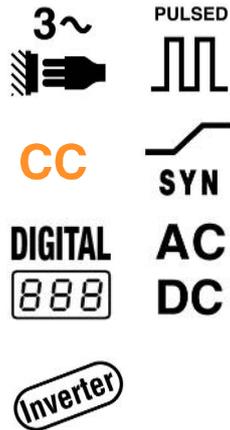
Standard & Optional Equipments

<p>This Order Code Covers The Welding Machine and All of The Equipments</p>	<p>604978</p>	<p>604979</p>	<p>602175</p>	<p>201521</p>	<p>638116</p>
<p>605151 Optional</p>	<p>204184 Optional</p>	<p>603936 Optional</p>	<p>605838 Optional</p>	<p>600737 Optional</p>	



Features

- Easily regulate current via hand torch switch.
- Improve quality at every welding place through a wide variety of welding modes.
- Improve welding performance of thin plates with silent pulse function.
- Improved arc concentration allows for better workability fillet and butt welding.
- Light weight and compact size.
- Automatic compensation for mains voltage fluctuations within +15% -15%.
- Perform very well in MMA welding.
- 3 phase network.
- Current increase and decrease by single / double clicking of the standard torch switch.



PoWer TIG 300 AC / DC Pulse

Technical Specs.		TIG	MMA
Input Voltage	V	3 Phase 50/60 Hz, 400 V ±15	
Installed Power	kVA	11	9
Fuse (delayed action)	A	32	32
Open Circuit Voltage	V	58	58
Current Range	A	4-300	10-250
Duty Cycle at (40 °C)	100%	190	158
	60%	245	204
	40%	300	250
Standards		EN 60974-1 / EN 60974-3 / EN 60974-10 / S	
Protection Class	IP	23 S	
Insulation Class		H	
Dimensions (L*W*H)	mm	640/250/370	
Weight	kg	30	

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments 606308	 603940	 602175	 202521	 638116
 603941 Optional	 204184 Optional	 603936 Optional		



Features

- Digital ampermeter and voltmeter with welding current presetting and hold function of the last read value.
- Pulse welding allows a better arc control and less deformation of the workpiece (0,5-2000Hz).
- Welding pulse mode selector switch: Syn=Easy-Fast-Ultra Fast-Slow pulse function.
- 'Energy saving'function to operate the power source cooling fan and the torch water Cooling only when necessary.
- Arc Force-hot start and electrode Antisticking function for best MMA Welding.
- AC square wave balance and balance plus , AC square wave frequency adjustment.
- Wave selector: Square-Mixed-Sinusoidal-Triangular.
- Tungsten electrode diameter presetting for a better control os the arc striking and arc Dynamics.
- Personalised welding program storing and recalling.
- Mains voltage fluctuation automatic compensation within +%20 ve -%20.
- Welding mode selector switch: 2T/4T –Cycle-Spot Timer.
- Digital adjustment of all the welding parameters.
- VRD device reduces the open circuit voltage to values below 12V, possibility of activating.
- Use of special TIG torches will enable the remote control of the welding parameters directly from the torch.(optional)



PoWer TIG 3000 AC / DC Pulse

Technical Specs.		TIG	MMA
Input Voltage	V	3 Phase 50/60 Hz, 400 V ±20	
Installed Power	kVA	9.6	9
Fuse (delayed action)	A	10	32
Open Circuit Voltage	V	100	58
Current Range	A	5-300	10-250
Duty Cycle at (40 °C)	100%	210	158
	60%	250	204
	35%	300	250
Standards		EN 60974-1 / EN 60974-3 / EN 60974-10 / S	
Protection Class	IP	23 S	
Insulation Class		H	
Dimensions (L*W*H)	mm	465/185/390	
Weight	kg	19	

Standard & Optional Equipments

<p>606860 This Order Code Covers The Welding Machine and All of The Equipments</p>	<p>606825</p>	<p>602175</p>	<p>201521</p>	<p>638116</p>
<p>606826 Optional</p>	<p>204184 Optional</p>	<p>603936 Optional</p>	<p>605838 Optional</p>	<p>600737 Optional</p>



Features

- Digital ampermeter and voltmeter with welding current presetting and hold function of the last read value.
- Pulse welding allows a better arc control and less deformation of the workpiece (0,5-2000Hz).
- Welding pulse mode selector switch: Syn=Easy-Fast-Ultra Fast-Slow pulse function.
- 'Energy saving'function to operate the power source cooling fan and the torch water Cooling only when necessary.
- Arc Force-hot start and electrode Antisticking function for best MMA Welding.
- AC square wave balance and balance plus , AC square wave frequency adjustment.
- Wave selector: Square-Mixed-Sinusoidal-Triangular.
- Tungsten electrode diameter presetting for a better control os the arc striking and arc Dynamics.
- Personalised welding program storing and recalling.
- Mains voltage fluctuation automatic compensation within +%20 ve -%20.
- Welding mode selector switch: 2T/4T –Cycle-Spot Timer.
- Digital adjustment of all the welding parameters.
- VRD device reduces the open circuit voltage to values below 12V, possibility of activating.
- Use of special TIG torches will enable the remote control of the welding parameters directly from the torch.(optional)



PoWer TIG 4000 AC / DC Pulse

Technical Specs.		TIG	MMA
Input Voltage	V	3 Phase 50/60 Hz, 400 V+15/-20%	
Installed Power	kVA	15.3	19.9
Fuse (delayed action)	A	16	16
Open Circuit Voltage	V	65	65
Current Range	A	5-400	5-400
Duty Cycle at (40 °C)	100%	250	250
	60%	320	320
	35%	400	400
Standards		EN 60974-1 / EN 60974-3 / EN 60974-10 / S	
Protection Class	IP	23 S	
Insulation Class		H	
Dimensions (L*W*H)	mm	670/290/525	
Weight	kg	49	

Standard & Optional Equipments

<p>This Order Code Covers The Welding Machine and All of The Equipments</p>	<p>607008</p>	<p>604975</p>	<p>602175</p>	<p>201780</p>	<p>638116</p>
<p>605150 Optional</p>	<p>201611 Optional</p>	<p>603936 Optional</p>	<p>605838 Optional</p>	<p>600737 Optional</p>	



Features

- Digital adjustment of all the welding parameters.
- Pulse welding allows a better arc control and less deformation of the workpiece (0,5-500Hz).
- Standard equipped with pulse mode integrated into the control with available "Easy Pulse" facility.
- "Energy saving" function to operate the power source cooling fan and the torch water Cooling only when necessary.
- Arc Force-hot start and electrode Antisticking function for best MMA Welding.
- Wave selector: Square-Mixed-Sinusoidal.
- AC square wave balance and balance plus, AC square wave frequency adjustment.
- Tungsten electrode diameter presetting for a better control of the arc striking and arc Dynamics.
- Personalised welding program storing and recalling.
- Mains voltage fluctuation automatic compensation within +%20 ve -%20.
- Welding mode selector switch : 2T/4T –Cycle-Spot Timer.
- Use of special TIG torches will enable the remote control of the welding parameters directly from the torch.(optional)



PoWer TIG 500 AC / DC Pulse



Technical Specs.		TIG	MMA
Input Voltage	V	3 Phase 50/60 Hz, 400 V % +15/-20	
Installed Power	kVA	17.9	17.9
Fuse (delayed action)	A	16	16
Open Circuit Voltage	V	70	70
Current Range	A	10-500	10-500
Duty Cycle at (40 °C)	100%	310	310
	60%	400	400
	35%	500	500
Standards		EN 60974-1 / EN 60974-3 / EN 60974-10 / S	
Protection Class	IP	23 S	
Insulation Class		H	
Dimensions (L*W*H)	mm	715/290/525	
Weight	kg	53	

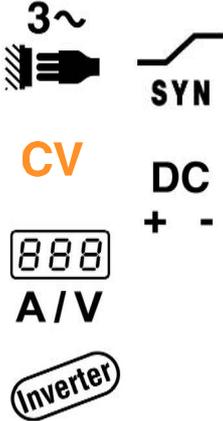
Standard & Optional Equipments

<p>This Order Code Covers The Welding Machine and All of The Equipments</p>	<p>607124</p>	<p>605785</p>	<p>602175</p>	<p>201780</p>	<p>638116</p>
<p>605150 Optional</p>	<p>201611 Optional</p>	<p>603936 Optional</p>	<p>605838 Optional</p>	<p>600737 Optional</p>	



Features

- High Quality Welding in low current range.
- Penetration Adjustment Function, contributes to the stabilization of the welding quality.
- Digital Electronic Reactor Control which supports high quality welding.
- DC classic and DC synergic welding method.
- Instant current adjustment function on the torch.
- Pre/post-gas time, initial current, up/down slope current time etc. parameters.
- Detachable wire feeding unit (4+3 rolling system for greater welding torch flexibility).
- Substantially improved the instantaneous arc starts by digital turbo start function and digital antistick.
- Setting of job memory fine adjustment (30 Jobs).
- Current increase and decrease by single / double clicking of the standard torch switch.



Technical Specs.	PoWer MIG GS 380 S	
Input Voltage	V	3 Phase, 50/60 Hz, 400 ± 15 V
Installed Power	kVA	17.1
Fuse (delayed action)	A	62
Open Circuit Voltage	V	58
Current Range	A	30-380
Current Tension Range	V	12-36
Duty Cycle at (40 °C)	100%	270
	60%	350
	50%	380
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class	H	
Dimensions (L*W*H)	mm	640 / 250 / 430
Weight	kg	30
Wire Feeder Unit		
Wire Feeder Units	CM-7401	
Wire Types	Fe / FC	
Usable Wire Diameters	ø mm	0.8 / 1.0 / 1.2
Wire Feeding Speed	m/min	22 max.
Dimensions (L*W*H)	mm	732/243/402
Weight	kg	16

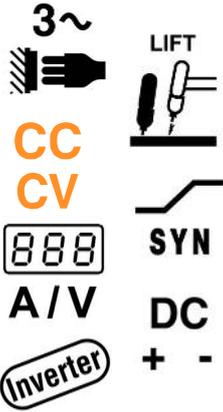
Standard & Optional Equipments

<p>This Order Code Covers The Welding Machine and All of the Equipments</p> <p>603946</p>	<p>603948</p>	<p>603945</p>	<p>603941</p>	<p>204185</p>
<p>606730</p>	<p>201780</p>	<p>638116</p>	<p>607678 Optional</p>	<p>605178 Optional</p>
<p>204084</p>				



Features

- MIG-MAG /MMA (Electric Arc welding)/TIG Lift (Argon) multiprocess functions.
- Excellent software optimized for coated materials such as galvanized.
- Memory function for 100 parameters
- Easy to adjust parameters such as pre-gas/post-gas, up-slope/down-slope, initial current/ final current crater filling-arc spot time etc.
- When the stick out is changable and long, constant function eliminate the disadvantages.
- Newly developed tunnel protection and due to the revolution control of the cooling fan according to its duty cycle or ambient air temperature, the design prevents dust from entering the area where electronic components are installed.
- Data editing /copying/transferring, using USB via machine front panel.
- Unique wire feeding advantages via three wire straighteners and four feed rollers.
- Interface board is located in the machine as a standart, which provides an easy connection to PLC, Automation & Robotic Systems.
- Ease of control of the machine current using a standard torch without the need for high-cost torches with special control.
- Optionally, monitoring of welding data from android mobile phone, tablet or Pc, graphical welder test, amount of consumption, working time, recording of WPs work and print out etc. Technological advantages.
- 1 year warranty as GEDIK welding.



Technical Specs.	PoWer MIG GS WB 400	
Input Voltage	V	3 Phase, 50/60 Hz, 400 ± 15 V
Installed Power	kVA	17.7
Fuse (delayed action)	A	25
Open Circuit Voltage	V	70
Current Range	A	30-400
Current Tension Range	V	12-34
Duty Cycle at (40 °C)	50%	400
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class	H	
Dimensions (L*W*H)	mm	395 / 710 / 592
Weight	kg	62
Wire Feeder Unit		
Wire Feeder Units	CM-7403A-D	
Wire Types	Fe / FC Al	
Usable Wire Diameters	ø mm	0.8/0.9/1.0/1.2/1.4/1.6 1.0/1.2/1.6
Wire Feeding Speed	m/min	22 max.
Dimensions (L*W*H)	mm	710/240/395
Weight	kg	17

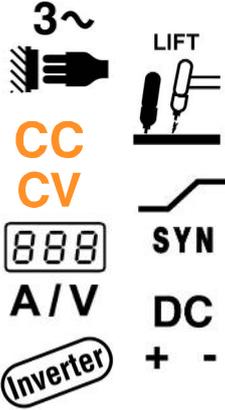
Standard & Optional Equipments

<p>This Order Code Covers The Welding Machine and All of The Equipments</p> <p>607125</p>	<p>600617</p>	<p>606737</p>	<p>201780</p>	<p>638116</p>
<p>608276</p>	<p>606691</p>	<p>204084</p>	<p>204185</p>	<p>607678 Optional</p>
<p>605178 Optional</p>				



Features

- MIG-MAG /MMA (Electric Arc welding) /TIG Lift (Argon) multiprocess functions.
- With Low spatter¹ function in thin and medium thickness materials, 80% non-spatter and stablized welding possibility even using pure co2 and mixture gas
- Excellent software optimized for coated materials such as galvanized.
- Memory function for 100 parameters
- Easy to adjust parameters s as pre-gas/post gas, up-slope/down-slope, initial current/ final current, crater filling arc spot time etc.
- When the stick out is changable and long, constant penetration function eliminate the disadvantages
- Newly developed tunnel protection and due to the revolution control of the cooling fan according to its duty cycle or ambient air temperature, the design prevents dust fromentering the area where electronic components are installed.
- Data editing /copying/ transferring, using USB via machine front panel.
- Unique wire feeding advantages via three wire straighteners and four feed rollers.
- Interface board is located in the machine as a standart, which provides an easy connection to PLC, Automation & Robotic Systems.
- Ease of control of the machine current using a standard torch without the need for high-cost torches with special control.
- Optionally, monitoring of welding data from android mobile phone, tablet or PC, graphical welder test, amount of wire consumption, working time, recording of WPs work and print out etc.
- Technological advantages.
- 1 year warranty as GEDIK welding.



Technical Specs.	PoWer MIG GS WB 400 L	
Input Voltage	V	3 Phase, 50/60 Hz, 400 ± 15 V
Installed Power	kVA	18.2
Fuse (delayed action)	A	32
Open Circuit Voltage	V	70
Current Range	A	30-400
Current Tension Range	V	12-34
Duty Cycle at (40 °C)	50%	400
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class	H	
Dimensions (L*W*H)	mm	395 / 710 / 592
Weight	kg	62
Wire Feeder Unit		
Wire Feeder Units	CM-7403A-D	
Wire Types	Fe / FC AI	
Usable Wire Diameters	ø mm	0.8/0.9/1.0/1.2/1.4/1.6 1.0/1.2/1.6
Wire Feeding Speed	m/min	22 max.
Dimensions (L*W*H)	mm	710/240/395
Weight	kg	17

Standard & Optional Equipments

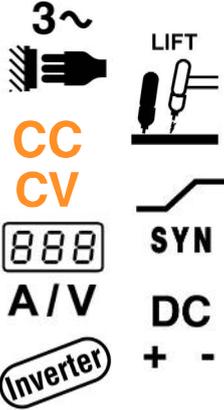
This Order Code Covers The Welding Machine and All of The Equipments	607126	607070	606737	201780	638116
608276	606691	204084	204185	607678 Optional	
605178 Optional					



Features

- MIG-MAG /MMA (Electric Arc welding TG-Lift (Argon) multiprocess functions.
- At 100% 500 A current output achieves high-efficiency welding.
- Excellent software optimized for coated materials such as galvanized.
- Memory function for 100 parameters
- Easy to adjust parameters such as pre gas/post-gas, up slope/down-slope, initial current/ final current, crater filling arc spot time etc.
- When the stick out is changeable and long, constant penetration' function eliminate the disadvantages.
- Newly developed tunnel protection and due to the revolution control of the cooling fan according to its duty cycle or ambient air temperature, the design prevents dust from entering the area where electronic components are installed.
- Data editing /copying /transferring using USB via machine front panel.
- Unique wire feeding advantages via three wire straighteners and four feed rollers.
- Interface board is located in the machine as a standart, which provides an easy connection to PLC, Automation & Robotic Systems.
- Ease of control of the machine current using a standard torch without the need for high-cost torches with special control.
- Optionally, monitoring of welding data from android mobile phone, tablet or Pc, graphical welder test, amount of wire consumption, working time, recording of wPs work and print out etc.
- Technological advantages.
- 1 year warranty as GEDIK welding.

Technical Sepcs.	PoWer MIG GS WB 500	
Input Voltage	V	3 Phase, 50/60 Hz, 400 ± 15 V
Installed Power	kVA	23.6
Fuse (delayed action)	A	34
Open Circuit Voltage	V	70
Current Range	A	30-550
Current Tension Range	V	12-39
Duty Cycle at (40 °C)	50%	500
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class	H	
Dimensions (L*W*H)	mm	395 / 710 / 762
Weight	kg	80
Wire Feeder Unit		
Wire Feeder Units	CM-7403A-D	
Wire Types	Fe / FC AI	
Usable Wire Diameters	ø mm	0.8/0.9/1.0/1.2/1.4/1.6 1.0/1.2/1.6
Wire Feeding Speed	m/min	22 max.
Dimensions (L*W*H)	mm	710/240/395
Weight	kg	17



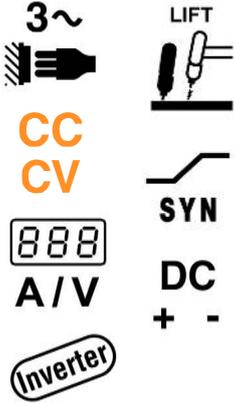
Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	Welding machine	Cable	Torch	Electrode holder
Welding machine	Power supply	Cable	Stand	Control panel (Optional)
Control panel (Optional)				



Features

- Multifunction equipment with premium welding quality in MIG/MAG, MMA and TIG by "lift" mode.
 - Synergic digital control of all the welding parameters.
 - User friendly and easy-to-use selection and recalling of the parameters and welding programs.
 - Personalized parameters: ability to store personalized welding parameters (JOBS).
 - Excellent arc striking always precise and efficient.
 - Total or partial equipment access locking key by password.
 - Low Power Consumption results in daily operational cost savings.
 - "ENERGY SAVING" function to operate the power source cooling fan and torch water cooling only when necessary.
 - Long interconnecting cable: possibility of using up to 50 m length, parameters can be adjusted from the feeder.
 - Robot interface facility on request.
 - Control rack protection cover.
 - You can select of 12 different languages.
- ARC is the support basis for special welding software.
- Sotware for special MIG/MAG process (optional).
- VISION PIPE for more accurate welding in pipe first root pass.
 - VISION COLD for low heat transfer MIG/MAG welding.
 - VISION ULTRASPEED to weld small and medium thickness at a far higher speed.
 - VISION POWER to obtain deeper penetration on medium and large thickness material.



Technical Specs.	4000		5000	
Input Voltage	V	3 Phase, 50/60 Hz, 400 ± 20 V		
Installed Power	kVA	18.6	25.6	
Fuse (delayed action)	A	25	35	
Open Circuit Voltage	V	70	70	
Current Range	A	10-400	10-500	
Duty Cycle at (40 °C)	100%	310	380	
	60%	370	460	
	50%	400	500	
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S			
Protection Class	IP	23 S		
Insulation Class	H			
Usable Wire Diameters	ø mm	0.6-1.6		
Dimensions (L*W*H)	mm	660/290/515	660/290/515	
Weight	kg	39	43	



Standard & Optional Equipments

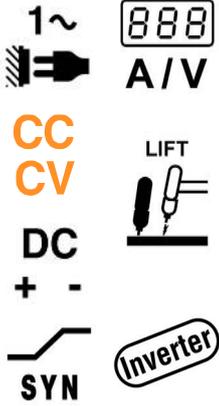
This Order Code Covers The Welding Machine and All of The Equipments	607127 4000 A	This Order Code Covers The Welding Machine and All of The Equipments	607128 5000 A	Welding machine	600521 4000 A	Welding machine	606641 5000 A	Cable reel	204083
Stand	201611	Torch	604396	Cable	201780	Locking key	638116	Battery	606833
Feeder	600892								



Features



- Multiprocess: MIG PULSE, MIG/MAG Synergic, MIG/MAG Manual, MMA and TIG Lift.
- Digital control of all welding parameters with preset synergic curves according to used material, gas and wire diameter.
- User friendly and easy-to-use selection and recalling of the parameters and welding programs.
- Ability to store personalized welding parameters up to 99 JOBS.
- Built-in polarity changeover facility for most common gas and gasless wires.
- Professional wire feeding mechanism.
- Double groove rolls replaceable without any tool.
- Energy Saving: fan on demand.
- Possibility of utilizing ø300 mm coils by means of the Retrofit Kit (Optional).
- Welding "mode" selector; 2T/4T-initial & crater-spot timer-stitch timer function.
- VRD (Voltage Reduction Device) function.
- Central Euro connection for the torch.



Technical Specs.		MIG / MAG	TIG	MMA
Input Voltage	V	1 Phase 220 / 230 50 / 60 Hz +/-15%		
Installed Power	kVA	5.1	3.9	5.6
Fuse (delayed action)	A	16	16	16
Open Circuit Voltage	V	59	59	59
Current Range	A	10 - 200	5 - 175	10 - 150
Duty Cycle at (40 °C)	100%	100	100	90
	60%	115	115	110
	X%	200(%15)	175(%20)	150(%25)
Usable Wire Diameters		0.6 - 1.0	---	---
Standards		EN 60974-1 / EN 60974-5 / EN 60974-10 / S		
Protection Class	IP	23 S		
Isolation Class	IP	H		
Dimensions (L*W*H)	mm	500/220/425		
Weight	kg	16		

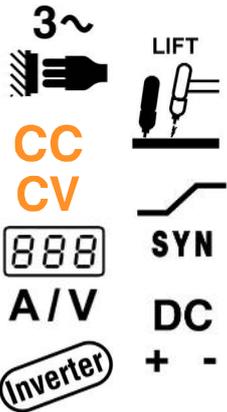
Standard & Optional Equipments





Features

- Based on high quality inverter technology.
- DC Pulse MIG / MAG and CO₂ / MAG / MIG.
- Optional Wave pulse feature.
- MMA & Lift Tig available.
- Compact, reliable light design.
- Excellent pulse performance.
- Four-Roll Encoder Wire feeder.
- Incredible quality of welding achievable on galvanized steel.
- Arc stability at very high welding speeds.
- With the optional software achieve high quality welding on such as Magnesium & Titanium.
- Current increase and decrease by single / double clicking of the standard torch switch.



Technical Specs.	PoWer MIG GPS 270 C	
Input Voltage	V	3 Phase, 50/60 Hz, 400 ±15 V
Installed Power	kVA	13.6
Fuse (delayed action)	A	32
Open Circuit Voltage	V	81
Current Range	A	30-300
Current Tension Range	V	12-30
Duty Cycle at (40 °C)	100%	170
	60%	220
	40%	270
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Usable Wire Types	Fe / Al / SS / Cu	
Usable Wire Diameters	ø mm	0.8/0.9/1.0/1.2
Protection Class	IP	23
Isolation Class	H	
Dimensions (L*W*H)	mm	640/300/600
Weight	kg	49

Standard & Optional Equipments





Features

- MIG-MAG MMA (Electric Arcwelding) /TIG-Lift(Argon multiprocess functions).
- Low heat input with AC MIG, gap fill capability and excellent result for hard-welded materials with high welding speed.
- Standard programs for such as unalloyed-Alloyed steel/stainless/Aluminium/copper, Brazing/Nickel/Titanium.
- Unique adjustable 0.1-32 Hz double frequency is standard for Al, SS and Steel Alloys.
- Memory function for 100 parameters
- Easy to parameters e/down-slope, initial current/ adjust such as post-gas, final current, crater filling-arc spot time etc.
- When the stick out is changable and long, constant function eliminate the disadvantages.
- Newly developed tunnel protection and due to the revolution control of the cooling fan according to its duty cycle or ambient air temperature, the design prevents dust from entering the area where electronic components are installed.
- Data editing /copying transferring, using usb via machine front panel.
- Unique wire feeding advantages via three wire straighteners and four feed rollers.
- Interface board is located in the machine as a standart, which provides an easy connection to PLC, Automation & Robotic Systems.
- Ease of control of the machine current using a standard torch without the need for high-cost torches with special control.
- Optionally, monitoring of welding data from android mobile phone, tablet or Pc, graphical welder test, amount of wire consumption, working time, recording of wPs work and print out etc. Technological advantages.
- 1 year warranty as GEDIK welding.



CV

AC
DC



A/V



Technical Specs.	PoWer MIG GPS WB 400 AC / DC	
Input Voltage	V	3 Phase, 50/60 Hz, 400 ± 15 V
Installed Power	kVA	21.4
Fuse (delayed action)	A	32
Open Circuit Voltage	V	92
Current Range	A	30-400
Current Tension Range	V	12-34
Duty Cycle at (40 °C)	100%	350
	60%	360
	40%	400
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class		H
Dimensions (L*W*H)	mm	395 / 710 / 762
Weight	kg	86
Wire Feeder Unit		CM-7403 A-D
Wire Feeder Units		
Wire Types	Fe / FC Al	
Usable Wire Diameters	ø mm	0.8 / 0.9 / 1.0 / 1.2 1.0 / 1.2 / 1.6
Wire Feeding Speed	m/min	22 max.
Dimensions (L*W*H)	mm	710/240/395
Weight	kg	17

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments				



Features

- MIG-MAG/MMA (Electric Arc welding/ TG-Lift (Argon) multiprocess functions.
- Not-spatter welding even using 25% CO2 mixture gas and gas cost advantage.
- Standard pro for such as Unalloyed-Alloyed Steel/Stainless/Aluminium/Copper- Brazing/Nickel/Titanium.
- Unique adjustable 0.1-32 double pulse frequency is standard for Al, SS and Steel Alloys.
- Memory function for 100 parameters.
- Easy to adjust parameters such as pre-gas/post-gas, up-slope/down-slope, initial current/ final current, crater filling-arc spot time etc.
- When the stick out is changable and long, constant function eliminate the disadvantages.
- Newly developed tunnel protection and due to the revolution control of the cooling fan according to its duty cycle or ambient air temperature, the design prevents dust from entering the area where electronic components are installed.
- Data editing /copying/transferring using USB via machine front panel.
- Unique wire feeding advantages via three wire straighteners and four feed rollers.
- Interface board is located in the machine as a standart, which provides an easy connection to PLC, Automation & Robotic Systems.
- Ease of control of the machine current using a standard torch without the need for high-cost torches with special control.
- Optionally, monitoring of welding data from android mobile phone, tablet or PC, graphical welder test, amount of wire consumption, working time, recording of WPS work and print out etc. Technological advantages.
- 1 year warranty as GEDIK welding.



Technical Specs.	PoWer MIG GPS WB 320	
Input Voltage	V	3 Phase, 50/60 Hz, 400 + 15 V
Installed Power	kVA	11.1
Fuse (delayed action)	A	25
Open Circuit Voltage	V	80
Current Range	A	30-320
Current Tension Range	V	15-30
Duty Cycle at (40 °C)	100%	283
	60%	320
Standards	IP	EN 60974-1 / EN 60974-5 / EN 60974-10 / S
Protection Class		23
Isolation Class	mm	H
Dimensions (L*W*H)	kg	395/710/592
Weight		62
Wire Feeder Unit		
Wire Feeder Units		CM-7403A-D
Wire Types		Fe / FC Al
Usable Wire Diameters	ø mm	0.8 / 1.0 / 1.2 1.0 / 1.2 / 1.6
Wire Feeding Speed	m/min	22 max.
Dimensions (L*W*H)	mm	710/240/395
Weight	kg	17

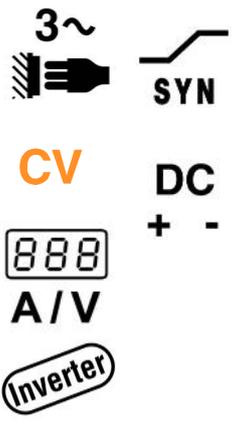
Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	608076	608276	606691	204084
204185	606737	201780	638116	607678 Optional
605178 Optional				



Features

- Based on high quality inverter technology.
- DC Pulse MIG / MAG and CO2 / MAG / MIG.
- Stable arc by intelligent filter.
- Comfortable operation by good arc start.
- Excellent pulse performance.
- Optional Wave pulse feature.
- High stability even at low current range.
- Equipped with user-friendly perfect synergic control.
- User friendly operation panel.
- Encoder-feed back control wire feeding system.
- Expanded voltage tolerance.
- Current increase and decrease by single / double clicking of the standard torch switch.



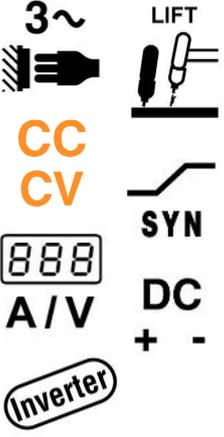
Technical Specs.	PoWer MIG GPS 500	
Input Voltage	V	3 Phase, 50/60 Hz, 400 ± 15 V
Installed Power	kVA	17.8 (DC Pulse) 23.8 (DC)
Fuse (delayed action)	A	63
Open Circuit Voltage	V	86
Current Range	A	30-500
Current Tension Range	V	12-36 (DC pulse), 12-45 (DC)
Duty Cycle at (40 °C)	100%	387 (DC)
	60%	500 (DC)
	50%	500 (DC pulse)
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class	H	
Dimensions (L*W*H)	mm	653 / 300 / 595
Weight	kg	55
Wire Feeder Unit		
Wire Feeder Units		CM-7401 CMA-7401
Wire Types		Fe / FC Al
Usable Wire Diameters	ø mm	0.8 / 1.0 / 1.2 / 1.6 1.0 / 1.2 / 1.6
Wire Feeding Speed	m/min	22 max.
Dimensions (L*W*H)	mm	732/243/402
Weight	kg	16

Standard & Optional Equipments



Features

- MIG-MAG MMA (Electric Arc welding) TIG-Lift(Argon) multiprocess functions.
- Non-spatter welding even using 25% co2 mixture gas and gas cost advantage.
- Standard programs for such as Unalloyed-Alloyed Steel/Stainless/Aluminium/Copper-Brazing/Nickel/Titanium. Unique adjustable 0.1-32 Hz double pulse frequency is standard for Al,SS and Steel Alloys.
- Memory function for 100 parameters.
- Easy to adjust parameters such as pre-gas/post-gas, up-slope/down-slope, final current, crater filling arc spot time etc.
- When the stick out is changable and long, constant function eliminate the disadvantages.
- Newly developed tunnel protection and due to the revolution control of the cooling fan according to its duty cycle or ambient air temperature, the design prevents dust from entering the area where electronic components are installed.
- Data editing /copying transferring, using USB via machine front panel.
- Unique wire feeding advantages via three wire straighteners and four feed rollers.
- Interface board is located in the machine as a standart, which provides an easy connection to PLC, Automation & Robotic Systems.
- Ease of control of the machine current using a standard torch without the need for high-cost torches with special control.
- Optionallly, monitoring of welding data from android mobile phone, tablet or Pc, graphical welder test, amount of wire consumption, working time, recording of wps work and print out etc. Technological advantages.
- 1 year warranty as GEDIK Welding.



Technical Specs.	PoWer MIG GPS WB 400	
Input Voltage	V	3 Phase, 50/60 Hz, 400 ± 15 V
Installed Power	kVA	19.2
Fuse (delayed action)	A	32
Open Circuit Voltage	V	70
Current Range	A	30-400
Current Tension Range	V	12-34
Duty Cycle at (40 °C)	50%	400
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class	H	
Dimensions (L*W*H)	mm	395 / 710 / 592
Weight	kg	62
Wire Feeder Unit		
Wire Feeder Units	CM-7403A-D	
Wire Types	Fe / FC AI	
Usable Wire Diameters	ø mm	0.8/0.9/1.0/1.2/1.4/1.6 1.0/1.2/1.6
Wire Feeding Speed	m/min	22 max.
Dimensions (L*W*H)	mm	710/240/395
Weight	kg	17

Standard & Optional Equipments

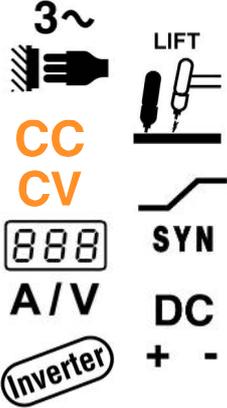
This Order Code Covers The Welding Machine and All of The Equipments				
				Optional
Optional				



Features

- MIG-MAG MMA (Electric Arc welding) TG-Lift (Argon) multiprocess functions.
- Non spatter welding even using 25% CO2 mixture gas and gas cost advantage.
- With 'Low Spatter' function in thin and medium thickness materials, 80% non-spatter and stabilized welding possibility even using pure CO2 and mixture gas.
- Excellent software optimized for coated materials such as galvanized.
- Standard programs for such as unalloyed -Alloyed steel/Stainless/Aluminium/Copper-Brazing/Nickel/Titanium.
- Unique adjustable 0.1-32 Hz double pulse frequency is standard for Al, ss and steel Alloys.
- Memory function for 100 parameters.
- Easy to adjust parameters such as pre-gas/post-gas, up-slope/down-slope, initial current/ final current, crater filling arc spot time etc.
- When the stick out is changable and long, constant penetration' function eliminate the disadvantages.
- Newly developed tunnel protection and due to the revolution control of the cooling fan according to its duty cycle or ambient air temperature, the design prevents dust from entering the area where electronic components are installed.
- Data editing copying/transferring, using USB via machine front panel.
- Unique wire feeding advantages via three wire straighteners and four feed rollers.
- Interface board is located in the machine as a standart, which provides an easy connection to PLC, Automation & Robotic Systems.
- Ease of control of the machine current using a standard torch without the need for high- cost torches with special control.
- Optionally, monitoring of welding data from android mobile phone, tablet or pc, graphical welder test, amount of wire consumption, working time, recording of WPS work and print out etc. Technological advantages.

1 year warranty as GEDIK welding.



Technical Specs.	PoWer MIG GPS WB 500 L	
Input Voltage	V	3 Phase, 50/60 Hz, 400 + 15 V
Installed Power	kVA	25
Fuse (delayed action)	A	32
Open Circuit Voltage	V	80
Current Range	A	30-550
Current Tension Range	V	12-39
Duty Cycle at (40 °C)	50%	500
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class		H
Dimensions (L*W*H)	mm	395 / 710 / 762
Weight	kg	83
Wire Feeder Unit		
Wire Feeder Units		CM-7403A-D
Wire Types		Fe / FC AI
Usable Wire Diameters	ø mm	0.8/0.9/1.0/1.2/1.4/1.6 1.0/1.2/1.6
Wire Feeding Speed	m/min	22 max.
Dimensions (L*W*H)	mm	710/240/395
Weight	kg	17

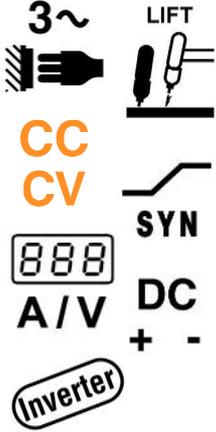
Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	606712		606694		606737		204186		638116
	608276		606691		204084		204185		607678 Optional
	605175 Optional								



Features

- Spatter free exceptional welding characteristics in both MIG/MAG and PULSE & DOUBLE PULSE MIG on any material and with any gas.
- Multifunction equipment with premium welding quality in MIG/MAG, MMA and TIG by "lift" mode.
- Synergic digital control of all the welding parameters.
- ARC software for premium performances with faster welding speed, higher welding wire deposition and reduced thermal dilatations.
- User friendly and easy-to-use selection and recalling of the parameters and welding programs.
- Personalized parameters: ability to store personalized welding parameters (JOBS).
- Excellent arc striking always precise and efficient.
- Total or partial equipment access locking key by password.
- Low Power Consumption results in daily operational cost savings.
- "ENERGY SAVING" function to operate the power source cooling fan and torch water cooling only when necessary.
- Long interconnecting cable: possibility of using up to 50 m length, parameters can be adjusted from the feeder.
- Robot interface facility on request.
- You can select of 12 different languages.
- SOFTWARE for special MIG/MAG process (optional).
- VISION PIPE for first root pass of pipes.
- VISION COLD to weld thin material with a colder short arc with lower with lower heat transfer.
- VISION POWER for a more concentrated arc and deeper penetration.
- VISION ULTRASPEED for a higher welding speed.



Technical Specs.		4000	5000
Input Voltage	V	3 Phase, 50/60 Hz, 400 ± 20 V	
Installed Power	kVA	25.5	32
Fuse (delayed action)	A	30	40
Open Circuit Voltage	V	70	70
Current Range	A	10-400	10-500
Duty Cycle at (40 °C)	100%	330	380
	60%	370	460
	50%	400	500
Standards		EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23 S	
Insulation Class		H	
Usable Wire Diameters	ø mm	0.6-1.6	
Dimensions (L*W*H)	mm	660/290/515	660/290/515
Weight	kg	40	44



Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments 606406 4000 A	This Order Code Covers The Welding Machine and All of The Equipments 606539 5000 A	 606286 4000 A	 606481 5000 A	 204083
 201611	 604396	 201780	 638116	 606833
 600892				



Features



- Compact type MIG/MAG welding machine, with wire feeding unit placed inside the machine.
- Voltage calibration with 10 stages between 30-240 A welding current range.
- High efficiency with 2 stage choke coil. Ideal for welding metal sheets up to 4.0 mm.
- Wire feeding speed adjustment with 1-22 m/min range.
- 2-4 trigger selection.
- 1 year guarantee except for torch kit.



Technical Specs.	GKM 240	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	8
Fuse (delayed action)	A	32
Open Circuit Voltage	V	13-32
Current Range	A	30-240
Duty Cycle at (40 °C)	100%	140
	60%	180
	45%	240
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Usable Wire Diameters	mm	0.8 - 1.0
Protection Class	IP	23
Insulation Class	H	
Dimensions (L*W*H)	mm	800/420/670
Weight	kg	82

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments

302020

302001

604392

3 mt.

604393

Optional
4 mt.

201109

638116

Argon

600952

CO₂

600949

Please Select One



Features

- Compact type MIG/MAG welding machine, with wire feeding unit placed inside the machine.
- Voltage calibration with 10 stages between 30-250 A welding current range.
- High efficiency with 2 stage choke coil.
- Ideal for welding sheet metals up to 4.0 mm.
- Wire feeding speed adjustment within 1-23 m/min range.
- 2-4 trigger selection.
- 1 year guarantee except for torch kit.



Technical Specs.	GKM 250	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	8.1
Fuse (delayed action)	A	32
Open Circuit Voltage	V	13-32
Current Range	A	30-250
Duty Cycle at (40 °C)	100%	140
	60%	180
	40%	250
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Usable Wire Diameters	mm	0.8 - 1.0
Protection Class	IP	23
Insulation Class	H	
Dimensions (L*W*H)	mm	930/480/900
Weight	kg	75

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	302803		302653		604392 3 mt.		604393 Optional 4 mt.		201109
			638116 Argon		600952 CO ₂		600949		

Please Select One



Features



- Compact type MIG/MAG welding machine, with wire feeding unit placed inside the machine.
- Voltage calibration with 12 stages between 30-350 A welding current range.
- High efficiency with 2 stage choke coil.
- Ideal for welding metal sheets up to 8.0 mm .
- Wire feeding speed adjustment within 1-22 m/min range.
- 2-4 trigger selection.
- Digital current and voltage indicator.
- 1 year guarantee except for torch kit.



Technical Specs.	GKM 350-G	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	15.6
Fuse (delayed action)	A	32
Open Circuit Voltage	V	18-47
Current Range	A	30-350
Duty Cycle at (40 °C)	100%	230
	60%	300
	40%	350
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Usable Wire Diameters	mm	0.8 - 1.0 - 1.2
Protection Class	IP	23
Insulation Class	H	
Dimensions (L*W*H)	mm	930/480/900
Weight	kg	125

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments

302021		302002		604394	3 mt.	604395	Optional 4 mt.	201302	
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638116	Argon	600952	CO ₂	600949	
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Please Select One



Features

- Gas cooled MIG/MAG welding machine, which provides easy access to the work area by separating wire feed unit.
- Voltage calibration with 12 stages between 30-350 A welding current range.
- Wire feeding unit with 4 rolls.
- High efficiency with 2 stage choke coil.
- Ideal for welding sheet metals up to 8.0 mm.
- Wire feeding speed adjustment within 1-22 m/min range.
- 2-4 trigger selection.
- Digital current and voltage indicator.
- 1 year guarantee except for torch kit.



Technical Specs.	GKM 350-2G	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	16
Fuse (delayed action)	A	32
Open Circuit Voltage	V	13-45
Current Range	A	30-350
Duty Cycle at (40 °C)	100%	210
	60%	270
	40%	350
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class	H	
Dimensions (mm)	mm	1075 / 500 / 800
Weight	kg	125
Wire Feeder Unit		
Usable Wire Diameters	ø mm	0.8 / 1.0 / 1.2
Wire Types	Fe / FC	
Wire Feeding Speed	m/min	22 max
Dimensions (L*W*H)	mm	630/460/230
Weight	kg	15

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments 302024	302004	604394 3 mt.	604395 Optional 4 mt.	201302
638116 Argon	600952 CO ₂	600949	201219 5 mt. 201495 Optional 10 mt. 203639 Optional 15 mt.	

Please Select One



Features

- Compact type MIG/MAG welding machine, with the wire feeding unit placed inside the machine.
- Voltage calibration with 18 stages between 30-420 A welding current range.
- High efficiency with 2 stage choke coil.
- Ideal for welding metal sheets up to 20 mm.
- Wire feeding speed adjustment within 1-22 m/min range.
- 2-4 trigger selection.
- Digital current and voltage indicator.
- 1 year guarantee except for torch kit.



Technical Specs.	GKM 420-G	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	17.5
Fuse (delayed action)	A	42
Open Circuit Voltage	V	13-43
Current Range	A	30-420
Duty Cycle at (40 °C)	100%	280
	60%	360
	45%	420
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Usable Wire Diameters	σ mm	0.8 - 1.0 - 1.2
Protection Class	IP	23
Insulation Class		H
Dimensions (L*W*H)	mm	1075/500/800
Weight	kg	140

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	302022		302003		604394 3 mt.		604395 Optional 4 mt.		201302
			638116 Argon		600952 CO ₂		600949		

Please Select One



Features

- Compact type, water cooled MIG/MAG welding machine, with wire feeding unit placed inside the machine.
- Voltage calibration with 18 stages between 30-420 A welding current range.
- High efficiency with 2 stage choke coil.
- Ideal for welding metal sheets up to 25 mm.
- It is preferred by heavy industrial companies.
- Wire feeding speed adjustment within 1-22 m/min range.
- 2-4 trigger selections.
- Digital current and voltage indicators.
- 1 year guarantee except for torch kit.



Technical Specs.	GKM 420-W	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	17.6
Fuse (delayed action)	A	42
Open Circuit Voltage	V	13-43
Current Range	A	30-420
Duty Cycle at (40 °C)	100%	280
	60%	360
	45%	420
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Usable Wire Diameters	ø mm	0.8 - 1.0 - 1.2
Protection Class	IP	23
Insulation Class	H	
Dimensions (L*W*H)	mm	1075/500/800
Weight	kg	165

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments	302026		302006		604396 3 mt.		604397 Optional 4 mt.		201302
			638116 Argon		600952 CO ₂		600949		

Please Select One



Features

- Gas cooled MIG/MAG welding machine, which provides easy access to the work area by separating wire feeding unit.
- Voltage calibration with 18 stages between 30-420 A welding current range.
- Wire feeding system with 4 rolls.
- High efficiency with 2 stage choke coil.
- Ideal for welding metals sheets up to 25 mm.
- Wire feeding speed adjustment within 1-22 m/min range.
- 2-4 trigger selections.
- Digital current and voltage indicators.
- 1 year guarantee except for torch kit.



Technical Specs.	GKM 420-2G	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	17.5
Fuse (delayed action)	A	42
Open Circuit Voltage	V	13-43
Current Range	A	30-420
Duty Cycle at (40 °C)	100%	280
	60%	360
	45%	420
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class	H	
Dimensions (L*W*H)	mm	1075 / 500 / 800
Weight	kg	140
Wire Feeder Unit		
Usable Wire Diameters	o mm	0.8 / 1.0 / 1.2
Wire Types	Fe / FC	
Wire Feeding Speed	m/min	22 max
Dimensions (L*W*H)	mm	630/460/230
Weight	kg	15

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments 302025	302005	604394	604395 Optional	201302
638116 Argon	600952 (CO ₂)	600949	201219 5 mt. 201495 Optional 10 mt. 203639 Optional 15 mt.	

Please Select One



Features

- Water cooled MIG/MAG welding machine, which provides easy access to the work area by separating the wire feeding unit.
- Voltage calibration with 18 stages between 30-420 A welding current range.
- Wire feeding system with 4 rolls.
- High efficiency with 2 stage choke coil.
- Ideal for welding metal sheets up to 25 mm.
- It is preferred by heavy industrial companies.
- Wire feeding speed adjustment within 1-22 m/min range.
- 2-4 trigger selection.
- Digital current and voltage indicator.
- 1 year guarantee except for torch kit.



Technical Specs.	GKM 420-2W	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	17.6
Fuse (delayed action)	A	42
Open Circuit Voltage	V	13-43
Current Range	A	30-420
Duty Cycle at (40 °C)	100%	280
	60%	360
	45%	420
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class	H	
Dimensions (L*W*H)	mm	1075 / 500 / 800
Weight	kg	162
Wire Feeder Unit		
Usable Wire Diameters	ø mm	0.8 / 1.0 / 1.2
Wire Types	Fe / FC	
Wire Feeding Speed	m/min	22 max
Dimensions (L*W*H)	mm	630/460/230
Weight	kg	15

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments 302027	302007	604396 3 mt.	604397 Optional 4 mt.	201302
638116 Argon	600952 (CO ₂)	600949	201484 5 mt. 201494 Optional 10 mt. 206025 Optional 15 mt.	

Please Select One



Features

- Air cooled MIG/MAG welding machine, which gives easy access to the work area by separating the wire feeding unit.
- Voltage calibration with 36 (4x9) stages between 40-500 A welding current range.
- Wire feeding system with 4 rolls.
- High efficiency with 4 stage choke coil.
- Ideal for welding metal sheets up to 40 mm.
- It is preferred by heavy industrial companies.
- Wire feeding speed adjustment within 1-22 m/min range.
- 2-4 trigger selection.
- Digital current and voltage indicator.
- 1 year guarantee except for torch kit.



Technical Specs.	GKM 500-2G	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	27.5
Fuse (delayed action)	A	63
Open Circuit Voltage	V	16-57
Current Range	A	40-500
Duty Cycle at (40 °C)	100%	400
	60%	500
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class	H	
Dimensions (L*W*H)	mm	1100 / 510 / 1440
Weight	kg	211
Wire Feeder Unit		
Usable Wire Diameters	ø mm	0.8 / 1.0 / 1.2 / 1.6
Wire Types	Fe / FC	
Wire Feeding Speed	m/min	22 max
Dimensions (L*W*H)	mm	630/460/230
Weight	kg	15

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments 302787	302764	604394 3 mt.	604395 Optional 4 mt.	201780
638116 Argon	600952 (CO ₂)	600949	201994 5 mt. 202062 Optional 10 mt. 202063 Optional 15 mt.	

Please Select One



Features

- Water cooled MIG/MAG welding machine, which gives easy access to the work area by separating the wire feeding unit.
- Voltage calibration with 36 (4x9) stages between 40-500 A welding current range.
- Wire feeding system with 4 rolls.
- High efficiency with 4 stage choke coil.
- Ideal for welding metal sheets up to 40 mm.
- It is preferred by heavy industrial companies.
- Wire feeding speed adjustment within 1-22 m/min range.
- 2-4 trigger selection.
- Digital current and voltage indicator.
- 1 year guarantee except for torch kit.



Technical Specs.	GKM 500-2W	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	27.5
Fuse (delayed action)	A	63
Open Circuit Voltage	V	16-57
Current Range	A	40-500
Duty Cycle at (40 °C)	100%	400
	60%	500
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class	H	
Dimensions (L*W*H)	mm	1100 / 510 / 1440
Weight	kg	211
Wire Feeder Unit		
Usable Wire Diameters	ø mm	0.8 / 1.0 / 1.2 / 1.6
Wire Types	Fe / FC	
Wire Feeding Speed	m/min	22 max
Dimensions (L*W*H)	mm	630/460/230
Weight	kg	15

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments 302028	 302008	 604396 3 mt.	 604397 Optional 4 mt.	 201780
 638116 Argon	 600952 (CO ₂)	 600949	 201748 5 mt. 201756 Optional 10 mt. 201834 Optional 15 mt.	

Please Select One



Features

- Water cooled MIG/MAG welding machine, which gives easy access to the work area by separating the wire feeding unit.
- Voltage calibration with 36 (4x9) stages between 40-600 A welding current range.
- Wire feeding system with 4 rolls.
- High efficiency with 4 stage choke coil.
- Ideal for welding metal sheets up to 50 mm.
- It is preferred by heavy industrial companies.
- Wire feeding speed adjustment within 1-22 m/min range.
- 2-4 trigger selection.
- Digital current and voltage indicator.
- 1 year guarantee except for torch kit.



Technical Specs.	GKM 600-2W	
Input Voltage	V	3 Phase, 50/60 Hz, 380 V
Installed Power	kVA	33.6
Fuse (delayed action)	A	63
Open Circuit Voltage	V	18-60
Current Range	A	40-600
Duty Cycle at (40 °C)	100%	410
	60%	520
	45%	600
Standards	EN 60974-1 / EN 60974-5 / EN 60974-10 / S	
Protection Class	IP	23
Isolation Class	H	
Dimensions (L*W*H)	mm	1100 / 510 / 1440
Weight	kg	265
Wire Feeder Unit		
Usable Wire Diameters	ø mm	0.8 / 1.0 / 1.2 / 1.6
Wire Types	Fe / FC	
Wire Feeding Speed	m/min	22 max
Dimensions (L*W*H)	mm	630/460/230
Weight	kg	15

Standard & Optional Equipments

This Order Code Covers The Welding Machine and All of The Equipments 302029	302009	604396 3 mt.	604397 Optional 4 mt.	201780
638116 Argon	600952 (CO ₂)	600949	201748 5 mt. 201756 Optional 10 mt. 201834 Optional 15 mt.	

Please Select One



Features

- Arc parameter electronic control for an excellent cutting quality.
- Cutting parameters stability within +/- 10% mains voltage fluctuations long lasting consumable parts.
- Innovative and user friendly design.
- Robust handle integrated into the chassis.
- Control rack protection cover.
- IP 23 protection class and dust-proof electronic components, thanks to the innovative "Tunnel" fan cooling system, allow their use in the toughest work environment.
- Electrode wearing and improper operation signalling.
- Possibility of cutting grids and perforated lamination sheets.
- Contact cutting possibility without sliding blocks or other spacers.
- Central connector for the torch.
- Built-in filter with air impurity automatic expulsion.
- PFC - Power Factor Correction(Cos f=1).
- The PFC circuit gives the machine a wider protection against mains voltage fluctuations, by also making it safer whenever being operated by power generator sets.



Technical Specs.	PoWer CUT 40 i	
Input Voltage	V	1 Phase 50/60 Hz, 230 V, ± 10
Installed Power	kVA	5.4
Delayed Fuse	A	16
Current Range	A	20-40
Cutting Capacity	mm	Severence : 15 Quality : 10
Duty Cycle at (40 °C)	100%	20
	60%	30
	40%	40
Standards	EN 60974-1 / IEC 60974-7 / EN 60974-10 / S	
Protection Class	IP	23 S
Insulation Class	H	
Dimensions (L*W*H)	mm	490/185/390
Weight	kg	16

Standard Equipments

This Order Code Covers The Welding Machine and All of The Equipments	606812		606784		606806		202569	
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Features

- Arc parameter electronic control for an excellent cutting quality.
- Energy saving function to switch off the power source cooling fan when no longer necessary.
- Cutting parameters stability within +/- 10% mains voltage fluctuations.
- Long lasting consumable parts.
- Innovative and user friendly design.
- IP 23 protection class and dust-proof electronic components, thanks to the innovative. "Tunnel" fan cooling system, allow their use in the toughest work environment.
- Electrode wearing and improper operation signalling.
- Possibility of cutting grids and perforated lamination sheets.
- Contact cutting possibility without sliding blocks or other spacers.



Technical Specs.	PoWer CUT 61 i	
Input Voltage	V	3 Phase 50/60 Hz, 400 V, ± 10
Installed Power	kVA	7.5
Delayed Fuse	A	10
Current Range	A	20-60
Cutting Capacity	mm	Severence : 20 Quality : 15
Duty Cycle at (40 °C)	100%	40
	60%	50
	40%	60
Standards		EN 60974-1 / IEC 60974-3 / EN 60974-7 / EN 60974-10 / S
Protection Class	IP	23 S
Insulation Class		H
Dimensions (L*W*H)	mm	540/220/425
Weight	kg	23

Standard Equipments

<p>This Order Code Covers The Welding Machine and All of The Equipments</p>	 <p>604982</p>	 <p>604775</p>	 <p>605748</p>	 <p>202569</p>
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Features

- Arc parameter electronic control for an excellent cutting quality.
- Energy saving function to switch off the power source cooling fan when no longer necessary.
- Cutting parameters stability within +/- 10% mains voltage fluctuations.
- Innovative and user friendly design.
- IP 23 protection class and dust-proof electronic components, thanks to the innovative. "Tunnel" fan cooling system, allow their use in the toughest work environment.
- Electrode wearing and improper operation signalling.
- Possibility of cutting grids and perforated lamination sheets.
- Contact cutting possibility without sliding blocks or other spacers.
- Central connector for the torch.
- Regulator group with built-in filter and air impurity automatic expulsion.



Technical Specs.	PoWer CUT 105	
Input Voltage	V	3 Phase 50/60 Hz, 400 V, ± 10
Installed Power	kVA	15
Delayed Fuse	A	16
Current Range	A	20-100
Cutting Capacity	mm	Severence : 35
		Quality : 25
Duty Cycle at (40 °C)	100%	70
	60%	85
	40%	100
Standards	EN 60974-1 / IEC 60974-3 / EN 60974-7 / EN 60974-10 / S	
Protection Class	IP	23 S
Insulation Class	H	
Dimensions (L*W*H)	mm	610/220/425
Weight	kg	32

Standard Equipments

This Order Code Covers The Welding Machine and All of The Equipments	604980	604699	605749	202569



Features

- Arc parameter electronic control for an excellent cutting quality.
- Energy saving function to switch off the power source cooling fan when no longer necessary.
- Cutting parameters stability within +/- 10% mains voltage fluctuations.
- Innovative and user friendly design.
- IP 23 protection class and dust-proof electronic components, thanks to the innovative.
- "Tunnel" fan cooling system, allow their use in the toughest work environment.
- Electrode wearing and improper operation signalling.
- Possibility of cutting grids and perforated lamination sheets.
- Contact cutting possibility without sliding blocks or other spacers.
- Central connector for the torch.
- Regulator group with built-in filter and air impurity automatic expulsion.



Technical Specs.	PoWer CUT 155	
Input Voltage	V	3 Phase 50/60 Hz, 400 V, ± 10
Installed Power	kVA	27,5
Fuse (delayed action)	A	30
Open Circuit Voltage	A	25-150
Cutting Capacity	mm	Severance : 50
		Quality : 40
Duty Cycle at (40 °C)	100%	100
	60%	120
	30%	150
Standards		EN 60974-1 / IEC 60974-3 / EN 60974-7 / EN 60974-10 / S
Protection Class	IP	23 S
Insulation Class		H
Dimensions (L*W*H)	mm	730/290/515
Weight	kg	48

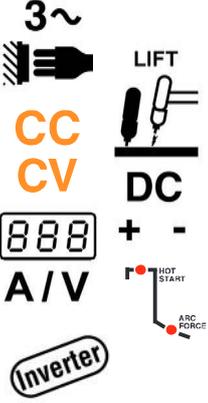
Standard Equipments

<p>This Order Code Covers The Welding Machine and All of The Equipments</p>			
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* % 20 loss when working with stainless steel & aluminium.



- Features**
- Especially designed for use under heavy working conditions.
 - Very good welding performance with fine adjustment control.
 - Suitable for long working conditions with 100% duty cycle.
 - Digital current and voltage setting display.
 - Suitable to work under +/-10% voltage fluctuations and constant welding current at high temperature.
 - Suitable for very long welding seams and very thick workpieces.
 - Embedded expert program with 10 sets of complete welding parameters.
 - Uninfluenced by input voltage fluctuation.
 - Digital communication between tractor and welder.
 - 3 and 4 wheeled tractor unit (optional)
 - Flux collecting unit.
 - The slides have the ability to move horizontally and vertically.
 - Smart fan feature greatly expands working life.
 - Self-diagnostic function with error code display.
 - Electro slag welding facility.
 - Mode :
 - Lift-TIG, MMA Welding, MIG Welding Mode (CV)
 - Extra Functions :
 - Hot Start
 - Arc Force
 - Wire diameter selection
 - CC / CV selection
 - Inductance setting



Technical Specs.	PoWer SAW 1000	
Input Voltage	V	3 Phase 50/60 Hz, 380 V, ± 20
Installed Power	kVA	54.6
Fuse (delayed action)	A	83
Open Circuit Voltage	A	60-1000
Duty Cycle at (40 °C)	100%	1000
Standards	EN ISO 60974-1 / EN ISO 60974-10	
Protection Class	IP	23
Insulation Class		H
Dimensions (L*W*H)	mm	767/352/757
Weight	kg	95

Standard & Optional Equipments

<p>This Order Code Covers The Welding Machine and All of The Equipments</p> <p>608181</p>	<p>608122</p>	<p>204243</p>	<p>204453 Optional</p>	<p>639135 Optional</p>
<p>607606 Optional</p>	<p>608123</p>	<p>608124 Optional</p>	<p>204233</p>	

Accessories



GeKa MMA Welding Accessories



Product	Product Code
200A Electrode Holder	105792
500A Electrode Holder	101038



Product	Product Code
400A Earth Clamp	101040



Product	Product Code
10-25mm ² Female Jack Set	638049
50-70mm ² Female Jack Set	206001
70-95mm ² Female Jack Set	101438



Product	Product Code
10-25mm ² Male Jack Set	106056
50-70mm ² Male Jack Set	101425
50-70mm ² Male Jack Rubber	101436
70-95mm ² Male Jack Set	101437



Product	Product Code
GGS WP 26 V Valve Control TIG Torch	600926



Product	Product Code
DC6 Remote Control	600737

TIG Torch



Product	Product Code	Length	Cooling Type
GGs WP 26	602175	4 mt.	Air
GGs WP 26	600925	8 mt.	Air
GGs WP 26	604971	16 mt.	Air
GGs WP 18	603936	4 mt.	Water
GGs WP 18	600923	8 mt.	Water
GGs WP 18	606269	16 mt.	Water

Body



Product	Product Code
WP 18 TIG Torch Body (Water)	605161
WP 26 TIG Torch Body (Air)	605160
WP 18F Flexible TIG Torch Body (Water)	606389
WP 18V Valve TIG Torch Body (Water)	606387
WP 26F Flexible TIG Torch Body (Air)	606390
WP 26V Valve TIG Torch Body (Air)	606388

Electrode Back Cap



Product	Product Code
Long Back Cap	603555
Med. Back Cap	639222
Short Back Cap	638388

Ceramic Nozzles



Product	No.	Product Code
Nozzle	4	602307
Nozzle	5	603072
Nozzle	6	638028
Nozzle	7	638029
Nozzle	8	638437

Collet and Collet Bodies



Product	Dia.	Product Code
Collet	1.6mm	603741
Collet	2.0mm	603742
Collet	2.4mm	603743
Collet	3.2mm	603744



Product	Dia.	Product Code
Collet Body	1.6mm	603745
Collet Body	2.0mm	603746
Collet Body	2.4mm	603747
Collet Body	3.2mm	603748

Foot Pedal



Product	Product Code
PSR 7 Foot Pedal	605838

Remote Control



Product	Product Code
DC6 Remote Control	600737

Gas Pressure Regulator



Product	Product Code
Gas Pressure Regulator	638116

MIG-MAG Welding Torch

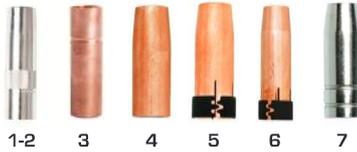


GSS 400 A GSS 350 A GGS 280 A GGS 500 A GGS 360 A GGS 250 A GGS 150 A

Product	Product Code	Length	Cooling Type
GSS 400 A	603947	3 mt	Water
GSS 400 A	603985	4.5 mt	Water
GSS 350 A	603966	3 mt	Water
GGS 280 A	603952	3 mt	Air
GSS 500 A	604396	3 mt	Water
GSS 500 A	604397	4 mt	Water
GGS 360 A	604394	3 mt	Air
GGS 360 A	604395	4 mt	Air
GGS 250 A	604392	3 mt	Air
GGS 250 A	604393	4 mt	Air
GGS 150 A	604390	3 mt	Air
GGS 150 A	604391	4 mt	Air



Nr.	Product	Product Code
1	15 AK Neck	600944
2	25 AK Neck	600945
3	36 AK Neck	600946
4	501 D Neck	600947



No.	Product	Product Code
1	GSS 400 Nozzle	604100
2	GSS 350 Nozzle	604100
3	GGS 280 Nozzle	604085
4	GSS 500 Nozzle	600969
5	GGS 360 Nozzle	600968
6	GGS 250 Nozzle	600967
7	GGS 150 Nozzle	600966



No.	Product	Product Code
1	M6 0.8 mm contact tip	604088
1	M6 1.0 mm contact tip	604089
1	M6 1.2 mm contact tip	604090
2	M6 0.8 mm contact tip E-Cu	603090
3	M6 0.8 mm contact tip E-Cu	600934
3	M6 1.0 mm contact tip E-Cu	600938
3	M6 1.2 mm contact tip E-Cu	600940
3	M6 0.8 mm contact tip E-Cu	605608
3	M6 1.0 mm contact tip (Zirconium)	605609
3	M6 1.2 mm contact tip (Zirconium)	605610
3	M6 1.0 mm contact tip (Aluminium)	605611
3	M6 1.2 mm contact tip (Aluminium)	605612
4	M8 0.8 mm contact tip E-Cu	600935
4	M8 1.0 mm contact tip E-Cu	600939
4	M8 1.2 mm contact tip E-Cu	600941
4	M8 0.8 mm contact tip (Zirconium)	605613
4	M8 1.0 mm contact tip (Zirconium)	605614
4	M8 1.2 mm contact tip (Zirconium)	605615
4	M8 1.0 mm contact tip (Aluminium)	605616
4	M8 1.2 mm contact tip (Aluminium)	605617
4	M8 1.6 mm contact tip E-Cu	600943



No.	Product	Product Code
1	GGS 280 - GSS 400 Tip Holder	604091
2	25 AK M6 Tip Holder	603749
3	36 AK M6 Tip Holder	600962
3	36 AK M8 Tip Holder	600961
4	501 D M8 Tip Holder	600963
5	GGS 280 Diffusor	604099
6	GSS 350 - 400 Diffusor	604098
7	36 AK Diffusor - White	600950
7	36 AK Diffusor (Ceramic)	603116
8	36 AK Diffusor - Black	600950
9	501 D Diffusor (Plastic)	600951
9	501 D Diffusor (Ceramic)	603115



Product	Length	Product Code
Isolated 0.6 - 0.8 mm Blue Spiral	3.0 mt.	639175
Isolated 0.6 - 0.8 mm Blue Spiral	4.0 mt.	606038
Isolated 1.0 - 1.2 mm Red Spiral	3.0 mt.	638514
Isolated 1.0 - 1.2 mm Red Spiral	4.0 mt.	602628
Teflon Spiral 1.0 - 1.2 mm Red	3.0 mt.	606039
Steel Spiral 1.0 - 1.2 mm	3.0 mt.	606040
Steel Spiral 1.0 - 1.2 mm	4.0 mt.	600978
GGS 280 Spiral	3.5 mt.	604205
GSS 400 Spiral	3.5 mt.	604029
GSS 400 Spiral	4.5 mt.	604894
GSS 400 Teflon Spiral	3.5 mt.	604030

Plasma Cutting Torch



Product	Product Code	Length	Cooling
Plasma Cutting Torch 150 A	605749	6 mt	Air
Plasma Cutting Torch 70 A	605748	6 mt	Air
Plasma Cutting Torch 40 A	606806	4 mt	Air
P150 Plasma Torch Neck	605774	---	--
P70 Plasma Torch Neck	607079	---	--
PT71 Plasma Torch Neck	607119	---	--



Product	Product Code
P70 Distance Spring	606652
P150 Distance Spring	605067
P150 Distance Spring	606643
P150 Nozzle	605121
P70 Nozzle	606651
PT71 Nozzle	606810



Product	Product Code
P70 Air Tube	607080
P70 Tip 1,0 mm (Long)	605775
P70 Tip 1,2 mm (Short)	607082
P70 Tip 1,2 mm (Long)	606649
P70 Electrode (Short)	607081
P70 Electrode (Long)	606648
PT71 Tip 0,9 mm	606809
PT71 Electrode	606807



Product	Product Code
P150 Air Tube	607084
P150 Tip 1,35 mm	605129
P150 Tip 1,60 mm	606654
P150 Tip 1,80 mm	607085
P150 Electrode	605066



Product	Product Code
PT71 Gas Diffusor	606808
P70 Front Insulator	606650
P150 Front Insulator	606871
P150 Gas Diffusor	605068

Technical Information

Table of the Electrodes for Manual Arc Welding of Non-alloy and Fine Grain Steels according to TS 563/ EN 499 – 2002

E 46 3 1Ni B 6 4 H5

Production / Product	
G	Wire Electrodes
O	Oxy-acetylene
E	Electric arc welding
S	Submerged arc welding wires
T	Flux-cored wires
W	TIG Rods
F	Submerged arc welding fluxes

Alloy Symbol	Chemical Composition % 1) 2) 3)		
	Mn	Mo	Ni
	2,00	-	-
Mo	1,40	0,3 - 0,6	-
MnMo	> 1,4 - 2,0	0,3 - 0,6	-
1 Ni	-	-	0,6 - 1,2
2 Ni	1,40	-	1,8 - 2,6
3 Ni	1,40	-	> 2,6 - 3,8
Mn 1Ni	> 1,4 - 2,0	-	0,6 - 1,2
1 NiMo	1,40	0,3 - 0,6	0,6 - 1,2
Z	Any other agreed composition		

1) If not specified Mo<0,3; Ni<0,3; Cr<0,2; V<0,05; Nb<0,05; Cu<0,3
 2) Single values shown in the table mean maximum values
 3) The results shall be rounded to the same number of significant figures as in the specified value using the rules according to ISO 31-0, annex B rule A

Yield Strength, Tensile Strength and Elongation			
Symbol	ReL (N/mm ²)	Rm (N/mm ²)	A (%)
35	355	440-570	22
38	380	470-600	20
42	420	500-640	20
46	460	530-680	20
50	500	560-720	18

Symbol for impact properties of all-weld metal (Min. 47J)

Symbol	Temperature -°C
Z	No Requirements
A	(+20)
0	0
2	-20
3	-30
4	-40
5	-50
6	-60

Electrode covering	
A	Acid covering
C	Cellulosic covering
R	Rutile covering
RR	Thick Rutile covering
RC	Rutile-Cellulosic covering
RA	Rutile-Acid cov.
RB	Rutile-Basic cov.
B	Basic covering

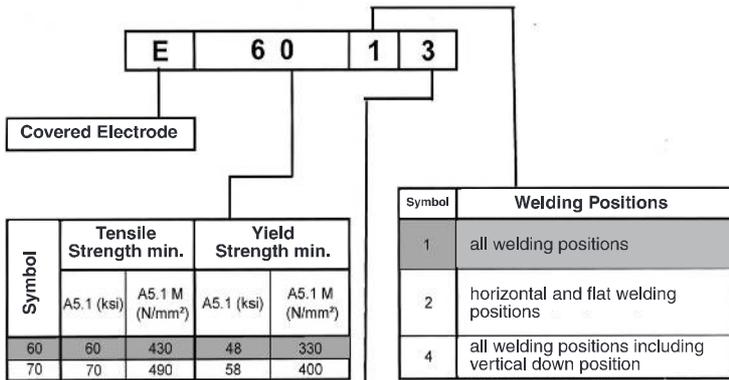
Symbol for weld metal recovery and type of current (%)

1	≤ 105	≠/≠
2	≤ 105	=
3	> 105 ≤ 125	≠/≠
4	> 105 ≤ 125	=
5	> 125 ≤ 160	≠/≠
6	> 125 < 160	=
7	> 160	≠/≠
8	> 160	=

Symbols for welding positions	
1	PA, PB, PC, PD, PE, PF, PG
2	PA, PB, PC, PD, PE, PF,
3	PA, PB
4	PA
5	PA, PB, PG

Symbols for hydrogen content of the all-weld metal	
Symbol	ml/100g
H 5	5
H 10	10
H 15	15

Table of the Electrodes for Welding of Non-alloy Steels according to AWS A5.1/AE.1 M: 2004



Symbol	Tensile Strength min.		Yield Strength min.	
	A5.1 (ksi)	A5.1 M (N/mm ²)	A5.1 (ksi)	A5.1 M (N/mm ²)
60	60	430	48	330
70	70	490	58	400

Symbol	Welding Positions
1	all welding positions
2	horizontal and flat welding positions
4	all welding positions including vertical down position

Symbol	Type of Cover	Welding Position	Current Type	Elongation %min.
10	Cellulosic-Sodium silicate	F, V, OH, H-fillet	DC (+)	22
11	Cellulosic-Potassium silicate	F, V, OH, H-fillet	AC - DC (+)	22
12	Rutile-Sodium silicate	F, V, OH, H-fillet	AC - DC (-)	17
13	Rutile-Potassium silicate	F, V, OH, H-fillet	AC - DC (-) (+)	17
14	Rutile-Iron powder	F, V, OH, H-fillet	AC - DC (-) (+)	17
15	Basic-Sodium silicate	F, V, OH, H-fillet	DC (+)	22
16	Basic-Potassium silicate	F, V, OH, H-fillet	AC - DC (+)	22
18	Basic, Iron powder-Potassium silicate	F, V, OH, H-fillet	AC - DC (+)	22
19	Rutile, Iron oxide-Potassium silicate	F, V, OH, H-fillet	AC - DC (-) (+)	22
20	Iron oxide	F, H-fillet	AC - DC (-) (+)	22
22	Iron oxide	only for one-run welding	AC - DC (-)	—
24	Rutile-Iron powder	F, H-fillet	AC - DC (-) (+)	17
27	Iron oxide - Iron powder	F, H-fillet	AC - DC (-) (+)	22
28	Basic, Iron powder - Potassium Silicate	F, H-fillet	AC - DC (+)	22
48	Basic, Iron powder - Potassium Silicate	F, OH, H, V-Down	AC - DC (+)	22

F=Flat V=Vertical OH=Overhead H=Horizontal
H-Fillets= Horizontal fillets V-Down= Vertical with downward progression

Table of High Strength Electrodes according to TS EN 757-2002

Production / Product		E	69	6	Mn2NiCrMo	B	3	4	H5
G	Wire Electrodes								
O	Oxy-acetylene								
E	Electric arc welding								
S	Submerged arc welding wires	55	550	610-780	18				
T	Flux-cored wires	62	620	690-890	17				
W	TIG Rods	69	690	760-960	17				
F	Submerged arc welding fluxes	79	790	860-1080	16				
		89	890	980-1180	15				

Yield Strength, Tensile Strength & Elongation Symbol Rel. (N/mm ²) Rm (N/mm ²) A (%)
55
62
69
79
89

Symbol for impact properties of all-weld metal min. 47J	Temperature °C
Z	No Requirements
A	(+20)
0	0
2	-20
3	-30
4	-40
5	-50
6	-60
7	-70
8	-80

Symbol for weld metal recovery and type of current (%)	1	2	3	4	5	6	7	8
1	105	105	> 105 ≤ 125	> 105 ≤ 125	> 125 ≤ 160	> 125 ≤ 160	> 160	> 160
2	=	=	=	=	=	=	=	=
3	=	=	=	=	=	=	=	=
4	=	=	=	=	=	=	=	=
5	=	=	=	=	=	=	=	=
6	=	=	=	=	=	=	=	=
7	=	=	=	=	=	=	=	=
8	=	=	=	=	=	=	=	=

Alloy Symbol	Mn	Ni	Cr	Mo
MnMo	1,4-2,0	—	—	0,3-0,6
Mn1Ni1	1,4-2,0	0,6-1,2	—	—
1NiMo	1,4	0,6-1,20	—	0,3-0,6
1,5 NiMo	1,4	1,2-1,8	—	0,3-0,6
2 NiMo	1,4	1,8-2,8	—	0,3-0,6
Mn1NiMo	1,4-2,0	0,6-1,2	—	0,3-0,6
Mn2NiMo	1,4-2,0	1,8-2,6	—	0,3-0,6
Mn2NiCrMo	1,4-2,0	1,8-2,6	0,3-0,6	0,3-0,6
Mn2Ni1CrMo	1,4-2,0	1,8-2,6	0,6-1,0	0,3-0,6
Z	Any other agreed composition			

1) If not specified C 0,03%-0,10%, Ni <0,3%, Cr <0,2%, Mo <0,2%, V <0,05%, Nb <0,05%, Cu <0,3%, P <0,025%, S <0,020%

2) Single values shown in the table mean maximum values

3) The results shall be rounded to the same number of significant figures as in the specified value using the rules according to ISO 31-0, annex B table A

Chemical Composition (% 1) 2) 3)
Mn
Ni
Cr
Mo

Electrode covering
A
C
R
RR
RC
RA
RB

Symbol for Welding Positions
1
2
3
4
5

Symbol for hydrogen content of the all-weld metal	
Symbol	ml/100g
H 5	5
H 10	10

Table for Creep-Resisting (Heat-Resisting) Electrodes according to TS EN 1599-2002

Alloy Symbol	Chemical Composition % 1) 2) 3) % Mass											Yield Strength Ret. (N/mm ²)	Tensile Strength Rm (N/mm ²)	Elongation A(%)	Impact Strength J	Post Weld Heat Treatment °C	
	E B 3 4 5 H8																
	C	Si	Mn	P	S	Cr	Mo	V	other								
Mo	0.10	0.80	0.40-0.50	0.03	0.025	—	0.40-0.70	—	—	—	—	355	510	22	47	570-620	60
MoV	0.03-0.12	0.80	0.40-1.50	0.03	0.025	0.30-0.60	0.80-1.20	0.25-0.60	—	—	—	355	510	18	47	690-730	60
CrMo0.5	0.05-0.12	0.80	0.40-1.50	0.03	0.025	0.40-0.65	0.40-0.65	—	—	—	—	355	510	22	47	600-650	60
CrMo1	0.05-0.12	0.80	0.40-1.50	0.03	0.025	0.80-1.40	0.45-0.70	—	—	—	—	355	510	20	47	660-700	60
CrMo1L	0.05	0.80	0.40-1.50	0.03	0.025	0.90-1.40	0.45-0.70	—	—	—	—	355	510	20	47	660-700	60
CrMoV1	0.05-0.15	0.80	0.40-1.50	0.03	0.025	0.90-1.30	0.90-1.30	0.10-0.30	—	—	—	435	590	15	47	680-730	60
CrMo2	0.05-0.12	0.80	0.40-1.30	0.03	0.025	2.0-2.6	0.90-1.30	—	—	—	—	400	500	16	47	690-750	60
CrMo2L	0.05	0.80	0.40-1.30	0.025	0.025	2.0-2.6	0.90-1.30	—	—	—	—	400	500	18	47	690-750	60
CrMo5	0.03-0.12	0.80	0.40-1.50	0.025	0.025	4.0-6.0	0.40-0.70	—	—	—	—	400	590	17	47	730-760	60
CrMo6	0.03-0.12	0.80	0.40-1.30	0.025	0.025	8.0-10.0	0.30-1.2	0.15	Ni 1.0	—	—	435	590	18	34	740-780	60
CrMo91	0.05-0.12	0.60	0.40-1.50	0.025	0.025	8.0-10.5	0.80-1.20	0.15-0.30	Nb 0.03-0.10 N 0.02-0.07	—	—	415	585	17	47	750-770	120-180
CrMoVV1/2	0.15-0.22	0.80	0.40-1.30	0.025	0.025	10.0-12.0	0.80-1.20	0.20-0.40	Ni 0.8 W 0.40-0.80	—	—	550	690	15	34	740-780	60
Z	Any other agreed composition																

- 1) If not specified Ni <=0.3, Cu <=0.3, V <=0.03, Nb <=0.01, Cr <=0.2.
- 2) Single values shown in the table mean maximum values.
- 3) The results shall be rounded to the same number of significant figures as in the specified value using the rules according to ISO 31-0, annex B rule A

Electrode covering

A	Acid covering
C	Cellulosic covering
R	Rutile covering
RR	Thick Rutile covering
RC	Rutile-Cellulosic covering
RA	Rutile-Acid cov.
RB	Rutile-Basic cov.
B	Basic covering

Electrode covering

1	PA, PB, PC, PD, PE, PF, PG, PH
2	PA, PB, PC, PD, PE, PF,
3	PA, PB, PC
4	PA, PB
5	PA, PB, PG

Production / Product

G	Wire Electrodes
O	Oxy-acetylene
E	Electric arc welding
S	Submerged arc welding wires
T	Flux-cored wires
W	TIG Rods
F	Submerged arc welding fluxes

Symbol for weld metal recovery and type of current (%)

1	105
2	105
3	> 105 <= 125
4	> 105 <= 125

In order to demonstrate operability with no voltage no higher than 65V.

Symbol for hydrogen content of the all-weld metal

Symbol	ml/100g
H 5	5
H 10	10

Table of the Low-Alloy Electrodes according to AWS A5.5-96

E | 80 | 1 | 8 | - | B2

Covered Electrode

Symbol	Tensile Strength		Yield Strength	
	(ksi)	(N/mm ²)	(ksi)	(N/mm ²)
70	70	480	60	415
80	80	550	67	460
90	90	620	77	530
100	100	690	87	600
110	110	760	97	670
120	120	830	107	740

1	All Welding Positions
2	Horizontal and flat welding positions

Symbol	Type of Cover	Welding Position	Type of Current
10	Cellulosic Sodium Silicate	F, V, OH, H-fillet	DC (+)
11	Cellulosic Potassium Silicate	F, V, OH, H-fillet	AC DC (+)
13	Rutile Potassium Silicate	F, V, OH, H-fillet	AC DC (-) (+)
15	Basic Sodium Silicate	F, V, OH, H-fillet	DC (+)
16	Basic Potassium Silicate	F, V, OH, H-fillet	AC DC (+)
18	Basic Iron Powder Potassium Silicate	F, V, OH, H-fillet	AC DC (+)
20	Iron Oxide	F, H-fillet	AC DC (-) (+)
27	Iron Oxide Iron Powder	F, H-fillet	AC DC (-) (+)

F=Flat V=Vertical OH=Overhead
H=Horizontal H-Fillets= Horizontal fillets
V-Down= Vertical with downward progression

Symbol	Elongation % min.
E 7010	P1/A1/G 22/22/22
E 7011	A1/G 22/22
E 7015	X/B2L/G 25/19/25
E 7016	X/B2L/G 25/19/25
E 7018	X/B2L/C3L/W1/G 25/19/25/25/25
E 7020	A1/G 25/25
E 7027	A1/G 22/25
E 8010	P1/G 19/19
E 8011	G 19
E 8013	G 16
E 8015	X/B3L/G 19/17/19
E 8016	X/C3/C4/G 19/24/19/19
E 8018	X/B3L/C3/C4/NM1/W2/G 19/17/24/19/19/19/19
E 9010	G 17
E 9011	G 17
E 9013	G 14
E 9015	X/G 17/17
E 9016	X/G 17/17
E 9018	M/X/G 24/17/17
E 10010	G 16
E 10011	G 16
E 10013	G 13
E 10015	X/G 16/16
E 10016	X/G 16/16
E 10018	M/X/G 20/16/16
E 11010	G 15
E 11011	G 15
E 11013	G 13
E 11015	G 15
E 11016	G 15
E 11018	M 20
E 12010	G 14
E 12011	G 14
E 12013	G 11
E 12015	G 14
E 12016	G 14
E 12018	G/MM1 14/18/18

Symbol	Types of Electrodes	Chemical Composition of the Weld Metals %				
		C	Mn	Ni	Cr	Mo
EXXXX-A1	Carbon molybdenum alloyed	0,12	0,03	—	—	0,40-0,85
EXXXX-B1		0,05-0,12	0,90	—	0,40-0,65	0,40-0,65
EXXXX-B2		0,05-0,12	0,60	—	1,60-1,80	0,40-0,65
EXXXX-B3		0,05-0,12	0,90	—	2,00-2,50	0,90-1,20
EXXXX-B4L		0,05	0,90	—	1,75-2,25	0,40-0,65
EXXXX-B5		0,07-0,15	0,40-0,70	—	0,40-0,60	1,50-1,25
EXXXX-B6		0,05-0,10	1,00	0,40	4,00-8,00	0,45-0,65
EXXXX-B7		0,05-0,10	1,00	0,40	6,00-8,00	0,45-0,65
EXXXX-B8		0,05-0,10	1,00	0,40	8,00-10,5	0,85-1,20
EXXXX-B9	0,08-0,13	1,25	1,00	8,00-10,5	0,85-1,20	
EXXXX-C1	Chromium molybdenum alloyed	0,12	1,25	2,00-2,75	—	—
EXXXX-C2		0,12	1,25	3,00-3,75	—	—
EXXXX-C3		0,12	0,40-1,25	0,85-1,10	0,15	0,35
EXXXX-C4		0,10	1,25	1,10-2,00	—	—
EXXXX-C5		0,05	0,40-1,00	6,00-7,25	—	—
EXXXX-NM1	Nickel alloyed	0,10	0,80-1,25	0,80-1,10	0,10	0,40-0,85
EXXXX-D1	Nickel molybdenum alloyed	0,12	1,00-1,75	0,60	—	0,25-0,45
EXXXX-D2		0,15	1,65-2,00	0,60	—	0,25-0,45
EXXXX-D3		0,12	1,00-1,80	0,60	—	0,40-0,85
XXXX-G	Low alloy electrode	Mn: 1.00 - Si: 0.80 - Ni: 0.50 - Cr: 0.30 Mo: 0.20 V: 0.10 When at least one of these elements exceeds the limit, designated with "G".				
EXXXX-M	Military similar electrode	0,10	0,60-1,25	1,40-1,80	0,15	0,35
EXXXX-P1	Pipeline electrodes	0,20	1,20	1,00	0,30	0,50
EXXXX-W1	Weathering steel electrodes	0,12	0,40-0,70	0,20-0,40	0,15-0,30	Cu: 0,3-0,6
EXXXX-W2		0,12	0,50-1,30	0,40-0,80	0,45-0,70	Cu: 0,3-0,75

The symbol L is added to the low-carbon electrodes.

Table of Covered Electrodes for Manual Arc Welding of Heat-Resisting and Stainless Steels according to TS 2716 EN 1600-2002

Symbol of alloy	Chemical Composition (% 1) 2)											Mechanical Properties			Symbol for welding position
	C	Si	Mn	P	S	Cr	Ni	Mo	Other Elements	Yield Strength	Tensile Strength	Elongation %	Post weld Heat Treatment		
Martensitic / Ferritic															
13 3.4	0.06	1.00	1.50	0.03	0.025	11.0-14.0	<0.60	<0.75	-	-	-	250	450	15	560-670/200°C for 1h
17	0.12	1.00	1.50	0.03	0.025	14.0-18.0	<0.60	<0.75	-	-	-	300	450	15	560-670/200°C for 1h
19 9 L	0.08	1.20	2.00	0.03	0.025	18.0-21.0	9.0-11.0	<0.75	-	-	-	350	500	30	none
19 9 Lb	0.04	1.20	2.00	0.03	0.025	18.0-21.0	9.0-11.0	<0.75	-	-	-	350	510	30	none
19 12 L	0.08	1.20	2.00	0.03	0.025	17.0-20.0	10.0-13.0	2.0-3.0	-	-	-	300	500	25	none
19 12 Lb	0.04	1.20	2.00	0.03	0.025	17.0-20.0	10.0-13.0	2.0-3.0	-	-	-	300	500	25	none
19 12 3 Nb	0.08	1.20	2.00	0.03	0.025	17.0-20.0	10.0-13.0	2.5-3.0	-	-	-	300	500	25	none
19 13 4 N L	0.04	1.20	1.0-1.50	0.03	0.025	17.0-20.0	12.0-15.0	3.0-4.5	-	-	-	300	500	25	none
Autonitic-Ferritic															
25 7 2 N L	0.04	1.20	2.00	0.03	0.025	21.0-24.0	7.5-10.5	2.5-4.0	-	-	-	450	500	20	none
25 7 2 N Lb	0.04	1.20	2.00	0.03	0.025	24.0-26.0	6.0-8.0	1.0-3.0	-	-	-	500	700	15	none
25 9 3 Cu N L	0.04	1.20	2.50	0.03	0.025	24.0-27.0	7.5-10.5	2.5-4.0	-	-	-	550	620	18	none
25 9 4 N L	0.04	1.20	2.50	0.03	0.025	24.0-27.0	8.0-10.5	2.5-4.5	-	-	-	500	620	18	none
Austenitic-Ferritic															
18 15 3 L	0.04	1.20	1.0-4.0	0.03	0.025	16.5-19.5	14.0-17.0	2.5-3.5	-	-	-	300	480	25	none
18 16 5 N L	0.04	1.20	1.0-4.0	0.03	0.025	17.0-20.0	10.5-16.0	3.5-6.0	-	-	-	300	480	25	none
20 25 5 Cu N L	0.04	1.20	1.0-4.0	0.03	0.025	19.0-22.0	24.0-27.0	4.0-7.0	-	-	-	300	510	25	none
21 25 5 N L	0.04	1.20	1.0-4.0	0.03	0.025	19.0-22.0	24.0-27.0	4.0-7.0	-	-	-	300	510	25	none
23 22 3 N L	0.04	1.20	1.0-1.50	0.03	0.025	24.0-27.0	20.0-23.0	2.0-3.2	-	-	-	300	510	25	none
27 31 4 Cu L	0.04	1.20	2.50	0.03	0.025	26.0-29.0	30.0-33.0	3.0-4.5	-	-	-	240	500	25	none
Special Types															
18 8 Mn	0.20	1.20	4.0-7.5	0.035	0.025	17.0-20.0	7.0-10.0	-	-	-	-	300	500	25	none
18 9 Mn Mo	0.04-0.14	1.20	3.0-5.0	0.035	0.025	18.0-21.5	9.0-11.0	0.5-1.5	-	-	-	300	500	25	none
19 15 3	0.04	1.20	2.00	0.03	0.025	16.5-19.5	10.5-13.5	1.5-2.5	-	-	-	300	500	25	none
23 12 Nb	0.04	1.20	2.50	0.03	0.025	22.0-25.0	11.0-14.0	<0.75	-	-	-	300	500	25	none
23 12 2 L	0.04	1.20	2.50	0.03	0.025	22.0-25.0	11.0-14.0	<0.75	-	-	-	300	550	25	none
29 9	0.15	1.20	2.50	0.035	0.025	27.0-31.0	8.0-12.0	<0.75	-	-	-	400	650	15	none
Resisting Types															
18 9 H	0.04-0.08	1.00	2.50	0.03	0.025	14.5-16.5	7.5-9.5	1.5-2.5	-	-	-	300	510	25	none
19 9 H	0.04-0.08	1.20	2.00	0.03	0.025	16.0-21.0	9.0-11.0	<0.75	-	-	-	300	500	30	none
25 4	0.15 +	1.20	2.50	0.03	0.025	24.0-27.0	4.0-6.0	<0.75	-	-	-	400	600	15	none
25 4 H	0.15 +	1.20	2.50	0.03	0.025	20.0-23.0	10.0-13.0	<0.75	-	-	-	300	500	25	none
25 20 H	0.35-0.45	1.20	2.50	0.03	0.025	23.0-27.0	18.0-22.0	<0.75	-	-	-	300	500	10	none
18 36	0.25	1.20	2.00	0.03	0.025	14.0-16.0	33.0-37.0	<0.75	-	-	-	300	500	10	none

Symbol for welding position

1	PA	PR	PC	PD	PE
2	PA	PR	PC	PD	PE
3	PA	PR	PC	PD	PE
4	PA	PR	PC	PD	PE
5	PA	PR	PC	PD	PE

Symbol for weld metal recovery weld type (EN 1600-2002)

1	> 105	mm
2	≥ 105	mm
3	> 105 & 125	mm
4	> 105 & 150	mm
5	> 125 & 150	mm
6	> 125 & 160	mm
7	> 160	mm
8	> 160	mm

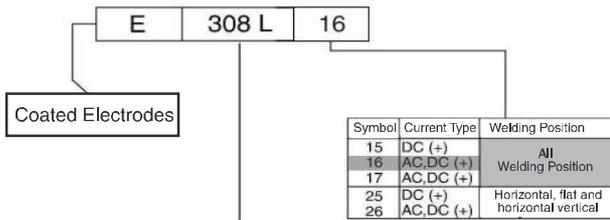
Electrode Covering

R	Rutile Cov.
B	Basic Cov.

Production / Product

G	Wire Electrodes
O	Oxy-acetylene
E	Electric arc welding
S	Submerged arc welding wires
T	Flux-cored wires
W	TIG Rods
F	Submerged arc welding fluxes

Table of Stainless Steel Electrodes according to AWS A5.4



Symbol	Chemical Composition of Weld Metal %						Mechanical Properties	
	C	Si	Mn	Cr	Ni	Mo	Tensile Strength	Elongation min. %
E 209 ¹⁾	0.06	0.90	4.0 - 7.0	20.5 - 24.0	9.5 - 12.0	1.5 - 3.0	690	15
E 219 ¹⁾	0.06	1.00	8.0 - 10.0	19.0 - 21.5	5.5 - 7.0	0.75	620	15
E 240 ¹⁾	0.06	1.00	10.5 - 13.5	17.0 - 19.0	4.0 - 6.0	0.75	690	15
E 307	0.04 - 0.14	0.90	3.30 - 4.75	18.0 - 21.5	9.0 - 10.7	0.5 - 1.5	590	30
E 308	0.08	0.90	0.5 - 2.5	18.0 - 21.0	9.0 - 11.0	0.75	550	35
E 308 H	0.04 - 0.08	0.90	0.5 - 2.5	18.0 - 21.0	9.0 - 11.0	0.75	550	35
E 308 L	0.04	0.90	0.5 - 2.5	18.0 - 21.0	9.0 - 11.0	0.75	520	35
E 308 Mo	0.08	0.90	0.5 - 2.5	18.0 - 21.0	9.0 - 12.0	2.0 - 3.0	550	35
E 308 MoL	0.04	0.90	0.5 - 2.5	18.0 - 21.0	9.0 - 12.0	2.0 - 3.0	520	35
E 309	0.15	0.90	0.5 - 2.5	22.0 - 25.0	12.0 - 14.0	0.75	550	30
E 309 L	0.04	0.90	0.5 - 2.5	22.0 - 25.0	12.0 - 14.0	0.75	520	30
E 309 Cb ³⁾	0.12	0.90	0.5 - 2.5	22.0 - 25.0	12.0 - 14.0	0.75	550	30
E 309 Mo	0.12	0.90	0.5 - 2.5	22.0 - 25.0	12.0 - 14.0	2.0 - 3.0	550	30
E 309 MoL	0.04	0.90	0.5 - 2.5	22.0 - 25.0	12.0 - 14.0	2.0 - 3.0	520	30
E 310	0.08 - 0.20	0.75	1.0 - 2.5	25.0 - 28.0	20.0 - 22.5	0.75	550	30
E 310 H	0.35 - 0.45	0.75	1.0 - 2.5	25.0 - 28.0	20.0 - 22.5	0.75	620	10
E 310 Cb ³⁾	0.12	0.75	1.0 - 2.5	25.0 - 28.0	20.0 - 22.0	0.75	550	25
E 310 Mo	0.12	0.75	1.0 - 2.5	25.0 - 28.0	20.0 - 22.0	2.0 - 3.0	550	30
E 312	0.15	0.90	0.5 - 2.5	28.0 - 32.0	8.0 - 10.5	0.75	660	22
E 316	0.08	0.90	0.5 - 2.5	17.0 - 20.0	11.0 - 14.0	2.0 - 3.0	520	30
E 316 H	0.04 - 0.08	0.90	0.5 - 2.5	17.0 - 20.0	11.0 - 14.0	2.0 - 3.0	520	30
E 316 L	0.04	0.90	0.5 - 2.5	17.0 - 20.0	11.0 - 14.0	2.0 - 3.0	490	30
E 317	0.08	0.90	0.5 - 2.5	18.0 - 21.0	12.0 - 14.0	3.0 - 4.0	550	30
E 317 L	0.04	0.90	0.5 - 2.5	18.0 - 21.0	12.0 - 14.0	3.0 - 4.0	520	30
E 318 ³⁾	0.08	0.90	0.5 - 2.5	17.0 - 20.0	11.0 - 14.0	2.0 - 3.0	550	25
E 320	0.07	0.60	0.5 - 2.5	19.0 - 21.0	32.0 - 36.0	2.0 - 3.0	550	30
E 320 LR ²⁾³⁾	0.03	0.30	1.50 - 2.5	19.0 - 21.0	32.0 - 36.0	2.0 - 3.0	520	30
E 330	0.18 - 0.25	0.90	1.0 - 2.5	14.0 - 17.0	33.0 - 37.0	0.75	520	25
E 330 H	0.35 - 0.45	0.90	1.0 - 2.5	14.0 - 17.0	33.0 - 37.0	0.75	620	10
E 347	0.08	0.90	0.5 - 2.5	18.0 - 21.0	9.0 - 11.0	0.75	520	30
E 349	0.13	0.90	0.5 - 2.5	18.0 - 21.0	8.0 - 10.0	0.35 - 0.65	690	25
E 383	0.03	0.90	0.5 - 2.5	26.5 - 29.0	30.0 - 33.0	3.2 - 4.2	520	30
E 385	0.03	0.75	1.0 - 2.5	19.5 - 21.5	24.0 - 26.0	4.2 - 5.2	520	30
E 410	0.12	0.90	1.0	11.0 - 13.5	0.7	0.75	450	20
E 410 NiMo	0.06	0.90	1.0	11.0 - 12.5	4.0 - 5.0	0.40 - 0.70	760	15
E 430	0.10	0.90	1.0	15.0 - 18.0	0.6	0.75	450	20
E 502	0.10	0.90	1.0	4.0 - 6.0	0.4	0.45 - 0.65	420	20
E 505	0.10	0.90	1.0	8.0 - 10.5	0.4	0.85 - 1.20	420	20
E 630 ²⁾³⁾	0.05	0.75	0.25 - 0.75	16.00 - 16.75	4.5 - 5.0	0.75	930	7
E 16-8-2	0.10	0.60	0.5 - 2.5	14.5 - 16.5	7.5 - 9.5	1.0 - 2.0	550	35
E 7 Cr	0.10	0.90	1.0	6.0 - 8.0	0.4	0.45 - 0.65	420	20
E 2209 ¹⁾	0.04	0.90	0.5 - 2.0	21.5 - 23.5	8.5 - 10.5	2.5 - 3.5	690	20
E 2553 ¹⁾²⁾	0.06	1.0	0.5 - 1.5	24.0 - 27.0	6.5 - 8.5	2.9 - 3.9	760	15

- 1) Weld metal includes N.
- 2) Weld metal includes cu.
- 3) Weld metal includes Cb (Nb)+Ta.

**Table of Cast Iron Electrodes according to
TS 9463 EN ISO 1071-2005**

E NiFe - CI

Coated Electrodes

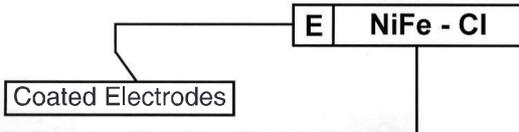
Symbol	Product Structure	Composition of the weld metal %									
		C	Si	Mn	P	S	Fe	Ni	Cu	Not	Other elements
Coated Electrodes											
Fe-1	E, S, T	2.0	1.5	0,5-1.5	0,04	0,04	rest	-	-	-	1.0
St	E, S, T	0.15	1.0	0.8	0.04	0.04	rest	-	0.35	-	0.4
Fe-2	E, T	0.2	1.5	0,3-1.5	0,04	0,04	rest	-	-	Nb+V: 5.0-10.0	1.0
Ni-CI	E	2.0	4.0	2.5	-	0.03	8.0	min.85	2.5	Al: 1.0	2.0
	S	1.0	0.75	2.5	-	0.03	4.0	min.90	4.0	-	1.0
Ni-CI-A	E	2.0	4.0	2.5	-	0.03	8.0	min.85	2.5	Al: 1.0-3.0	1.0
NiFe-1	E, S, T	2.0	4.0	2.5	0.03	0.03	rest	45-70	4.0	Al: 1.0	1.0
NiFe-2	E, S, T	2.0	4.0	1.0-5.0	0.03	0.03	rest	45-60	2.5	elements that produce carbide 3,0	1.0
	E	2.0	4.0	2.5	-	0.04	rest	40-60	2.5	Al: 1.0	1.0
NiFeT3-CI	T	2.0	1.0	3.0-5.0	-	0.03	rest	45-60	2.5	Al: 1.0	1.0
NiFeCI-A	E	2.0	4.0	2.5	-	0.03	rest	45-60	2.5	Al: 1.0-3.0	1.0
NiFeMn-CI	E	2.0	1.0	10.1	-	0.03	rest	35-45	2.5	Al: 1.0	1.0
	S	0.5	1.0	10 - 14	-	0.03	rest	35-45	2.5	Al: 1.0	1.0
NiCu	E, S, T	1.7	1.0	2.5	-	0.04	5.0	50-75	rest	-	1.0
	E, S	0.35-0.55	0.75	2.3	-	0.025	3.0-6.0	50-60	35-45	-	1.0
NiCu-B	E, S	0.35-0.55	0.75	2.3	-	0.025	3.0-6.0	60-70	25-35	-	1.0
Z	R, E, T	Any agreed composition									

Single values shown in the table mean maximum values unless noted otherwise.

Symbol	Abbreviation of the consumable	Tensile Strength	Yield Strength	Elongation
		MPa	MPa	%
Fe-1	E C Fe - 1	No values, only for surface coating (intermediate transverse layers)		
St	E C St	No values, only for surface coating (intermediate transverse layers)		
Fe-2	E C Fe-2	320	440	8
	T C Fe-2	200	250	3
Ni-CI	E C Ni-CI	200	250	3
	S C Ni-CI	200	250	3
Ni-CI-A	E C NiCI-A	200	250	3
NiFe-1	E/S/T C NiFe1	290	420	6
NiFe-2	E/S/T C NiFe2	290	420	6
NiFe-CI		250	350	6
NiFeT3-CI	T C NiFeT3-CI	250	350	12
350 NiFe-CI-A	E C NiFeCI-A	250	350	4
NiFeMn-CI	E S NiFeMn-CI	350	450	10
	S C NiFeMn-CI	350	450	15
NiCu	E C NiCu	190	300	15

Symbol	Weld metal recovery rate (%)	Current Type
1	≤ 105	AC - DC
2	≤ 105	DC
3	> 105≤125	AC - DC
4	>105≤125	DC
5	>105≤125	AC - DC
6	>105≤125	DC
7	>160	AC - DC
8	>160	DC

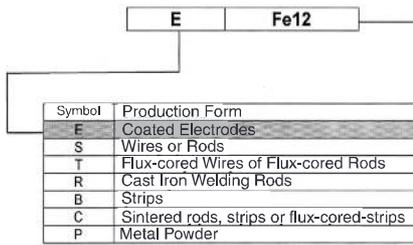
Table of Cast Iron Electrodes according to AWS 5.15-90



Symbol	Composition of the weld metal												
	C	Mn	Si	P	S	Fe	Ni	Mo	Cu	Mg	Al	Ce	Other elements
Coated Electrodes													
ENi-CI	2,00	2,50	4,00	—	0,03	8,00	min. 85	—	2,50	—	1,00	—	1,00
ENi-CI-A	2,00	2,50	4,00	—	0,03	8,00	min. 85	—	2,50	—	1,0-3,0	—	1,00
ENiFe-CI	2,00	2,50	4,00	—	0,03	Rest	45-60	—	2,50	—	1,00	—	1,00
ENiFe-CI-A	2,00	2,50	4,00	—	0,03	Rest	45-60	—	2,50	—	1,0-3,0	—	1,00
ENiFeMn-CI	2,00	10,0-14,0	1,00	—	0,03	Rest	35-45	—	2,50	—	1,00	—	1,00
ENiCu-A	0,35-0,55	2,30	0,75	—	0,025	3,0-6,0	60-60	—	35-45	—	—	—	1,00
ENiCu-B	0,35-0,55	2,30	0,75	—	0,025	3,0-6,0	60-70	—	25-35	—	—	—	1,00
Flux-cored Wires													
ENiFeT3-CI	2,00	3,0-5,0	1,00	—	0,03	Rest	45-60	—	2,50	—	1,00	—	1,00
Core Wire													
E St	0,15	0,60	0,15	0,04	0,04	Rest	—	—	—	—	—	—	—
Cast Iron Welding Rods for Oxy-acetylene Welding													
RCI	3,2-3,5	0,60-0,75	2,7-3,0	0,50-0,75	0,10	Rest	eser	eser	—	—	—	—	—
RCI-A	3,2-3,5	0,50-0,70	2,0-2,5	0,20-0,40	0,10	Rest	1,2-1,6	0,25-0,45	—	—	—	—	—
RCI-B	3,2-4,0	0,10-0,40	3,2-3,8	0,05	0,015	Rest	0,50	—	—	0,04-0,10	—	0,20	—
TIG Rods													
ERNi-CI	1,00	2,50	0,75	—	0,03	4,00	min. 90	—	4,00	—	—	—	1,00
ERNiFeMn-CI	0,50	10,0-14,0	1,00	—	0,03	Rest	35-45	—	2,50	—	1,00	—	1,00

Symbol	Tensile Strength min.		Yield Strength min.		Elongation %	Hardness BHN
	(ksi)	(N/mm ²)	(ksi)	(N/mm ²)		
RCI	20-25	138-172	—	—	—	150-210
RCI-A	35-40	241-276	—	—	—	225-290
RCI-B (kaynaklı)	80-90	552-621	70-75	483-517	3,0-5,0	220-310
RCI-B (tavli)	50-60	345	40-45	276-310	5,0-15,0	150-200
E St	—	—	—	—	—	250-400
ENi-CI	40-65	276-448	38-60	262-414	3,0-6,0	135-218
ENi-CI-A	40-65	276-448	38-60	262-414	3,0-6,0	135-218
ENiFe-CI	58-84	400-579	43-63	296-434	6,0-18,0	165-218
ENiFe-CI-A	58-84	400-579	43-63	296-434	4,0-12,0	165-218
ENiFeMn-CI	75-95	517-655	60-70	414-483	10,0-18,0	165-210
ENiFeT3-CI	65-80	448-552	40-55	276-379	12,0-20,0	150-165
ERNiFeMn-CI	75-100	517-689	65-80	448-552	15-35	165-210

Table of Electrodes for Hardfacing according to AWS A5.13-2000



Alloy Symbol	Acceptance	Chemical Composition %									
		C	Cr	Ni	Mn	Mo	W	V	Nb	other	rest
Fe1	p	≤ 0,4	≤ 3,5	---	0,5 - 3	≤ 1	≤ 1	≤ 1	---	---	Fe
Fe2	p	0,4 - 1,2	≤ 7	≤ 1	0,5 - 3	≤ 1	≤ 1	≤ 1	---	---	Fe
Fe3	st	0,2 - 0,5	1 - 8	≤ 5	≤ 3	≤ 4,5	≤ 10	≤ 1,5	---	Co, Si	Fe
Fe4	st (p)	0,2 - 1,5	2 - 6	≤ 4	≤ 3	≤ 10	≤ 19	≤ 4	---	Co, Si	Fe
Fe5	c p s t w	≤ 0,5	≤ 0,1	17 - 22	≤ 1	3 - 5	---	---	---	Co, Ti	Fe
Fe6	g p s	≤ 2,5	≤ 10	---	≤ 3	≤ 3	---	---	≤ 10	Ti	Fe
Fe7	c p t	≤ 0,2	4 - 30	≤ 6	≤ 3	≤ 2	---	≤ 1	≤ 1	Si	Fe
Fe8	g p l	≤ 0,2 - 2	5 - 18	---	0,3 - 3	≤ 4,5	≤ 2	≤ 2	≤ 10	Si, Ti	Fe
Fe9	k (n) p	0,3 - 1,2	≤ 19	≤ 3	11 - 18	≤ 2	---	≤ 1	---	Ti	Fe
Fe10	c k (n) p z	≤ 0,25	17 - 22	7 - 11	3 - 8	≤ 1,5	---	---	≤ 1,5	Si	Fe
Fe11	c n z	≤ 0,3	18 - 31	8 - 20	≤ 3	≤ 4	---	---	≤ 1,5	Cu	Fe
Fe12	c (n) z	≤ 0,08	17 - 26	9 - 26	0,5 - 3	≤ 4	---	---	≤ 1,5	---	Fe
Fe13	G	≤ 1,5	≤ 6,5	≤ 4	0,5 - 3	≤ 4	---	---	---	B, Ti	Fe
Fe14	g (c)	1,5 - 4,5	25 - 40	≤ 4	0,5 - 3	≤ 4	---	---	---	---	Fe
Fe15	g	4,5 - 5,5	20 - 40	≤ 4	0,5 - 3	≤ 2	---	---	≤ 10	B	Fe
Fe16	g z	4,0 - 7,5	10 - 40	---	≤ 3	≤ 9	≤ 8	≤ 10	≤ 10	B, Co	Fe
Fe20	c g t z	hardfacing mat.	---	---	---	---	---	---	---	---	Fe
Ni1	c p l	≤ 1	15 - 30	rest	0,3 - 1	≤ 6	≤ 2	≤ 1	---	Si, Fe, B	Ni
Ni2	c k p t z	≤ 0,1	15 - 30	rest	≤ 1,5	≤ 28	≤ 8	≤ 1	≤ 4	Co, Si, Ti	Ni
Ni3	c p t	≤ 1	1 - 15	rest	0,3 - 1	≤ 6	≤ 2	≤ 1	---	Si, Fe, B	Ni
Ni4	c k p t z	≤ 0,1	1 - 15	rest	≤ 1,5	≤ 28	≤ 8	≤ 1	≤ 4	Co, Si, Ti	Ni
Ni20	c g t z	hardfacing mat.	---	---	---	---	---	---	---	---	Ni
Co1	c k t z	≤ 0,6	20 - 30	≤ 10	≤ 10	≤ 15	---	---	---	Fe	Co
Co2	t z (c s)	0,6 - 3	20 - 35	≤ 4	0,1 - 2	---	6 - 14	---	---	Fe	Co
Co3	t z (c s)	1 - 3	20 - 35	≤ 4	≤ 2	≤ 1	6 - 14	---	---	Fe	Co
Cu1	c (n)	---	---	≤ 6	≤ 15	---	---	---	---	Al, Fe, Sn	Cu
Al1	c n	---	---	---	10 - 35	≤ 0,5	---	---	---	Cu, Si	Al
Cr1	c g	1 - 5	rest	---	≤ 1	---	---	15 - 30	---	Fe, B, Si, Zr	Cr

Acceptance: c: corrosion resistance n: non-magnetized t: heat resisting
g: abrasion resisting p: impact resisting z: oxidation resisting
k: working hardening s: shearing ability w: precipitation hardening

a) Analyses that do not fit this table is signified with z.

Table of Surfacing Electrodes according to AWS A5.13-2000

E FeMn-A

Symbol	UNS Number	Chemical Composition %										
		C	Mn	Si	Cr	Ni	Mo	V	W	Other	Fe	Other elements total
IRON BASE SURFACING ELECTRODES ^{a)}												
EFe1	W74001	0.04-0.20	0.5-2.0	1.0	0.5-3.5	---	1.5	---	---	---	rest	1.0
EFe2	W74002	0.10-0.30	0.0-2.0	1.0	1.8-3.8	1.0	1.0	0.35	---	---	rest	1.0
EFe3	W74003	0.50-0.80	0.5-1.5	1.0	4.0-8.0	---	1.0	---	---	---	rest	1.0
EFe4	W74004	1.0-2.0	0.5-2.0	1.0	3.0-5.0	---	---	---	---	---	rest	1.0
EFe5	W75110	0.30-0.80	1.5-2.5	0.90	1.5-3.0	---	7.0-9.5	0.5-1.5	0.5-1.5	---	rest	1.0
EFe6	W77510	0.6-1.0	0.4-1.0	1.0	3.0-5.0	---	7.0-9.5	0.5-1.5	0.5-1.5	---	rest	1.0
EFe7	W77610	1.5-3.0	0.5-2.0	1.5	4.0-8.0	---	1.0	---	---	---	rest	1.0
EFeMn-A	W79110	0.5-1.0	12-16	1.3	---	2.5-5.0	---	---	---	---	rest	1.0
EFeMn-B	W79310	0.5-1.0	12-16	1.3	---	0.5-1.5	---	---	---	---	rest	1.0
EFeMn-C	W79210	0.5-1.0	12-16	1.3	2.5-5.0	2.85-5.0	---	---	---	---	rest	1.0
EFeMn-D	W79410	0.5-1.0	15-20	1.3	4.5-7.5	---	---	0.4-1.2	---	---	rest	1.0
EFeMn-E	W79510	0.5-1.0	15-20	1.3	3.0-6.0	1.0	---	---	---	---	rest	1.0
EFeMn-F	W79610	0.8-1.2	17-21	1.3	3.0-6.0	1.0	---	---	---	---	rest	1.0
EFeMnCr	W79710	0.25-0.75	12-18	1.3	13-17	0.5-2.0	2.0	1.0	---	---	rest	1.0
EFeCr-A1-A	W74011	3.5-4.5	4.0-6.0	0.5-2.0	20-25	---	0.5	---	---	---	rest	1.0
EFeCr-A2	W74012	2.5-3.5	0.5-1.5	0.5-1.5	7.5-9.0	---	---	---	---	Ti 1.2-1.8	rest	1.0
EFeCr-A3	W74013	2.5-4.5	0.5-2.0	1.0-2.5	14-20	---	1.5	---	---	---	rest	1.0
EFeCr-A4	W74014	3.5-4.5	1.5-3.5	1.5	23-29	---	1.0-3.0	---	---	---	rest	1.0
EFeCr-A5	W74015	1.5-2.5	0.5-1.5	2.0	24-32	4.0	4.0	---	---	---	rest	1.0
EFeCr-A6	W74016	2.5-3.5	0.5-1.5	1.0-2.5	24-30	---	0.5-2.0	---	---	---	rest	1.0
EFeCr-A7	W74017	3.5-5.0	0.5-1.5	0.5-2.5	23-30	---	2.0-4.5	---	---	---	rest	1.0
EFeCr-A8	W74018	2.5-4.5	0.5-1.5	1.5	30-40	---	2.0	---	---	---	rest	1.0
EFeCr-E1	W74211	5.0-6.5	2.0-3.0	0.8-1.5	12-16	---	---	---	---	Ti 4.0-7.0	rest	1.0
EFeCr-E2	W74212	4.0-6.0	0.5-1.5	1.5	14-20	---	5.0-7.0	1.5	---	---	rest	1.0
EFeCr-E3	W74213	5.0-7.0	0.5-2.0	0.5-2.0	18-28	---	5.0-7.0	---	3.0-5.0	---	rest	1.0
EFeCr-E4	W74214	4.0-6.0	0.5-1.5	1.0	20-30	---	5.0-7.0	0.5-1.5	2.0	Nb 4.0-7.0	rest	1.0

a) Sulfur and phosphorus contents each shall not exceed 0.035%.

Nickel and Cobalt Base Surfacing Electrodes

Symbol	UNS Number	C	Mn	Si	Cr	Ni	Mo	Fe	W	other	Co	Other elements total
ECrCo-A	W73006	0.7-1.4	2.0	2.0	25-32	3.0	1.0	5.0	3.0-6.0	---	rest	1.0
ECrCo-B	W73012	1.0-1.7	2.0	2.0	25-32	3.0	1.0	5.0	7.0-9.5	---	rest	1.0
ECrCo-C	W73001	1.7-3.0	2.0	2.0	25-33	3.0	1.0	5.0	11-14	---	rest	1.0
ECrCo-E	W73021	0.15-0.4	1.5	2.0	24-29	2.0-4.0	4.5-6.5	5.0	0.50	---	rest	1.0
ENiCr-C	W89606	0.5-1.0	---	3.5-5.5	12-18	rest	---	3.5-5.5	---	B 2.5-4.5	1.0	1.0
ENiCrMo-SA	W80002	0.12	1.0	1.0	14-18	rest	14-18	4.0-7.0	3.0-5.0	V 0.40	---	1.0
ENiCrFeCo	W83002	2.2-3.0	1.0	0.6-1.5	25-30	10-33	7.0-10	20-25	2.0-4.0	---	10-15	1.0

b) Sulfur and phosphorus contents each shall not exceed 0.03%.

**Table of Wire Electrodes and Deposits for Gas-shielded Arc
Welding of Non-alloy and Fine-grain Steels according to
TS 5618 EN 440-2002**

G 42 3 M G3Si1

Alloy Symbol	Chemical Composition % ¹⁾²⁾³⁾								
	C	Si	Mn	P	S	Ni	Mo	Al	Ti+Zr
GO	0,06-0,14								
G2Si	0,06-0,14	0,50-0,80	0,90-1,30	0,025	0,025	0,15	0,15	0,02	0,15
G3Si1	0,06-0,14	0,70-1,00	1,30-1,60	0,025	0,025	0,15	0,15	0,02	0,15
G4Si1	0,06-0,14	0,80-1,20	1,60-1,90	0,025	0,025	0,15	0,15	0,02	0,15
G3Si2	0,06-0,14	1,00-1,30	1,30-1,60	0,025	0,025	0,15	0,15	0,02	0,15
G2Ti	0,04-0,14	0,40-0,80	0,90-1,40	0,025	0,025	0,15	0,15	0,05-0,20	0,05-0,25
G3Ni1	0,06-0,14	0,50-0,90	1,00-1,60	0,025	0,025	0,80-0,15	0,15	0,02	0,15
G2Ni2	0,06-0,14	0,40-0,80	0,80-1,40	0,025	0,025	2,10-2,70	0,15	0,02	0,15
G2Mo	0,08-0,14	0,30-0,70	0,90-1,30	0,025	0,025	0,15	0,40-0,60	0,02	0,15
G4Mo	0,08-0,14	0,50-0,80	1,70-2,10	0,025	0,025	0,15	0,40-0,60	0,02	0,15
G2A1	0,08-0,14	0,30-0,50	0,90-1,30	0,025	0,025	0,15	0,15	0,35-0,75	0,15

1) Single values shown in the table mean maximum values.

2) If not specified, Cr<%0,15, Cu %<0,35 and V %<0,03.

Production / Product

G	Wire Electrodes
O	Oxy-acetylene
E	Electric arc welding
S	Submerged arc welding wires
T	Flux-cored wires
W	TIG Rods
F	Submerged arc welding fluxes

Symbol for impact properties of all-weld metal

Symbol	Temperature °C
Z	No Requirements
A	(+20)
0	0
2	-20
3	-30
4	-40
5	-50
6	-60
7	-70
8	-80

Yield Strength, Tensile Strength and Elongation

Symbol	ReL (N/mm ²)	Rm (N/mm ²)	A (%)
35	355	440-570	22
38	380	470-600	20
42	420	500-640	20
46	460	530-680	20
50	500	560-720	18
55	550	610-780	18
62	620	690-890	18
69	690	760-960	17
79	790	880-1080	16
89	890	980-1180	15

Shielding Gas EN 439

M Composition	
C	CO ₂
N	No Gas

Table of Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding (TIG, MIG) of Non- Alloy Steels according to AWS A5.18-2001

Chemical Compositions for Solid and Stick Electrodes (%) (a)														
	A5.18M	UNS Number	C	Mn	Si	P	S	Ni	Mo	Cu	Ti	Zr	Al	
ER 70S-2	ER 48S-2	K10726	0,07	0,90-1,40	0,40-0,70	0,025	0,035	0,15	0,15	0,03	0,50	0,05-0,15	0,02-0,12	0,05-0,15
ER 70S-3	ER 48S-3	K11022	0,06-0,15	0,90-1,40	0,45-0,75	0,025	0,035	0,15	0,15	0,03	0,50	-	-	-
ER 70S-4	ER 48S-4	K11132	0,06-0,15	1,00-1,50	0,65-0,85	0,025	0,035	0,15	0,15	0,03	0,50	-	-	-
ER 70S-6	ER 48S-6	K11140	0,06-0,15	1,40-1,85	0,80-1,15			0,15	0,15	0,03	0,50	-	-	-
ER 70S-7	ER 48S-7	K11125	0,07-0,15	1,50-2,00	0,50-0,80	0,025	0,035	0,15	0,15	0,03	0,50	-	-	-
ER 70S-G	ER 48S-G	-	Not Specified											

a) Single values shown in the table mean maximum values.

Min. Impact Strength of all-weld metal

ER 70 S - 6 H8

Symbols for hydrogen content of the all-weld metal

Symbol	mL/100g
H16	16
H8	8
H4	4

ER: Wire electrodes
 E: Stick Electrodes

Tensile Test				Impact Test		
Symbol	Tensile Strength (Mpa)	Yield Strength (Mpa)	Elongation (%)	Average Impact Strength (Min.)		
A5.18	A5.18M	Shielding Gas		A5.18M		
ER70S-2	ER48S-2			27J at -30C		
ER70S-3	ER48S-3			27J at -20C		
ER70S-4	ER48S-4			Not required		
ER70S-6	ER48S-6	CO ₂	480	400	22	27J at -30C
ER70S-7	ER48S-7			27J at -30C		
ER70S-G	ER48S-G		480	400	22	a
E70C-3X	E48C-3X	75-80 %Ar/Rem. CO ₂ or CO ₂	480	400	22	27J at -20C
E70C-6X	E48C-6X					27J at -30C
E70C-G(X)	E48C-G(X)		480	400	22	a
E70C-GS(X)	E48C-GS(X)		480	Not Specified		Not Required

S: Solid wires
 C: Composite wires

a) Specified according to the agreement between the producer and the customer.

Table of Wire Electrodes, Wires and Rods for Arc Welding of Creep-Resisting Steels according to TS EN 12070-2005

Alloy Symbols	Chemical Composition										Mechanical Properties					
	C	Si	Mn	P	S	Cr	Mo	V	Other Elements	Yield Strength (Min.) N/mm ²	Tensile Strength (Min.) N/mm ²	Elongation (Min.) %	Impact Energy (Min.) J	Pre-heating and Interpass Temperature °C	Post Weld Heat Treatment Temperature °C ^{a)} Duration (minutes)	
Mo	0.08-0.15	0.05-0.25	0.80-1.20	0.025	0.025	-	0.45-0.65	-	-	355	510	22	47	<200	None	
MoSi	0.08-0.15	0.50-0.80	0.70-1.30	0.02	0.02	-	0.40-0.60	-	-	355	510	22	47	<200	None	
MnMo	0.08-0.15	0.05-0.25	1.30-1.70	0.025	0.025	-	0.45-0.65	-	-	355	510	18	47	200-300	690-730	
MoV	0.08-0.15	0.10-0.30	0.60-1.00	0.02	0.02	0.30-0.60	0.50-1.00	0.25-0.45	-	355	510	18	47	200-300	690-730	
MoVSi	0.05-0.15	0.40-0.70	0.70-1.10	0.02	0.02	0.30-0.60	0.50-1.00	0.20-0.40	-	355	510	20	47	150-250	660-700	
CrMo1	0.08-0.15	0.05-0.25	0.80-1.20	0.02	0.02	0.90-1.30	0.40-0.65	-	-	435	590	15	24	200-300	680-730	
CrMoV1	0.08-0.15	0.05-0.25	0.80-1.20	0.02	0.02	0.90-1.30	0.90-1.30	0.10-0.35	-	400	500	18	47	200-300	690-750	
CrMoV1Si	0.08-0.15	0.50-0.80	0.80-1.20	0.02	0.02	0.90-1.30	0.90-1.30	0.10-0.35	-	400	500	18	47	200-300	690-750	
CrMo2	0.08-0.15	0.05-0.25	0.30-0.70	0.02	0.02	2.20-2.80	0.90-1.15	-	-	400	500	18	47	200-300	690-750	
CrMo2Mn2	0.1	0.5	0.50-1.20	0.02	0.015	2.20-2.50	0.90-1.20	-	-	400	500	18	47	200-300	690-750	
CrMo2Si	0.05	0.05-0.25	0.30-0.70	0.02	0.02	2.20-2.50	0.90-1.15	-	-	400	500	18	47	200-300	690-750	
CrMo2L	0.05	0.50-0.80	0.80-1.20	0.02	0.02	2.20-2.50	0.90-1.15	-	-	400	500	18	47	200-300	690-750	
CrMo5	0.03-0.10	0.20-0.50	0.40-0.75	0.02	0.02	5.50-6.50	0.50-0.80	-	-	400	590	17	47	200-300	730-760	
CrMo5Si	0.03-0.10	0.30-0.60	0.30-0.70	0.025	0.025	8.50-10.0	0.80-1.20	0.15	Ni 1.0	435	590	18	34	200-300	740-780	
CrMo5Si	0.03-0.10	0.40-0.80	0.40-0.80	0.02	0.02	8.50-10.0	0.80-1.20	-	-	415	585	17	47	250-350	750-780	
CrMo91	0.07-0.15	0.6	0.40-1.50	0.02	0.02	8.0-10.5	0.80-1.20	0.15-0.30	Ni 0.4-1.0 Nb 0.03-0.10 N 0.02-0.07 Cu 0.25	550	690	15	34	250-350 ^{b)} or 400-500 ^{b)}	740-780	
CrMoW12	0.22-0.30	0.05-0.40	0.40-1.20	0.025	0.02	10.5-12.5	0.80-1.20	0.20-0.40	Ni 0.8 W 0.35-0.60							
CrMoW12Si	0.17-0.24	0.20-0.60	0.40-1.00	0.025	0.02	11.0-12.0	0.80-1.20	0.20-0.40	Ni 0.8 W 0.35-0.60							

Any other agreed composition

- 1) Unless noted otherwise, Ni<0.3 Cu<0.3 V<0.03 Nb<0.01 Cr<0.2
 - 2) Better if Mn/Si>2
- a) Test specimen should be cooled to 300C in an oven not faster than 200 C/hour
b) The test specimen should be cooled to 120-100C right after the welding and it should stay at that temperature at least an hour

Table of Low-Alloy Steel Electrodes and Rods according to AWS A5.28-96

ER 80S - B6

Chemical Composition for Solid Electrodes and Wires														
Symbol	C	Mn	Si	P	S	Ni	Cr	Mo	V	Ti	Zr	Al	Cu	Other
Carbon-Molybdenum Steel Electrodes and Rods														
ER70S-A1	0.12	1.30	0.35-0.7	0.025	0.025	0.20	0.40-0.65							0.35 0.50
Chromium-Molybdenum Steel Electrodes and Rods														
ER80S-B2	0.07-0.12	0.4-0.7	0.4-0.7	0.025	0.025	0.20	1.2-1.5	0.40-0.65						0.35 0.50
ER70S-B2L	0.05	0.4-0.7	0.4-0.7	0.025	0.025	0.20	1.2-1.5	0.40-0.65						0.35 0.50
ER80S-B3	0.07-0.12	0.4-0.7	0.4-0.7	0.025	0.025	0.20	2.3-2.7	0.9-1.2						0.35 0.50
ER80S-B3L	0.05	0.4-0.7	0.4-0.7	0.025	0.025	0.20	2.3-2.7	0.9-1.2						0.35 0.50
ER80S-B6	0.10	0.4-0.7	0.60	0.025	0.025	0.60	4.5-6.0	0.45-0.65						0.35 0.50
ER80S-B8	0.10	0.4-0.7	0.50	0.025	0.025	0.50	8.0-10.5	0.8-1.2						0.35 0.50
ER90S-B9	0.07-0.13	1.25	0.15-0.30	0.010	0.010	1.00	8.0-9.5	0.8-1.1	0.15-0.25			0.04	0.20	0.50
Nickel Steel Electrodes and Rods														
ER80S-NI-1	0.12	1.25	0.40-0.80	0.025	0.025	0.8-1.1	0.15	0.35	0.05					0.35 0.50
ER80S-NI-2	0.12	1.25	0.40-0.80	0.025	0.025	2.00-2.75								0.35 0.50
ER80S-NI-3	0.12	1.25	0.40-0.80	0.025	0.025	3.00-3.75								0.35 0.50
Manganese-Molybdenum Steel Electrodes and Rods														
ER80S-D2	0.07-0.12	1.6-2.1	0.5-0.8	0.025	0.025	0.15		0.4-0.6						0.5 0.5
Other Low-Alloy Steel Electrodes and Rods														
ER100S-1	0.08	1.25-1.8	0.20-0.55	0.010	0.010	1.4-2.1	0.30	0.25-0.55	0.05	0.10	0.10	0.10	0.25	0.50
ER110S-1	0.09	1.4-1.8	0.20-0.55	0.010	0.010	1.9-2.6	0.50	0.25-0.55	0.04	0.10	0.10	0.10	0.25	0.50
ER120S-1	0.10	1.4-1.8	0.25-0.60	0.010	0.010	2.0-2.8	0.60	0.30-0.65	0.03	0.10	0.10	0.10	0.25	0.50
ERXXS-G							Not Specified							
Chemical Composition for Composite Electrode Weld Metal														
Symbol	C	Mn	Si	P	S	Ni	Cr	Mo	V	Ti	Zr	Al	Cu	Other
Manganese-Molybdenum Weld Metal														
ES90C-D2	0.12	1.0-1.9	0.90	0.025	0.030			0.4-0.6						0.35 0.50
Chromium-Molybdenum Weld Metal														
ET0C-B2L	0.05	0.4-1.0	0.25-0.60	0.025	0.030	0.20	1.0-1.5	0.40-0.65						0.35 0.50
ER0C-B2	0.05-0.12	0.4-1.0	0.25-0.60	0.025	0.030	0.20	1.0-1.5	0.40-0.65						0.35 0.50
ER0C-B3L	0.05	0.4-1.0	0.25-0.60	0.025	0.030	0.20	2.0-2.5	0.90-1.20						0.35 0.50
ES0C-B3	0.05-0.12	0.4-1.0	0.25-0.60	0.025	0.030	0.20	2.0-2.5	0.90-1.20						0.35 0.50
Nickel Weld Metal														
ER0C-NI-1	0.12	1.50	0.90	0.025	0.030	0.8-1.1		0.30						0.35 0.50
ET0C-NI2	0.08	1.25	0.90	0.025	0.030	1.75-2.75								0.35 0.50
ER0C-NI2	0.12	1.50	0.90	0.025	0.030	1.75-2.75								0.35 0.50
ER0C-NI3	0.12	1.50	0.90	0.025	0.030	2.75-3.75								0.35 0.50
Other Low-Alloy Weld Metal														
EXXC-G							Not Specified							

Symbol	Shielding Gas	Mechanical Values				Heat Treatment		Impact Energy (J) Min.
		Tensile Strength (N/mm ²) Min.	Yield Strength (N/mm ²) Min.	Elongation	PWHT (°C)	Interpass Temperature (°C)		
ER70S-B2L		515	400	19			Not Required	
E70C-B2L					620±15	135 - 165	Not Required	
ER70S-A1							Not Required	
ER80S-B2		550	470	19			Not Required	
E80C-B2							Not Required	
ER80S-B3L	Argon/1-5%O ₂	550	470	17			Not Required	
ER90S-B3		620	540	17	690±15	165 - 215	Not Required	
E90C-B3							Not Required	
ER80S-B6		550	470	17	745±15	177 - 232	Not Required	
ER80S-B8		620	410	16	745±15	205 - 260	Not Required	
ER90S-B8	Argon/5%O ₂	480	400	24	620±15	150 - 260	Not Required	
E70C-Ni-2							-62 °C-27 J	
ER80S-Ni1		550	470	24	-	135 - 165	-46 °C-27 J	
E80C-Ni1							135 - 165	
ER80S-Ni2	Argon/1-5%O ₂				620±15	135 - 165	-62 °C-27 J	
E80C-Ni2					620±15	135 - 165	-62 °C-27 J	
ER80S-Ni3		550	470	24	620±15	135 - 165	-73 °C-27 J	
E80C-Ni3					620±15	135 - 165	-73 °C-27 J	
ER80S-D2	CO ₂	550	470	17	-	135 - 165	-29 °C-27 J	
ER90S-D2	Argon/1-5%O ₂	620	540	17	-	135 - 165	-29 °C-27 J	
E90C-D2							-29 °C-27 J	
ER110S-1		690	610	16	-	135 - 165	-51 °C-68 J	
ER110S-1	Argon/2%O ₂	760	660	15	-	135 - 165	-51 °C-68 J	
ER120S-1		830	730	14	-	135 - 165	-51 °C-68 J	
E70S-G		480						
E70C-G								
ER80S-G	Not Specified	550	Not Specified					
E80C-G	Specified (Specified according to the producer and the customer)	620	Specified (Specified according to the producer and the customer)	Specified (Specified according to the producer and the customer)	Specified (Specified according to the producer and the customer)	Specified (Specified according to the producer and the customer)	Specified (Specified according to the producer and the customer)	
ER90S-G								
E90C-G								
ER100S-G		690						
E100C-G								
ER110S-G		760						
E110C-G								
ER120S-G		830						
E120C-G								

Table of Wire Electrodes for Arc Welding of Stainless and Heat-Resisting Steels according to TS EN 12072-2003

G 19 12 3 Nb

Alloy Symbol	Chemical Composition (%) ¹⁾²⁾										Mechanical Properties			Post Weld Heat Treatment	Production/Process	
	C	Si	Mn	P ³⁾	S ³⁾	Cr	Ni	Mo	Other Elements	Tensile Strength (N/mm ²) Min.	Yield Strength (N/mm ²) Min.	Elongation (%) Min.				
Martensitic / Ferritic																
13	0.15	1.0	1.0	0.03	0.02	12.0-15.0	-	0.3				250	450	15	840-870 C for 2h	G W S P
13 L	0.05	1.0	1.0	0.03	0.02	12.0-15.0	-	0.3				280	450	15	580-620 C for 2h	
13 4	0.06	1.0	1.0	0.03	0.02	11.0-14.0	3.0-5.0	0.4-1.0				500	700	15	760-790 C for 2h	
13 4 L	0.12	1.0	1.0	0.03	0.02	16.0-18.0	-	-				300	450	15		
Austenitic																
19 9 L	0.03	0.65	1.0-2.5	0.03	0.02	19.0-21.0	9.0-11.0	0.3				320	510	30	None	
19 9 Nb	0.08	0.65	1.0-2.5	0.03	0.02	19.0-21.0	9.0-11.0	0.3				300	550	25	None	
19 12 3 L	0.03	0.65	1.0-2.5	0.03	0.02	18.0-20.0	11.0-14.0	2.5-3.0				320	510	30	None	
19 12 3 Nb	0.08	0.65	1.0-2.5	0.03	0.02	18.0-20.0	11.0-14.0	2.5-3.0				300	550	25	None	
Austenitic-Ferritic																
High corrosion resistance																
22 9 3 N L	0.03	1.0	2.5	0.03	0.02	21.0-24.0	7.0-10.0	2.5-4.0				450	550	20	None	
22 9 3 Nb	0.08	1.0	2.5	0.03	0.02	21.0-24.0	7.0-10.0	2.5-4.0				400	520	20	None	
25 8 5 Cu N L	0.03	1.0	2.5	0.03	0.02	24.0-27.0	8.0-11.0	2.5-4.0				550	620	18	None	
25 8 4 N L	0.08	0.65	1.0-2.5	0.03	0.02	24.0-27.0	8.0-10.5	2.5-4.5				550	620	18	None	
Ferritic/Austenitic																
High corrosion resistance																
18 15 3 L	0.03	1.0	1.0-4.0	0.03	0.02	17.0-20.0	3.0-16.0	2.5-4.0				360	480	25	None	
18 15 3 N L	0.03	1.0	1.0-4.0	0.03	0.02	17.0-20.0	3.0-16.0	3.5-5.0				300	480	25	None	
19 13 4 L	0.03	1.0	1.0-5.0	0.03	0.02	17.0-20.0	3.0-15.0	3.5-4.5				350	550	25	None	
19 13 4 Nb	0.08	1.0	1.0-5.0	0.03	0.02	17.0-20.0	3.0-15.0	3.5-4.5				320	510	25	None	
20 18 5 Mo L	0.03	1.0	3.0-5.0	0.03	0.02	19.0-22.0	1.0-1.5	2.5-4.0				320	510	25	None	
25 22 2 N L	0.03	1.0	3.5-4.5	0.03	0.02	24.0-27.0	31.0-34.0	1.5-3.0				320	510	25	None	
27 31 4 Cu L	0.03	1.0	1.0-3.0	0.03	0.02	28.0-29.0	30.0-33.0	3.0-4.5				240	500	25	None	
Special Types																
18 8 Min	0.20	1.2	5.0-8.0	0.03	0.03	17.0-20.0	7.0-10.0	0.3				300	500	25	None	
20 10 3	0.12	1.0	1.0-2.5	0.03	0.02	18.0-21.0	6.0-12.0	1.5-3.5				400	620	20	None	
23 12 L	0.03	0.65	1.0-2.5	0.03	0.02	22.0-25.0	11.0-14.0	0.3				320	510	25	None	
23 12 Nb	0.08	1.0	1.0-2.5	0.03	0.02	22.0-25.0	11.0-14.0	0.3				350	550	25	None	
23 12 2 L	0.03	1.0	1.0-2.5	0.03	0.02	21.0-25.0	11.0-15.5	2.5-3.5				350	550	25	None	
29 9	0.15	1.0	1.0-2.5	0.03	0.02	28.0-32.0	8.0-12.0	0.3				450	650	15	None	
Heat-Resisting Types																
18 8 2	0.10	1.0	1.0-2.5	0.03	0.02	14.5-16.5	7.5-9.5	1.0-2.5				320	510	25	None	
18 8 3	0.10	1.0	1.0-2.5	0.03	0.02	14.5-16.5	7.5-9.5	1.0-2.5				300	500	25	None	
19 12 3 H	0.04	0.08	1.0	0.025	0.03	18.0-20.0	11.0-14.0	-2.0-3.0				350	550	25	None	
22 12 H	0.04	0.15	2.0	1.0-2.5	0.03	21.0-24.0	11.0-14.0	0.3				350	550	25	None	
25 4	0.15	2.0	1.0-2.5	0.03	0.02	24.0-27.0	4.0-6.0	0.3				450	650	15	None	
25 20	0.08	0.15	2.0	1.0-2.5	0.03	24.0-27.0	18.0-22.0	0.3				350	550	20	None	
25 20 H	0.08	0.15	2.0	1.0-2.5	0.03	24.0-27.0	18.0-22.0	0.3				350	550	20	None	
25 20 H Nb	0.08	0.15	2.0	1.0-2.5	0.03	24.0-27.0	18.0-22.0	0.3				350	550	20	None	
18 36 H	0.18	0.25	0.40-2.0	1.0-2.5	0.03	15.0-19.0	31.0-37.0	0.3				350	550	15 ⁴⁾	None	

1) Single values shown in the table mean maximum values.
2) Si shall be added to the alloy symbol in case 30-038 + 3% Si.

Table of Wire Electrodes for Arc Welding of Stainless Steels according to AWS A5.9-93

ER 316L Si

ER: Wire electrodes

Symbol	Chemical Composition (%)							Mechanical Values		
	C	Cr	Ni	Mo	Mn	Si	Other Elements	Tensile Strength (MPa)	Elongation (%)	Heat Treatment °C
ER209	0.05	20.5-24.0	9.5-12.0	1.5-3.0	4.0-7.0	0.90	N:V:0.10-0.30 Cu:0.75	690	15	None
ER218	0.10	16.0-18.0	8.0-9.0	0.75	7.0-9.0	3.5-4.5	N:0.08-0.18 Cu:0.75	-	-	-
ER219	0.05	19.0-21.5	5.5-7.0	0.75	8.0-10.0	1.00	N:0.10-0.30 Cu:0.75	620	15	None
ER240	0.05	17.0-19.0	4.0-6.0	0.75	10.5-13.5	1.00	N:0.10-0.30 Cu:0.75	690	15	None
ER307	0.04-0.14	19.5-22.0	8.0-10.7	0.5-1.5	3.3-4.75	0.30-0.65	Cu:0.75	590	30	None
ER308	0.08	19.5-22.0	9.0-11.0	0.75	1.0-2.5	0.30-0.65	Cu:0.75	550	35	None
ER308H	0.04-0.08	19.5-22.0	9.0-11.0	0.50	1.0-2.5	0.30-0.65	Cu:0.75	550	35	None
ER308L	0.03	19.5-22.0	9.0-11.0	0.75	1.0-2.5	0.30-0.65	Cu:0.75	520	35	None
ER308Mo	0.08	18.0-21.0	9.0-12.0	2.0-3.0	1.0-2.5	0.30-0.65	Cu:0.75	550	35	None
ER308LMo	0.04	18.0-21.0	9.0-12.0	2.0-3.0	1.0-2.5	0.30-0.65	Cu:0.75	520	35	None
ER308Si	0.08	19.5-22.0	9.0-11.0	0.75	1.0-2.5	0.65-1.00	Cu:0.75	-	-	-
ER308LSi	0.03	19.5-22.0	9.0-11.0	0.75	1.0-2.5	0.65-1.00	Cu:0.75	-	-	-
ER309	0.12	23.0-25.0	12.0-14.0	0.75	1.0-2.5	0.30-0.65	Cu:0.75	550	30	None
ER309L	0.03	23.0-25.0	12.0-14.0	0.75	1.0-2.5	0.30-0.65	Cu:0.75	520	30	None
ER309Mo	0.12	23.0-25.0	12.0-14.0	2.0-3.0	1.0-2.5	0.30-0.65	Cu:0.75	550	30	None
ER309LMo	0.03	23.0-25.0	12.0-14.0	2.0-3.0	1.0-2.5	0.30-0.65	Cu:0.75	520	30	None
ER309Si	0.12	23.0-25.0	12.0-14.0	0.75	1.0-2.5	0.65-1.00	Cu:0.75	-	-	-
ER309LSi	0.03	23.0-25.0	12.0-14.0	0.75	1.0-2.5	0.65-1.00	Cu:0.75	-	-	-
ER310	0.08-0.15	25.0-28.0	20.0-22.5	0.75	1.0-2.5	0.30-0.65	Cu:0.75	550	30	None
ER312	0.15	28.0-32.0	8.0-10.5	0.75	1.0-2.5	0.30-0.65	Cu:0.75	660	22	None
ER316	0.08	18.0-20.0	11.0-14.0	2.0-3.0	1.0-2.5	0.30-0.65	Cu:0.75	520	30	None
ER316H	0.04-0.08	18.0-20.0	11.0-14.0	2.0-3.0	1.0-2.5	0.30-0.65	Cu:0.75	520	30	None
ER316L	0.03	18.0-20.0	11.0-14.0	2.0-3.0	1.0-2.5	0.30-0.65	Cu:0.75	490	30	None
ER316LSi	0.08	18.0-20.0	11.0-14.0	2.0-3.0	1.0-2.5	0.65-1.00	Cu:0.75	-	-	-
ER316LSi	0.03	18.0-20.0	11.0-14.0	2.0-3.0	1.0-2.5	0.65-1.00	Cu:0.75	-	-	-
ER317	0.08	18.5-20.5	13.0-15.0	2.0-3.0	1.0-2.5	0.30-0.65	Cu:0.75	550	30	None
ER317L	0.03	18.5-20.5	13.0-15.0	2.0-3.0	1.0-2.5	0.30-0.65	Cu:0.75	520	30	None
ER318	0.08	18.0-20.0	11.0-14.0	2.0-3.0	1.0-2.5	0.30-0.65	Cb:8*Cmin/1.0max Cu:0.75	550	25	None
ER320	0.07	19.0-21.0	32.0-36.0	2.0-3.0	2.50	0.60	Cb:8*Cmin/1.0max Cu:3.0-4.0	550	30	None
ER320LR	0.025	19.0-21.0	32.0-36.0	2.0-3.0	1.5-2.5	0.15	Cb:8*Cmin/1.0max Cu:3.0-4.0	520	30	None
ER321	0.08	18.5-20.5	9.0-10.5	0.75	1.0-2.5	0.30-0.65	Ti:9*Cmin/1.0max Cu:0.75	-	-	-
ER330	0.18-0.25	15.0-17.0	34.0-37.0	0.75	1.0-2.5	0.30-0.65	Cu:0.75	520	25	None
ER347	0.08	19.0-21.5	9.0-11.0	0.75	1.0-2.5	0.30-0.65	Cb:10*Cmin/1.0max Cu:0.75	520	30	None
ER347Si	0.08	19.0-21.5	9.0-11.0	0.75	1.0-2.5	0.65-1.00	Cb:10*Cmin/1.0max Cu:0.75	-	-	-
ER383	0.025	26.5-28.5	30.0-33.0	3.2-4.2	1.0-2.5	0.50	Cu:0.70-1.50	520	30	None
ER385	0.025	19.5-21.5	24.0-26.0	4.2-5.2	1.0-2.5	0.50	Cu:1.20-2.00	520	30	None
ER409	0.08	10.5-13.5	0.80	0.50	0.80	0.50	Ti:10*Cmin/1.0max Cu:0.75	-	-	-
ER409Cb	0.08	10.5-13.5	0.80	0.50	0.80	1.00	Cb:10*Cmin/1.0max Cu:0.75	-	-	-
ER410	0.12	11.5-13.5	0.80	0.75	0.60	0.50	Cu:0.75	450	20	730-760
ER410NiMo	0.06	11.0-12.5	4.0-5.0	0.4-0.7	0.60	0.50	Cu:0.75	760	15	595-620
ER420	0.25-0.40	12.0-14.0	0.60	0.75	0.60	0.50	Cu:0.75	-	-	-
ER430	0.10	16.5-17.0	0.60	0.75	0.60	0.50	Cu:0.75	450	20	760-790
ER446LMo	0.015	26.0-27.5	a	0.75-1.50	0.40	0.40	N:0.015	-	-	-
ER502	0.10	4.6-6.0	0.60	0.45-0.65	0.60	0.50	Cu:0.75	420	20	840-870
ER505	0.10	8.0-10.5	0.50	0.8-1.2	0.60	0.50	Cu:0.75	420	20	840-870
ER630	0.05	16.0-16.75	4.5-5.0	0.75	0.25-0.75	0.75	Cb:0.15-0.30 Cu:3.25-4.00	930	7	1025-1050
ER19-10H	0.04-0.08	18.5-20.0	9.0-11.0	0.25	1.0-2.0	0.30-0.65	Ti:0.05 Cb:0.05 Cu:0.75	-	-	-
ER16-8-2	0.10	14.5-16.5	7.5-9.5	1.0-2.0	1.0-2.0	0.30-0.65	Cu:0.75	550	35	None
ER2209	0.03	21.5-23.5	7.5-9.5	0.50-2.0	0.50-2.0	0.90	N:0.08-0.20 Cu:0.75	690	20	None
ER2553	0.04	24.0-27.0	4.5-6.5	1.50	1.50	1.00	N:0.10-0.25 Cu:1.5-2.5	760	15	None
ER3556	0.05-0.15	21.0-23.0	19.0-22.5	0.50-2.00	0.50-2.0	0.20-0.80	Co:16.0-21.0	-	-	-
		(N:0.10-0.30 W:2.0-3.5 Cb:0.30 Ta:0.30-1.25 Al:0.10-0.50 Zr:0.001-0.10 La:0.005-0.10 B:0.02)								

a) Nickel-Copper total is max. %0.5

Table of Covered Electrodes for Manual Metal Arc Welding of Nickel and Nickel Alloys according to TS 9666 EN ISO 14172

E – Ni 6625 (NiCr22Mo9Nb)

Symbol	Production Form
E	Covered Electrodes
R	Wires
T	Flux-cored Wires of Flux-cored Rods
Rt	Cast Iron Welding Rods
B	Sticks
C	Sintered rods, strips or flux-cored-strips
P	Metal Powder

Alloy Symbol		Chemical Composition % a)											Mechanical Values d)								
		C	Mn	Fe	Si	Cu	Ni	Co	Al	Ti	Cr	Nb	Mo	V	W	Notes	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation %		
NICKEL																					
Ni 2061	NI613	0.10	0.7	0.7	1.2	0.2	0.2	-	1.0	1.0-4.0	-	-	-	-	-	-	-	-	200	410	18
Nickel-Copper																					
Ni 4060	NIcU30Mn3Ti	0.15	4.0	2.5	1.5	27.0-34.0	min. 62.0	-	1.0	1.0	-	-	-	-	-	-	-	-	200	480	27
Ni 4061	NIcU27Mn3NbTi	0.15	4.0	2.5	1.3	24.0-31.0	min. 65.0	-	1.0	1.5	-	3.0	-	-	-	-	-	-	200	480	27
NICKEL-Chromium																					
Ni 6082	NIcR20Mn3Nb	0.10	2.0-6.0	4.0	0.8	0.5	min. 65.0	-	-	0.5	18.0-22.0	1.5-3.0	2.0	-	-	-	-	-	360	600	22
Ni 6231	NIcR22W14Mo	0.05-0.10	0.3-1.0	3.0	0.3-0.7	0.5	min. 45.0	5.0	0.5	0.1	20.0-24.0	-	1.0-3.0	-	13.0-15.0	-	-	-	350	620	18
NICKEL-Chromium-Iron																					
Ni 6025	NIcR25Fe10AlY	0.10-0.25	0.5	8.0-11.0	0.8	-	min. 55.0	-	1.5-2.2	0.3	24.0-28.0	-	-	-	-	0.15Y	-	-	400	690	12
Ni 6052	NIcR15Fe8Nb	0.08	3.5	11.0	0.8	0.5	min. 62.0	-	-	-	13.0-17.0	0.5-4.0	-	-	-	-	-	-	360	550	27
Ni 6092	NIcR16Fe12NbMo	0.10	1.0-3.5	12.0	0.8	0.5	min. 62.0	-	-	-	13.0-17.0	0.5-3.0	0.5-2.5	-	-	-	-	-	360	550	27
Ni 6093	NIcR16Fe8NbMo	0.20	1.0-5.0	12.0	1.0	0.5	min. 60.0	-	-	-	13.0-17.0	1.0-3.5	1.0-3.5	-	-	-	-	-	360	550	18
Ni 6094	NIcR14Fe4NbMo	0.15	1.0-4.5	12.0	0.8	0.5	min. 55.0	-	-	-	12.0-17.0	0.5-3.0	2.5-5.5	-	1.5	-	-	-	360	650	18
Ni 6095	NIcR15Fe8NbMoW	0.20	1.0-3.5	12.0	0.8	0.5	min. 55.0	-	-	-	13.0-17.0	1.0-3.5	1.0-3.5	-	1.5-3.5	-	-	-	360	650	18
Ni 6152	NIcR30Fe8Nb	0.05	5.0	7.0-12.0	0.8	0.5	min. 50.0	-	0.5	0.5	28.0-31.5	1.0-2.5	0.5	-	-	-	-	-	360	550	27
Ni 6182	NIcR15Fe6Mn	0.10	5.0-10.0	1.0	0.5	min. 60.0	-	-	1.0	13.0-17.0	1.0-3.5	-	-	-	-	-	-	-	360	550	27
Ni 6333	NIcR25Fe16CoMoW	0.10	1.2-2.0	min. 16.0	0.8-1.2	0.5	44.0-47.0	2.5-3.5	-	-	24.0-26.0	-	2.5-3.5	-	2.5-3.5	-	-	-	360	550	18
NI6701	NIcR38Fe7Nb	0.35-0.50	0.5-2.0	7.0	0.5-2.0	-	42.0-46.0	3.5	-	-	33.0-39.0	0.8-1.8	-	-	-	-	-	-	450	650	8
NI6702	NIcR28Fe6W	0.35-0.50	0.5-1.5	16.0	0.5-2.0	-	47.0-50.0	-	-	-	27.0-30.0	-	-	-	-	-	-	-	400	650	8
NI 6704	NIcR25Fe10Al3YC	0.75-0.30	0.5	8.0-11.0	0.8	-	min. 55.0	-	1.8-2.8	0.3	24.0-26.0	-	-	-	-	0.15Y	-	-	400	650	12
NI 6325	NIcR23Fe30Mo	0.06	1.0-3.0	30.0	0.7	1.5-3.0	35.0-40.0	-	0.1	1.0	27.0-31.0	1.0	2.5-4.5	-	-	-	-	-	240	550	22
NI 6165	NIcR23Fe30Mo	0.03	1.0-3.0	30.0	0.7	1.5-3.0	37.0-42.0	-	0.1	1.0	23.0-27.0	-	3.5-7.5	-	-	-	-	-	240	550	22

Table of Covered Electrodes for Manual Metal Arc Welding of Nickel and Nickel Alloys according to TS 9666 EN ISO 14172

Table 1 Continued

Numerical Alloy Symbol	Chemical	Chemical Composition (% a)										Mechanical Values d)										
		C	Mn	Fe	Si	Cu	Ni	Co	Al	Ti	Cr	Nb	Mo	V	W	Notes	Strength N/mm ²	Elongation N/mm ²				
Nickel-Molybdenum																						
Ni 1001	NiMo28Fe5	0.07	1.0	4.0-7.0	1.0	0.5	min. 55.0	2.5	-	-	-	1.0	-	26.0-30.0	0.6	1.0	-	400	690	22		
Ni 1004	NiMo25CrFe5	0.12	1.0	4.0-7.0	1.0	0.5	min. 60.0	-	-	-	2.5-3.5	-	-	23.0-27.0	0.6	1.0	-	400	690	22		
Ni 1008	NiMo19WCr	0.10	1.5	10.0	0.8	0.5	min. 60.0	-	-	-	0.5-3.5	-	-	17.0-20.0	-	2.0-4.0	-	360	650	22		
Ni 1009	NiMo20Wcu	0.10	1.5	7.0	0.8	1.0-3.1	min. 62.0	-	-	-	-	-	-	18.0-22.0	-	2.0-4.0	-	360	650	22		
Ni 1062	NiMo24CrFe6	0.02	1.0	4.0-7.0	0.7	-	min. 60.0	-	-	-	6.0-9.0	-	-	22.0-26.0	-	-	-	360	550	18		
Ni 1066	NiMo28	0.02	2.0	2.2	0.2	0.5	min. 64.5	-	-	-	1.0	-	-	26.0-30.0	-	1.0	-	400	690	22		
Ni 1067	NiMo30Cr	0.02	2.0	1.0-3.0	0.2	0.5	min. 62.0	3.0	-	-	1.0-3.0	-	-	27.0-32.0	-	3.0	-	350	690	22		
Ni 1069	NiMo28Fe4Cr	0.02	1.0	2.0-5.0	0.7	-	min. 65.0	1.0	0.5	-	0.5-1.5	-	-	26.0-30.0	-	-	-	360	550	20		
Nickel-Chromium-Molybdenum																						
Ni 6002	NiCr22Fe18Mo	0.05-0.15	1.0	17.0-20.0	1.0	0.5	min. 45.0	0.5-2.5	-	-	20.0-23.0	-	-	8.0-10.0	-	0.2-1.0	-	380	650	18		
Ni 6012	NiCr22Mo9	0.03	1.0	3.5	0.7	0.5	min. 58.0	-	-	0.4	0.4	20.0-23.0	1.5	8.5-10.5	-	-	-	410	650	22		
Ni 6022	NiCr21Mo13W3	0.02	1.0	2.0-6.0	0.2	0.5	min. 49.0	2.5	-	-	20.0-22.5	-	-	12.5-14.5	0.4	2.5-3.5	-	350	690	22		
Ni 6024	NiCr28Mo14	0.02	0.5	1.5	0.2	0.5	min. 55.0	-	-	-	26.0-27.0	-	-	13.5-15.0	-	-	-	350	690	22		
Ni 6030	NiCr29MoFe19W2	0.03	1.5	13.0-17.0	1.0	1.0-2.4	min. 36.0	5.0	-	-	28.0-31.5	0.3-1.5	-	4.0-6.0	-	1.5-4.0	-	350	585	22		
Ni 6059	NiCr23Mo16	0.02	1.0	1.5	0.2	-	min. 56.0	-	-	-	22.0-24.0	-	-	22.0-24.0	-	-	-	350	690	22		
Ni 6200	NiCr22Mo16Cu2	0.02	1.0	3.0	0.2	1.3-1.9	min. 45.0	2.0	-	-	20.0-24.0	-	-	15.0-17.0	-	-	-	400	690	22		
Ni 6205	NiCr25Mo16	0.02	0.5	5.0	0.2	2.0	min. 50.0	-	-	0.4	22.0-27.0	-	-	13.5-16.5	-	-	-	400	690	22		
Ni 6275	NiCr18Mo15Fe8W9	0.10	1.0	4.0-7.0	1.0	0.5	min. 50.0	2.5	-	-	14.5-16.5	-	-	15.0-18.0	0.4	3.0-4.5	-	400	690	22		
Ni 6452	NiCr18Mo15	0.02	1.0	4.0-7.0	0.2	0.5	min. 50.0	2.5	-	-	14.5-16.5	-	-	15.0-17.0	0.4	3.0-4.5	-	350	690	22		
Ni 6455	NiCr18Mo15Ti	0.02	1.5	3.0	0.2	0.5	min. 56.0	-	-	-	16.0-20.0	0.4	-	14.0-16.0	0.4	-	-	300	690	22		
Ni 6520	NiCr14Mo7Fe	0.10	2.0-4.0	10.0	1.0	0.5	min. 55.0	-	-	0.7	14.0-16.0	-	-	12.0-17.0	0.5-2.0	5.0-9.0	-	1.0-2.0	-	350	620	32
Ni 6625	NiCr22Mo6Nb	0.10	2.0	7.0	0.8	0.5	min. 55.0	-	-	-	20.0-23.0	3.0-4.2	-	6.0-10.0	-	-	-	400	760	27		
Ni 6627	NiCr21MoFeNb	0.03	2.2	5.0	0.7	0.5	min. 57.0	-	-	-	20.5-22.5	1.0-2.8	-	8.8-10.0	-	-	-	400	650	32		
Ni 6650	NiCr20Fe14Mo11W1	0.03	0.7	12.0-15.0	0.6	0.5	min. 44.0	1.0	0.5	-	19.0-22.0	0.3	-	10.0-13.0	-	1.0-2.0	0.15N	420	660	30		
Ni 6886	NiCr21Mo16W4	0.02	1.0	5.0	0.3	0.5	min. 49.0	-	-	-	0.3	19.0-23.0	-	15.0-17.0	-	3.0-4.4	0.02S	350	690	27		
Ni 6985	NiCr22Mo7Fe19	0.02	1.0	15.0-21.0	1.0	1.5-2.5	min. 45.0	5.0	-	-	21.0-23.5	1.0	-	6.0-8.0	-	1.5	-	350	620	22		
Nickel-Chromium-Cobalt-Molybdenum																						
Ni 6617	NiCr22Co12Mo	0.05-0.15	3.0	5.0	1.0	0.5	min. 45.0	9.0-15.0	1.5	0.6	20.0-26.0	1.0	-	6.0-10.0	-	-	-	400	620	22		

a) Single values for all elements except Ni are maxima.
b) The total of unspecified elements shall not exceed 0.5 %.
c) Phosphorus 0.020 max., sulfur 0.015 max.
d) Mechanical values are min. values.

Table of Flux-cored Electrodes for Gas-Shielded Arc Welding of Non-alloy and Fine-grain Steels according to TS EN 758-2002

Production/product	Chemical Composition (% 1)										Symbols for hydrogen content of the all-weld metal
	Alloy Symbol	Mn	Ni	Mo	Cr	V	Nb	Cu	Symbol ml/100g		
G Wire Electrodes	No symbol	2.0	0.5	0.2	0.2	0.08	0.05	0.3			H5
O Oxyacetylene	Mo	1.4	0.5	0.3-0.6	0.2	0.08	0.05	0.3			H10
E Electric arc welding	MnMo	>1.4-2.0	0.5	0.3-0.6	0.2	0.08	0.05	0.3			H15
S Submerged arc welding wires	1 Ni	1.4	0.6-1.2	0.2	0.2	0.08	0.05	0.3			5
T Flux-cored wires	1.5 Ni	1.6	1.2-1.8	0.2	0.2	0.08	0.05	0.3			5
W TIG Rods	2 Ni	1.4	1.6-2.6	0.2	0.2	0.08	0.05	0.3			5
3 Ni	1.4	2.6-3.8	0.2	0.2	0.08	0.05	0.3			5	
F Submerged arc welding fluxes	Mn1Ni1	>1.4-2.0	0.6-1.2	0.2	0.2	0.08	0.05	0.3			5
	1 NiMo	1.4	0.6-1.2	0.3-0.6	0.2	0.08	0.05	0.3			5
	Z	Any other agreed composition									5

1) Single values shown in the table mean maximum values.

Symbols for welding position

1	PA, PB, PC, PD, PE, PF, PG
2	PA, PB, PC, PD, PE, PF
3	PA, PB
4	PA
5	PA, PB, PG

Shielding Gas EN 439

M	Composition
C	CO ₂
N	No gas

Symbol for impact properties of all-weld metal

Symbol	temperatures C
Z	no requirements
A	+20
0	0
2	-20
3	-30
4	-40
5	-50
6	-60
7	-70
8	-80

Yield Strength, Tensile Strength and Elongation

Symbol	ReL (N/mm ²)	Rm (N/mm ²)	A (%)
35	355	440-570	22
38	380	470-500	20
42	420	500-540	20
46	460	530-590	20
50	500	560-720	18
55	550	610-780	18
62	620	690-890	18
69	690	760-960	17
79	790	880-1080	16
89	890	990-1180	15

Symbol for Type of Electrode Core

Symbol-Characteristics	Types of Weld	Shielding Gas
R Rutile, slow freezing slag	Single and Multiple pass	Required
P Rutile, fast freezing slag	Single and Multiple pass	Required
B Basic	Single and Multiple pass	Required
M Metal Powder	Single and Multiple pass	Required
V Rutile or Basic/fluoride	Single Pass	Not Required
W Basic/fluoride, slow freezing slag	Single and Multiple pass	Not Required
Y Basic/fluoride, fast freezing slag	Single and Multiple pass	Not Required
Z Other Types		

Table of Flux-Cored Wires according to AWS A5.20-95

E 7 1 T - 1 M J H4

E: Electrode

0 Flat and Horizontal Position
1 All Welding Positions

T: Flux-cored Wires

Symbol	ReL	Rm	A	Symbol for impact properties of all-weld metal
E7XT-1, -1M	400	480	22	27J at 18°C
E7XT-2, -2M	---	480	---	---
E7XT-3	---	480	---	---
E7XT-4	400	480	22	---
E7XT-5, 5M	400	480	22	27J at -29°C
E7XT-6	400	480	22	27J at -29°C
E7XT-7	400	480	22	---
E7XT-8	400	480	22	27J at -29°C
E7XT-9, 9M	400	480	22	27J at -29°C
E7XT-10	---	480	---	---
E7XT-11	400	480	20	---
E7XT-12, -12M	400	480-620	22	27J at -29°C
E6XT-13	---	415	---	---
E7XT-13	---	480	---	---
E6XT-14	---	480	---	---
E6XT-G	330	415	22	---
E7XT-G	400	480	22	---
E6XT-GS	---	415	---	---
E7XT-GS	---	480	---	---

a) Single values are minimum values.

M: 75-80% Argon - CO₂
If no M Symbol, products E70T-3, E70T-4, E70T-6, E70T-7, E70T-8, E70T-10, E70T-11, E71T-11, E61T-13, E71T-13, E71T-14 are used without gas, the rest is used with CO₂.

"J" is used if 27J is provided at -40°C.

Alloy Symbol		Chemical Composition %										
Symbol	UNS Number	C	Mn	Si	S	P	Cr	Ni	Mo	V	Al	Cu
E7XT-1	W07801											
E7XT-1M												
E7XT5	W07805	0.18	1.75	0.90	0.03	0.03	0.20	0.50	0.30	0.08	---	0.35
E7XT-5M												
E7XT-9	W07809											
E7XT-9M												
E7XT-4	W07804											
E7XT-6	W07806											
E7XT-7	W07807	(f)	1.75	0.60	0.03	0.03	0.20	0.50	0.30	0.08	1.8	0.35
E7XT-8	W07808											
E7XT-11	W07811											
E6XT-G	---	(f)	1.75	0.90	0.03	0.03	0.20	0.50	0.30	0.08	1.8	0.35
E7XT-12	W07812	0.15	1.60	0.90	0.03	0.03	0.20	0.50	0.30	0.08	---	0.35
E7XT-12M												
E6XT-13	W08613											
E7XT-2	W07802											
E7XT-2M												
E7XT-3	W07813											
E7XT-10	W07810											
E7XT-13	W07813											
E7XT-14	W07814											
E6XT-GS	---											

Not Specified

f) Limits of this element was not specified. Look at AWS A6.5 for it.

Symbols for hydrogen content of the all-weld metal	
Symbol	m/100g
H4	16.0
H8	8.0
H16	4.0

Table of Electrodes for Submerged Arc Welding of Non-alloy and Fine-grain Steels according to TS 5387 EN 756-1997

S 38 3 AB S2

Alloy Symbol	Chemical Composition % 1) 2)							
	C	Si	Mn	P	S	Mo	Ni	Cr
SO								
S1	0,05-0,15	0,15	0,35-0,60	0,025	0,025	0,15	0,15	0,15
S2	0,07-0,15	0,15	0,80-1,30	0,025	0,025	0,15	0,15	0,15
S3	0,07-0,15	0,15	> 1,30-1,75	0,025	0,025	0,15	0,15	0,15
S4	0,07-0,15	0,15	> 1,75-2,25	0,025	0,025	0,15	0,15	0,15
S1Si	0,07-0,15	0,15-0,40	0,35-0,60	0,025	0,025	0,15	0,15	0,15
S2Si	0,07-0,15	0,15-0,40	0,80-1,30	0,025	0,025	0,15	0,15	0,15
S2Si2	0,07-0,15	0,40-0,60	0,80-1,30	0,025	0,025	0,15	0,15	0,15
S3Si	0,07-0,15	0,15-0,40	> 1,30-1,85	0,025	0,025	0,15	0,15	0,15
S4Si	0,07-0,15	0,15-0,40	> 1,85-2,25	0,025	0,025	0,15	0,15	0,15
S1Mo	0,05-0,15	0,05-0,25	0,35-0,60	0,025	0,025	0,45-0,65	0,15	0,15
S2Mo	0,07-0,15	0,05-0,25	0,80-1,30	0,025	0,025	0,45-0,65	0,15	0,15
S3Mo	0,07-0,15	0,05-0,25	> 1,30-1,75	0,025	0,025	0,45-0,65	0,15	0,15
S4Mo	0,07-0,15	0,05-0,25	> 1,75-2,25	0,025	0,025	0,45-0,65	0,15	0,15
S2Ni1	0,07-0,15	0,05-0,25	0,80-1,30	0,020	0,025	0,15	0,80-1,20	0,15
S2Ni1,5	0,07-0,15	0,05-0,25	0,80-1,30	0,020	0,020	0,15	> 1,20-1,80	0,15
S2Ni2	0,07-0,15	0,05-0,25	0,80-1,30	0,020	0,020	0,15	> 1,80-2,40	0,15
S2Ni3	0,07-0,15	0,05-0,25	0,80-1,30	0,020	0,020	0,15	> 2,80-3,70	0,15
S2Ni1Mo	0,07-0,15	0,05-0,25	0,80-1,30	0,020	0,020	0,45-0,65	0,80-1,20	0,20
S3Ni1,5	0,07-0,15	0,05-0,25	> 1,30-1,70	0,020	0,020	0,15	> 1,20-1,80	0,20
S3Ni1Mo	0,07-0,15	0,05-0,25	> 1,30-1,80	0,020	0,020	0,45-0,65	0,80-1,20	0,20
S3Ni1,5Mo	0,07-0,15	0,05-0,25	1,20-1,80	0,020	0,020	0,30-0,50	1,20-1,80	0,20

1) Including the Cu of the covering, in the chemical composition of end product; Cu?%0,30; Al?%0,030.
2) Single values shown in the table mean maximum values.

Symbol	ReL (N/mm ²)	Rm (N/mm ²)	A (%)
35	355	440-570	22
38	380	470-600	20
42	420	500-640	20
46	460	530-680	20
50	500	560-720	18
55	550	610-780	18
62	620	690-890	18
69	690	760-960	17
79	790	880-1080	16
89	890	980-1180	15

Symbol	Temperature C
Z	no requirements
A	(+20)
0	0
2	-20
3	-30
4	-40
5	-50
6	-60
7	-70
8	-80

Production/product	
G	Wire Electrodes
O	Oxy-acetylene
E	Electric arc welding
S	Submerged arc welding wires
T	Flux-cored wires
W	TIG Rods
F	Submerged arc welding fluxes

Type of Submerged Welding Powder	Symbol
Manganese-silicate	MS
Calcium-silicate	CS
Zirconium-silicate	ZS
Rutile-silicate	RS
Aluminate-rutile	AR
Aluminate-basic	AB
Aluminate-silicate	AS
Aluminate-flouride-basic	AF
Flouride-basic	FB
Other types	ZS

Specification for Wires and Fluxes for Submerged Arc Welding according to AWS A5.17-97

Tensile Test			
Wire-Flux Combination	Tensile Strength psi	Yield Strength psi	Elongation %
F6XX-EXXX	60000-80000	48000	22
F7XX-EXXX	70000-95000	58000	22

Tensile Test			
Wire-Flux Combination	Tensile Strength MPa	Yield Strength MPa	Elongation %
F43XX-EXXX	430-560	330	22
F48XX-EXXX	480-660	400	22

Impact Test		
Symbol	Max. Test Temperature °F	Min. Average Energy
0	0	20 ft · lbf
2	-20	
4	-40	
5	-50	
6	-60	
8	-80	
Z	Not noted	

Impact Test		
Symbol	Max. Test Temperature °F	Min. Average Energy
0	0	27 Joule
2	-20	
3	-30	
4	-40	
5	-50	
6	-60	
Z	Not noted	

F: Submerged Arc Welding Flux	A: Without Heat Treatment
P: PWHT	P: PWHT

F	7	A	2	-	EM12
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F	43	A	3	-	EM12
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Chemical Composition for Submerged Arc Welding Wires (%)									
Symbol	UNS Number	C	Mn	Si	S	P	Cu	Ti	
Low-Manganese Electrodes									
EL 8	K01008	0,10	0,25/0,60	0,07	0,03	0,03	0,35	-	
EL 8K	K01009	0,10	0,25/0,60	0,10/0,25	0,03	0,03	0,35	-	
EL12	K01012	0,04/0,14	0,25/0,60	0,10	0,03	0,03	0,35	-	
Medium-Manganese Electrodes									
EM11K	K01111	0,07/0,15	1,00/1,50	0,65/0,85	0,03	0,025	0,35	-	
EM12	K01112	0,06/0,15	0,80/1,25	0,10	0,03	0,03	0,35	-	
EM12K	K01113	0,05/0,15	0,80/1,25	0,10/0,35	0,03	0,03	0,35	-	
EM13K	K01313	0,06/0,16	0,90/1,40	0,35/0,75	0,03	0,03	0,35	-	
EM14K	K01314	0,06/0,19	0,90/1,40	0,35/0,75	0,025	0,025	0,35	0,03/0,17	
EM15K	K01515	0,10/0,20	0,80/1,25	0,10/0,35	0,03	0,03	0,35	-	
High-Manganese Electrodes									
EH10K	K01210	0,07/0,15	1,30/1,70	0,05/0,25	0,025	0,025	0,35	-	
EH11K	K11140	0,07/0,15	1,40/1,85	0,80/1,15	0,03	0,03	0,35	-	
EH12K	K01213	0,06/0,15	1,50/2,00	0,25/0,65	0,025	0,025	0,35	-	
EH14	K11585	0,10/0,20	1,70/2,20	0,10	0,03	0,03	0,35	-	
EG	Not Specified								

Welding of Mild Steels

The most commonly used metallic materials of our era are iron based alloys. Steel has a very important role in them. The property that makes steels this important is their ability to make various types of alloys and their ability to gain various types of properties with the help of heat treatments. As known, while quenched, steel can be used as a tool that can easily process steel that has the same composition with the former one.

4000 types of steel that have different compositions and properties are developed since the industrial revolution. When different properties from the same steel are considered, there occurs a really wide spectrum.

The most important issue for welding is the hardening that is caused by rapid cooling from very high temperatures, which happens in some steels. The resulting hard material, which can go up to 64 HRC depending on the composition of the steel and the cooling rate, is called "martensite". Martensite is quite hard and brittle. The hardest steels are the ones that contain 0,7-0,8% C. The other significant factor in martensite formation aside from carbon is the cooling rate. While steels that include more than 0,3% carbon only harden when they are cooled in the water from a high temperature, hard and brittle martensitic structure occurs with a much slower cooling when steel includes alloying element.

In arc welding methods, metal is first heated to a temperature higher than its melting point; and then cooled down. Experiments and measurements show that the cooling rate of the welded zone on an iron bar is equivalent to the cooling rate of a piece that is heated up to a high temperature and cooled down by being quenched. Hence, it is obvious that this kind of a hard and brittle structure will be proceed at the weld zones of the steels that contain carbon and alloying elements of higher amount than a certain value for each.

Welding electrode producers adjust the composition of the filler metal in such a way that even if it mixes a little with the base metal being melted, no hardening occurs at the molten metal after cooling. However, hardening on the base metal that is interconnected to the welded zone can occur since this part that is warmed up to a high temperature and then cooled down.

Carbon and manganese are two elements that especially affect the hardening capability of the unalloyed steel. There are various opinions on the required maximum carbon content of the unalloyed steels for them to be welded without taking any precautions. For example, while the maximum carbon content for non-degassed steels are 0,25% and the maximum carbon content for non-degassed steels are 0,22% in Sweden, it is allowed for this value to go up to 0,30% in the USA.

Alloying elements such as chromium, molybdenum, vanadium, nickel and copper, when they are contained in low-alloyed steels, cause hardening of the heat-affected zone (HAZ) although carbon content is lower. In addition to crack formation right after the welding in this hard and brittle material, that is caused by heat, brittle fractures occur when any deformation process is performed on this structure material in case during use of welded joints, any smallest deformation stress causes such structures to undergo brittle fracture; and, this results in significant damages.

The Weldability Commission of International Institute of Welding advises that the hardness of the heat-affected zone should not be higher than 350 HVC.

The only solution for decreasing the hardness of HAZ is to decelerate the cooling process after welding. The safest way for doing this is preheating the piece and welding it at this temperature. Various theoretical and applied researches have been made in order to find a constant that gives the hardening tendency of the steel, and, hence to obtain a formula which gives the preheating temperature that should be applied. A solution that easily shows results is developed as a result of all these studies. In this Solution, which is named Carbon Equivalent, the amounts of the alloying elements which exist in the chemical composition of the steel consist are put into a formula; and, a constant is calculated, depending on whose value a preheating temperature is can be chosen determined according to this constant.

Although there are various formulas for the calculation of carbon equivalent in literature, all of them are empirical relations that give close and satisfactory results in practice. The Carbon Equivalent Formula which the International Institute of Welding (IIW) requires proposes for low-alloyed carbon steels is as follows:

$$C_{eq} = C + Mn/6 + Cr/5 + Mo/5 + V/5 + Ni/15 + Cu/15$$

The alloying elements limits in order for the above-given formula to be valid is as follows:

$$C < 0,5\%; Mn < 1\%; Cr < 1\%; Ni < 3,5\%; Mo < 0,6\%$$

The preheating temperature that should be applied according to C_{eq} is as follows:

C_{eq} (%)	Preheating Temperature (°C)
less than 0,45	not required at normal conditions
between 0,45 and 0,60	100-200
more than 0,60	200-350 (can be increased up to 600 at special conditions)

If the carbon equivalent, which is just an approach, is used; maximum preheating temperatures should be chosen as to be the upper limits of the value ranges that are valid for the conditions applied in the circumstances that are specified below, and in some special conditions, they should be exceeded, in order to eliminate any risks.

- If the base metal is Thomas steel or hot-cast steel,
- If the steel has a coarse-grained microstructure,
- If the base metal piece (the workpiece) is big large and unorderedly structure complex-shaped,
- If the workpiece is very thick,
- If low levels of energy should be applied during welding,
- If the filler metal is not firm sufficiently tough
- If the temperature of the welding environment is too low,

As seen, carbon equivalent only includes the chemical composition of the steel. However, it does not involve factors that primarily affect the cooling rate such as welding heat input, form of the weld groove, the geometry and thickness of the workpiece. Although there are some empirical formulas in the literature, the appropriate preheating temperatures according to electrode diameter (heat input), piece thickness, groove form according to C_{eq} is shown in the table.

The points below should be considered during the welding of the steels that have tendency to harden and have a C_{eq} value that is more than 0,45% for a safe welding.

- An appropriately chosen preheating temperature should be applied to all the whole pieces.
- The temperature should be kept at the same level during the welding process.
- A pre-dried basic-coated electrode should be used.
- If a piece will be annealed for stress relieving, it should be put into the furnace as soon as the welding process is finished before the piece cools down (It should stay in the furnace at the temperatures of 600-650 °C temperature for 2 hours for each 2 mm.). It should be taken out after it cooled down to 300 °C in the furnace, and should be left for air-cooling in a stable environment.

Recommended Pre-annealing Temperatures according to Carbon Equivalent, Electrode Diameter, Particle Thickness and Groove Type

C _{eq}	Electrode Diameter (mm)	Pre-annealing Temperature °C							
		Particle Thickness/Butt Seam				Particle Thickness/Inside Corner Seam			
		6 mm	12 mm	25 mm	50 mm	6 mm	12 mm	25 mm	50 mm
0.35	3.20	•	•	•	•	•	•	•	100
	4	•	•	•	•	•	•	•	•
	5	•	•	•	•	•	•	•	•
	6	•	•	•	•	•	•	•	•
0.40	3.20	•	•	•	150	•	•	100	200
	4	•	•	•	•	•	•	•	150
	5	•	•	•	•	•	•	•	100
	6	•	•	•	•	•	•	•	100
0.45	3.20	•	•	150	250	•	100	250	300
	4	•	•	100	200	•	•	200	250
	5	•	•	•	150	•	•	100	200
	6	•	•	•	100	•	•	•	150
0.50	3.20	•	•	250	350	•	150	350	(450)
	4	•	•	150	300	•	100	250	400
	5	•	•	100	200	•	•	200	350
	6	•	•	•	100	•	•	150	300
0.55	3.20	•	150	400	(550)	100	300	(550)	x
	4	•	•	300	(450)	•	200	(450)	x
	5	•	•	150	350	•	100	350	(600)
	6	•	•	150	300	•	•	300	(600)
0.60	3.20	150	400	x	x	350	x	x	x
	4	100	250	x	x	250	(600)	x	x
	5	•	100	(500)	(600)	150	300	(600)	x
	6	•	•	350	500	•	150	500	x
0.65	3.20	300	x	x	x	x	x	x	x
	4	200	350	x	x	x	x	x	x
	5	•	150	(600)	x	200	(600)	x	x
	6	•	•	(500)	x	100	300	x	x
0.70	3.20	400	x	x	x	x	x	x	x
	4	300	500	x	x	x	x	x	x
	5	200	400	x	x	400	(600)	x	x
	6	•	200	(600)	x	200	400	x	x
0.75	3.20	600	x	x	x	x	x	x	x
	4	500	x	x	x	x	x	x	x
	5	400	500	x	x	(600)	x	x	x
	6	200	400	x	x	(450)	(600)	x	x

• = Pre-Annealing is not recommended
 x = It is not used in practice since required pre-annealing temperature is too high

In production plants, damaged parts must be repaired immediately operations. The damaged part should be repaired by welding, and put into its place. The composition of the material of the piece is not generally known. The welding shop cannot be expected to analyze and determine the chemical composition of the piece before welding. In such conditions, the first thing that has to be done is to perform spark and file tests on the material. A file that is grinded to the surface of the material makes it easy to determine if hardening process is applied to the piece before. In the spark test, the piece is touched against the spinning surface of a grinding wheel. It is touched to the wheel in such a way that the length of the sparks is 30 cm. An experienced person who looks at the sparks in a dim light can estimate the elements that are in the composite and the proportions of these elements. Even an inexperienced person can identify carbon steel from alloyed steel, and the low-, middle- and high-carbon steels from each other after a few hours work unless they are dischromated. Another good way of analysing is to compare the piece with specimens from metals whose chemical compositions are known.

Magnetic-particle test is generally used in distinguishing ferritic steels that can harden after heat treatment from austenitic steels that cannot harden (despite their high carbon equivalent). Austenitic steels are not pulled by magnets since they are antimagnetic. The point that should be bewared is not to put the magnet to the zones that are mechanically worked or to the zones that hardened as a result of transformation because these zones can locally be magnetic as a result of transformation.

- Use the largest-diameter electrode to which that is suitable for both the weld groove's shape and the part's dimensions allow.
- Choose the max. value of welding ampacity that the electrode producer requested since the cool-down rate decreases when the energy applied to the weld zone increases.
- Use basic austenitic coated electrodes. This may prevent the cracks in the weld bead because austenitic steels are more tough.
- Welded joint should never be done through one pass. The welding with as many passes as it can have should be chosen because new pass has a tempering effect on the HAZ of the earlier pass, and hence the brittleness and hardness of this zone decreases. Various researchers advise that a tempering pass should be applied to the weld bead without touching the base metal after the welding.

Welding of Fine-Grained High-Strength Structural Steels

Fine-grained high-strength structural steels were developed in order to meet the increasing needs for light steel containers and high-strength containers and reactors in the industry. Carbides, nitrides and carbonitrides that are scattered around in a very fine structure especially in grain boundaries in the internal microstructure of fine-grained structural steels, and are transmitted to the solution only at the temperatures higher than 1100 °C; prevent grain growth even at the heat temperatures at the austenite zone. High-strength and firm tough steels group occurs are obtained as a result of this. In a second group of fine-grained structural steels, the yield and tensile strength and the firmness toughness of the steel are increased without causing the steel that will form a low-carbon martensite in the inner structure lose its weldability.

Since the Martensite start temperature is 400 °C in this quenched fine-grained structural steels group, the martensite that is formed is automatically tempered when it is slowly cooled down at a temperature lower than this. Therefore fine grained scattered around carbide precipitates that increase the strength of the inner structure form. Carbon content should not exceed 0,20 for their weldability in fine-grained structural steels. Steels that have the desired qualities are obtained by low or limited hardening by putting alloying elements as little as possible, fine-grain formation, decomposition of nitride particles that prevent grain growth and optimization between heat treatments.

Fine-grained structural steels have a very good weldability because of the limitations to their carbon and alloying element contents. Classical structural steels are preheated and welded with high energy input in order to slow down the cooling down rate. On the other hand, slow down of the cooling down rate in fine-grained structural steels causes them to turn into a ferrite and high-carbon martensite or bulk martensite or bulk bainite areas at the inner structure in weld line of the base metal. This causes the firmness toughness to decrease and the strength quality to deteriorate. This shows itself especially on the HAZ of the joints that are preheated at a very high temperature and welded with a single pass. If the welding process is multi-passed, quality of the weld zone gets better than the weld zone of the single pass welding since each pass tempers the weld zone of the former one. An appropriate preheating for thick and highly stressed constructions is an effective precaution for the cracks that can be caused by various reasons.

Specific-energy input E (kJ/cm) that is calculated by taking the ratio of the multiplication of welding current strength and arc voltage and relative thermal activity coefficient of welding method to the welding speed; preheating temperature and piece thickness are the three significant factors that affect the cooling down rate of the weld zone. These three factors should be considered together to be able to control the qualities of the weld zone of the fine-grained structural steels.

Cooling down rate $t_{8/5}$ at 800-500 °C is very important for affecting the qualities of the weld zone of the steels. The decrease in time causes the hardness and the strength to increase but the tendency to crack to increase.

Steel producers state the appropriate $t_{8/5}$ value for the fine-grained structural steels that they produce in the certificate of the steel.

There are mathematical formulas, computer programs that calculate the specific energy that is applied to the weld, piece thickness, preheating temperature and $t_{8/5}$, and nomograms on this issue.

1 kJ/cm for each mm of plate thickness as specific energy input is averagely chosen in practice. For example, $E=25$ kJ/cm specific energy for a 25mm thick plate. A preheating process that is between 80 °C and 200 °C is applied to the joint for the processes that are under +5 °C in weld of the fine-grained structural steels. For the processes higher than this temperature, yield limit and piece thickness are criteria for the decision whether preheating process is applied or not.

GeKa Electrodes for Welding of Fine-Grain/Non-Alloy and Low Alloy Steels

GeKa Electrodes		ELT	PANTERA	LOTUS	EGE	GRANT	TARGA	STEP	INTER	ELT R 110	CEM	ELT R 180	LNK 6010	LNK 6011	LNK 7010-G	LNK 7010 A	LNK 8010-G	LASER B 43	LASER B 47	LASER B 50	LASER B 47-A	LASER B 60	LASER B 55	LASER B 160	TEMPO B 60	TEMPO B 63	TEMPO B 65	TEMPO B 70	TEMPO B 75	TEMPO B 85	TEMPO NICH	TEMPO B 2	TEMPO B 3			
DIN	EN																																			
SI 37 2	S 235 JR																																			
WTSI 37.2-37.3	S 235 JRW																																			
SI 44 2	S 275 JR																																			
SI 50 2	E 295																																			
SI 60-2	E 335																																			
SI 70-2	E 380																																			
SI 37 3	S 235 J2G3																																			
SI 44 3	S 275 J2G3																																			
SI 52 3	S 355 J2G3																																			
SI 52 Cu 3	S 355 J2G3 Cu																																			
WTSI 52.3-52.3A	S 355 JRW																																			
HI	P 235 GH																																			
HI	P 265 GH																																			
17 Mn 4	P 285 GH																																			
19 Mn 5	P 310 GH																																			
19 Mn 6	P 355 GH																																			
WSIE 255	P 255 NH																																			
WSIE 355	P 355 NH																																			
WSIE 380	P 380 NH																																			
WSIE 420	P 420 NH																																			
WSIE 460	P 460 NH																																			
WSIE 500	P 500 NH																																			
SI 37 0	P 235 T1																																			
SI 44 0	P 275 T1																																			
SI 52 0	P 355 T1																																			
SI 37 4	P 235 T2																																			
SI 44 4	P 275 T2																																			
SI 52 4	P 355 T2																																			
SI 35 8	P 235 G1TH																																			
SI 45 8	P 255 G1TH																																			
SI E 210.7	L 210																																			

GeKa Electrodes for Welding of Fine-Grain/Non-Alloy and Low Alloy Steels

GeKa Electrodes		ELT	PANTERA	LOTUS	EGE	GRANIT	TARGA	STEP	INTER	ELT R 110	CEM	ELT R 180	LNK 6010	LNK 6011	LNK 7010-G	LNK 7010 A	LNK 8010-G	LASER B 43	LASER B 47	LASER B 50	LASER B 47-A	LASER B 60	LASER B 55	LASER B 160	TEMPO B 60	TEMPO B 63	TEMPO B 65	TEMPO B 70	TEMPO B 75	TEMPO B 85	TEMPO NiCr	TEMPO B 2	TEMPO B 3	
DIN	EN																																	
SIE 240.7	L 245 NB	B	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 290.7	L 290 NB		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 320.7	L 320		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 360.7	L 360 NB		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 415.7	L 415 NB		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 480.7	L 485 NB		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 290.7 TM	L 290 MB	X42	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 320.7 TM	L 320 MB	X46	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 360.7 TM	L 360 MB	X52	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 385.7 TM	L 385 M	X55	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 415.7 TM	L 415 MB	X60	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 445.7 TM	L 450 MB	X65	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 480.7 TM	L 485 MB	X70	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 255	S 255 N		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 355	S 355 N		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 380 / 420	S 380 N / 420 N		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 460	S 460N / 460NH		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SIE 500	S 500 N		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
T SIE 255	S 255 NL		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
T SIE 355	S/P 355 NL (1)		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
T SIE 380	S 380 NL		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
T SIE 420	S 420 NL 1		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
T SIE 460	S 460 NL 1		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
T SIE 500	S 500 NL 1		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ESIE 255 / 315	S 255/315 NL1		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ESIE 285 / 355	P 275/355 NL 2		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ESIE 380 / 420	S 380/420 NL 1		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ESIE 460	P 460 NL 2		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ESIE 500	S 500 NL 1		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ESIE 620 V	S 620 QL/QL1		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ESIE 690 V	S 690 QL/QL1		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

GeKa Electrodes for Welding of Fine-Grain/Non-Alloy and Low Alloy Steels

GeKa Electrodes		ELIT	PANTERA	LOTUS	EGE	GRANIT	TARGA	STEP	INTER	ELIT R 110	CEM	ELIT R 180	LNK 6010	LNK 6011	LNK 7010-G	LNK 7010-A	LNK 8010-G	LASER B 43	LASER B 47	LASER B 50	LASER B 47-A	LASER B 60	LASER B 56	LASER B 160	TEMPO B 60	TEMPO B 63	TEMPO B 65	TEMPO B 70	TEMPO B 75	TEMPO B 85	TEMPO NiCu	TEMPO B 2	TEMPO B 3			
DIN	EN																																			
GL-A	S 235 JRS1/S2																																			
GL-D	S 235 J2S1/S2																																			
GL-E	S 235 J4S																																			
GL-A32	S 315 G1S																																			
GL-D32	S 315 G2S																																			
GL-E32	S 315 G3S																																			
GL-A36	S 355 G1S																																			
GL-D36	S 355 G2S																																			
GL-E36	S 355 G3S																																			
C 22 / C 35	C 22 / C 35																																			
C 45 / C 60	C 45 / C 60																																			
GS 38	GE 200																																			
GS 45	GE 240																																			
GS 52	GE 260																																			
GS 60	GE 300																																			
GS 70	GE 340																																			
SiSiCh 800	R 0800																																			
20 MnMoNi 55	20 MnMoNi 5-5																																			
22 NiMoCr 37	22 NiMoCr 4-7																																			
15 NiCuMoNb 5	15NiCuMoNb5S																																			
17 MnMoV 64	17 MnMoV 6-4																																			
Ni-A-XTRA 56-70																																				
TTSi 35 N / 45 N	S 225 NL																																			
TTSi 35 V / 45 V	S 225 NL																																			
10-16 Ni 14																																				
14 Ni 6																																				
13 MnNi 63																																				

Welding of Heat and Creep Resisting Steels

Steel has to be heat-resisting in the fields of application such as power plants, high pressure steam boilers, refineries and steam turbines. Hence the weld metal should be as heat resisting as the base metal.

The yield and tensile strengths of the unalloyed structural steels decrease significantly at high temperatures. When alloying elements such as Cr, Mo, W or V to the steel, heat resistance values get much better. One has to consider only the yield and tensile strengths of the steel at the high temperature applications. Creep gets intensified for the materials as a result of the combined effect of temperature and mechanical stress. The creep characteristics of all high temperature steels are determined and put into the material standards and specifications in the last 20 years. In addition to these studies, similar tests are applied to the test rods that are provided from the weld metal that is produced with creep resisting electrodes. It is found out that the results have the same values as the test results from the heat and creep resisting steels, and the results for the stabilized austenitic weld metal have even much higher values than those.

These steels are classified depending on their compositions and hence their operative temperature. Cr, Mo, W, Co, Nb, Ta, Ti and Al affect both the matrix composition of the steel and carbide formation and develop its heat and creep resistance qualities. A little amount of Mo, V and Cr addition to the composition of the steel is enough for the temperatures up to 500 °C. Mo is especially efficient in increasing heat resistance quality. Material should be resistant to oxidation for the temperatures more than 550 °C. The best solution for this is to choose steels that include 12%Cr and Mo, V and Nb/Ta. Steels transform and start lose their creep resisting quality after 600 °C. Hence chromium-nickel austenitic steels are preferred for these temperatures. This product is steel that includes 16%Cr and 13%Ni, and of which basic type's creep resisting qualities are developed by adding Mo, V and Nb/Ta. (X 8 Cr Ni Nb 16 13 X8 Cr Ni Mo V Nb 16 13.) Only alloys that are Cr-, Ni-, Co-based including Mo, V and Nb/Ta show the appropriate creep resistance for the temperatures that are higher than 700 °C.

All 12% Cr and heat- and creep -resisting low-alloyed steels are generally welded after they are quenched and tempered. The heat-affected zone of these steels with hardening tendencies hardens if there are no precautions. Internal stresses that occur during welding process and the adjustment processes after the welding cause the risk of cracking at this zone. In order to prevent the danger of this, an appropriate groove should be chosen, a welding plan should be made, preheating and cooling should be carried out under control; and, stress-relief heating should be applied when it is necessary.

Stabilized austenitic steels show better qualities at high temperatures when that are welded after solution heat treatment is performed on them. Because of the tendency to crack in high temperatures of this type of materials, heat input should be low during the welding process. Since the low thermal conductivity of this type of materials can cause regional heat rises, the weld heat should not be allowed to accumulate at the welded zone. For these cases, short arc and electrodes that have diameters no longer than 4 mm should be applied at an 80-90 ° angle, and weld beads that are as narrow as possible should be produced with oscillations no higher than three times of the wire diameter. Welding is generally performed without preheating. However, preheating to 100-200 °C should be applied to the pieces that are thicker than 25 mm; but, the temperature of the welding zone should not exceed 300-350 °C in those cases.

Co-based, creep-resisting materials such as X40 Cr Ni Co Nb, should be preheated up to 200-400 °C because of their high content of carbon.

GeKa Electrodes for welding of Heat Resisting Steels

STEELS				ELECTRODES							
Steel Type	Norms of Steel			Max. Operating Temp. °C	OPUS MOB	OPUS MOR	TEMPO B 65	OPUS CM	OPUS C	OPUS 2 CM	OPUS 5 CM
	Material No.	EN	ASTM / AISI UNS								
Boiler Plates, Heat Resisting Steels EN 10028-2	1.0405	P255G1TH		500	•						
	1.0461	S255N		400	•						
	1.0481	P295GH		500	•						
	1.0482	P310GH		500	•		•				
	1.5415	16Mo3	A 335, Gr.P1	530	•						
Heat Resisting Steel Castings EN 10213-2	1.7335	13CrMo4-5	A 335, Gr.P11 P12	560				•	•		
	1.7380	10CrMo9-10		590						•	
	1.0619	GP240GH		450	•						
	1.5419	G20Mo5	A 217, Gr.WC1	500	•						
	1.7357	G17CrMo5-5	A 217, Gr.WC6	550				•			
	1.7379	G17CrMo9-10		600						•	
	1.7218	25CrMo4		300				•			
	1.7273	24CrMo10		400						•	
	1.7362	12CrMo19 5	A 335, Gr.P5	600							•
	1.6368	15NiCuMoNb5-6-4		500	•						
Heat Resisting Special Steels EN 10028-2 EN 10250-3	1.6311	20MnMoNi4-5	A 508 Cl 3	550	•						
	1.7375	12CrMo9-10		590						•	
Special Nuclear Reactor Steels SEW 028	1.6369	15NiCuMoNb55		375							
	1.6310	20MnMoNi5-5	A 533 Gr.B Cl 1	375							
Caustic Resisting Steels EN 10277-2	1.0407	C-16		---	•						
	1.0569	S355J2G3C		---	•						

Welding of Cryogenic Steels

Especially the production of the welding vessels that are used in storage and transportation of liquefied gases requires material that does not lose its qualities at very low temperatures and weld joints that are appropriate for it. As it is known, the tensile strength of steels increases but the ductility and firmness toughness of them decrease as the temperature decreases. For these reasons, the most important quality of the material for applications under the temperature of 0 °C is for it to protect its firmness toughness that is determined by impact test at the desired level. Various surveillance organizations estimate that these types of steels give the result of minimum 27J at ISO-V impact test at the lowest operation temperatures. The impact test is thought to be inadequate recently, and this type of steels is assessed by various fracture mechanics tests. Steels that are used depending on the ambient temperature they are in, and the appropriate GeKa Electrodes for their welding is shown in the table.

- The thin sheet metals that are used in this production branch are not generally preheated before welding. A preheating process between 80 and 150 °C is necessary as the cut view gets thicker and the carbon content exceeds 20%.
- Low hydrogen, well dried, basic coated electrodes are used in welding.
- Weld metal is chosen in such a way that it provides both the desired strength qualities and the necessary firmness toughness at the operation temperature.
- The most important point for these steels is to keep the heat input at the lowest level in order for HAZ not to have grain growth. Even if a preheating process is performed before the welding, the interpass temperature should not exceed 150 °C.
- Stress relief heating should be applied on some conditions in order to develop the qualities of the steel depending on the type of the steel and the specifications. The temperature degree and duration that the steel producer proposed should in no way exceeded.
- Welding should be performed in a flat position as horizontal as possible by using positioners. The reason is that both controlling the heat input and providing a faultless welding is only possible in this position. These types of steels should never be welded in overhead, horizontal vertical and vertical up positions. If vertical welding position is necessary, they should only be welded in vertical down position.

Weld bead is done straight without oscillating the electrode in order to limit the heat input during welding process. In case of vertical welding, vertical down welding position is preferred in order to decrease the heat input. Electrical arc welding with coated electrodes is still the most preferred welding method for welding of these types of steels. Submerged arc welding applications with TIG, MIG and special powders are also done recently.

Welding of Stainless Steels

The most important quality of stainless steels is that they do not rust, and that they are resistant to oxidation and corrosion. This quality is acquired by adding more than 12% chromium to the content of the steel. As the amount of chromium increases, the oxidation resistance at high temperatures also increases. Existence of the steel causes corrosion resistance especially in acidic environments. Besides nickel, molybdenum addition also protects steel from some types of corrosion. However, steels that contain more than 6.5% molybdenum cannot be produced economically.

Chromium causes steel to keep its mechanical qualities at very high temperatures. Hence chromium stainless steels are also used as creep resisting steels at high temperatures.

Stainless steels that have more than 170 types are widely used in industry for various purposes. The most commonly-used ones of the stainless steel types that are used in industry are generally divided into three main groups:

- Martensitic Chromium Stainless Steels.
- Ferritic Chromium Stainless Steels.
- Austenitic Chromium-Nickel Stainless Steels.

In constructions in which the stainless steels are used, modern welding methods such as electron beam welding and laser beam welding are also used besides arc welding with coated electrodes, gas metal arc welding methods (TIG, MIG), submerged arc welding and plasma welding.

Physical qualities of the stainless steels of different types are also different from each other. This plays an important role in welding processes.

Heat conductivity factor of chromium stainless is half of the unalloyed steels. This value is 50% more in austenitic chromium-nickel steels than the value in low-carbon alloy steels. This is of particular concern to constructor as well as the welder.

Low-carbon alloy steels have low resistance to electrical conductivity. This value is 4-7 times higher in stainless steels. Thus stainless steel electrodes redden more quickly, are produced shorter, and are loaded with 25% less strength of current than the normal electrodes.

Welding of Martensitic Chromium Stainless Steels

Stainless steels in this group contain Cr amount between 11.5% and 18%. Carbon amount in their composition is between 0.1% and 1.2%.

Main effective element in welding of martensitic stainless steels is carbon. Amount of carbon affects the hardness of HAZ, and can be controlled by welding method to an extent. If the hardness of HAZ increases, and, firmness toughness decreases.

Martensitic is relatively less hard in low-carbon martensitic stainless steels. Hence their tendency to crack is less. These steels are normally preheated at 200-400 °C temperature before welding. Soon after the welding a stress-relieving process can be performed before the joint cools down by heating it 800-820 °C for four hours and cooling it slowly in the furnace

Flux-coated electrodes and TIG welding wires of GeKa are safely used in welding of martensitic chromium stainless steels. Especially ELOX B 410 and GK 410 HD are coated electrodes that are appropriate for welding of low-carbon martensitic stainless steels. In addition to these, austenitic chromium-nickel stainless coated GeKa electrodes such as GeKa ELOX R 307, ELOX B 307, ELOX R 309, ELOX R 312, ELOX B 347, ELOX R 347 A7-A provide quality weld joints in conditions such that the strength of the weld bead is not required to be too strong and the joint does not operate in a sulfuric environment. The fact that the yield point of austenitic welding metal is low prevents the danger of cracking which is caused by tensile stress that will happen after the welding. If the joint operates in sulfuric environments, weld beads in which the base metal composition is the same is provided with GeKa stainless chromium special products. The application tables that are given can be used while choosing these products. You can easily solve the problems you experienced with the help of the experts of our company.

Welding of Ferritic Chromium Stainless Steels

This type of steels contains 16-30% Cr and 0.5-0.25% C. Its internal composition microstructure is normally made up of ferrite and carbide.

The most significant qualities of these steels are that they are not hardened by quenching since phase transformation is not seen when they are solid, and their corrosion and oxidation resistance is high at high temperatures. They are magnetic. They can be rolled hot or cold. They show their best mechanical qualities when they are normalized. Their resistance to the stress corrosion cracking caused by the chlorinated environments is high.

Weldability of ferritic chromium stainless steels is better than the weldability of martensitic stainless steels. However, one of the significant problems that occur in the welding of ferritic stainless steels is the tendency to grain growth at HAZ. This cannot be removed by a post-weld heating. Furthermore, carbide precipitation at the ferritic grain boundaries also causes vulnerability at weld joints. Thus the mechanic qualities decrease. Use of austenitic chromium-nickel electrodes at the arc welding of this type of steels with coated electrodes prevents the brittleness that is caused by the grain growth at the molten zone. GeKa ELOX R 308 and ELOX R 347 that contain 20%Cr and 10%Ni is recommended since they have great result at welding of low-carbon ferritic stainless steels. For the ferritic stainless steels that contain more than 0.1% carbon, GeKa Flux-coated Electrodes that contain more Cr and Ni can be easily used (ELOX R 309).

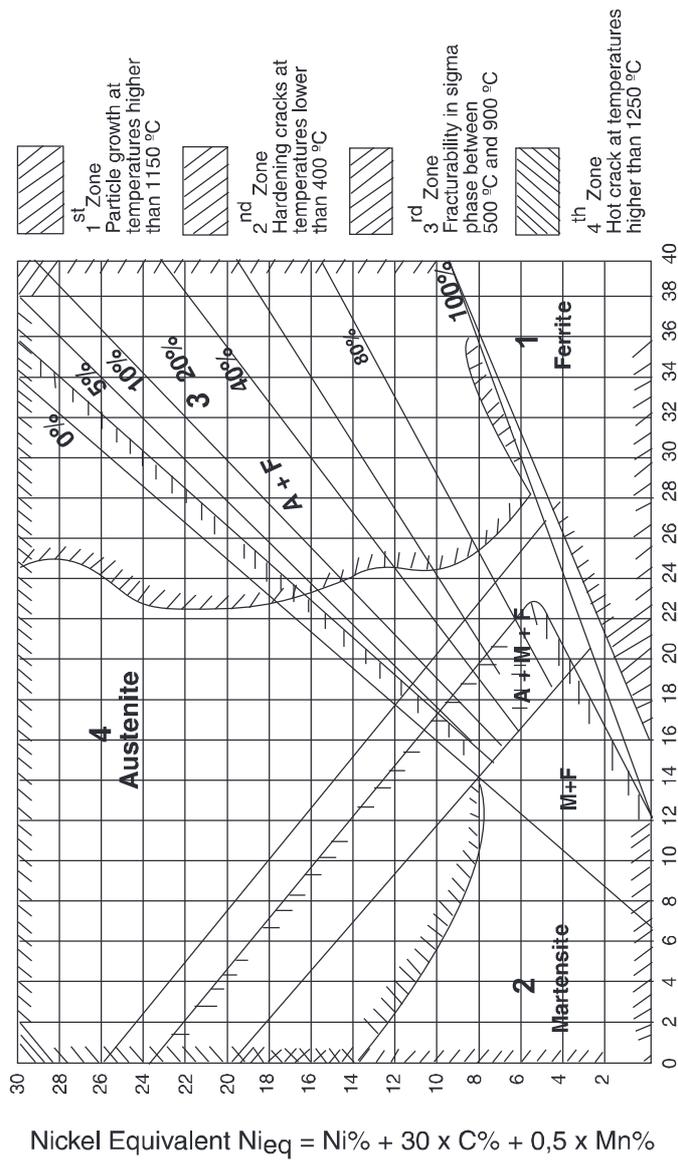
Use of the austenitic weld metal creates weld beads that have very good mechanical qualities, and absorbs most of the welding stress. However, the color of the weld beads would be different than the base metal. GeKa ELOX B 430 coated electrode that contains 18% Cr should be used when weld beads are desired to be the same color as the base metal since filler metal that has the same characteristics as the base metal should be used.

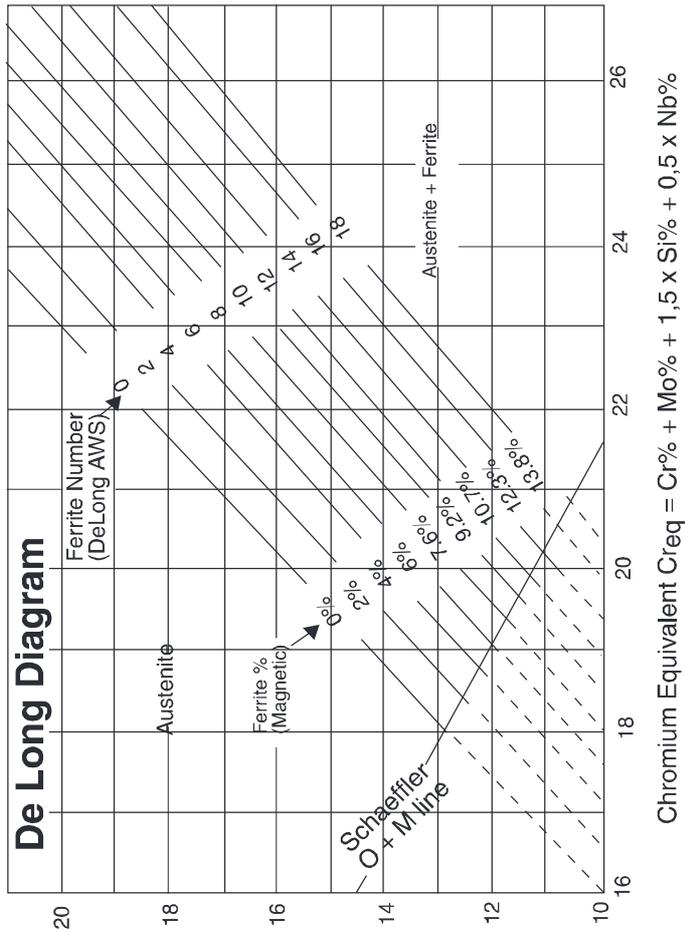
Preheating process in the welding of stainless steels prevents the danger of cracking in HAZ and minimizes the stress that is caused by the welding. 150-300 °C preheating temperature is recommended normally. Interpass temperature can be a little higher than the preheating temperature. To keep the heat input at low temperatures, the electrode with the smallest diameter possible should be chosen, the welding speed should be high and the electrode should not oscillate.

Rapid cooling after 750-800 °C post weld heating helps the and the intergranular corrosion resistance of the HAZ to increase for this type of steels.

Cold formation of the welded joints should be done after a heating process at 300-400 °C because the deformation capability of those steels significantly increases at this temperature.

For determination of the microstructure of the stainless steel weld metal
Shaeffler Diagram

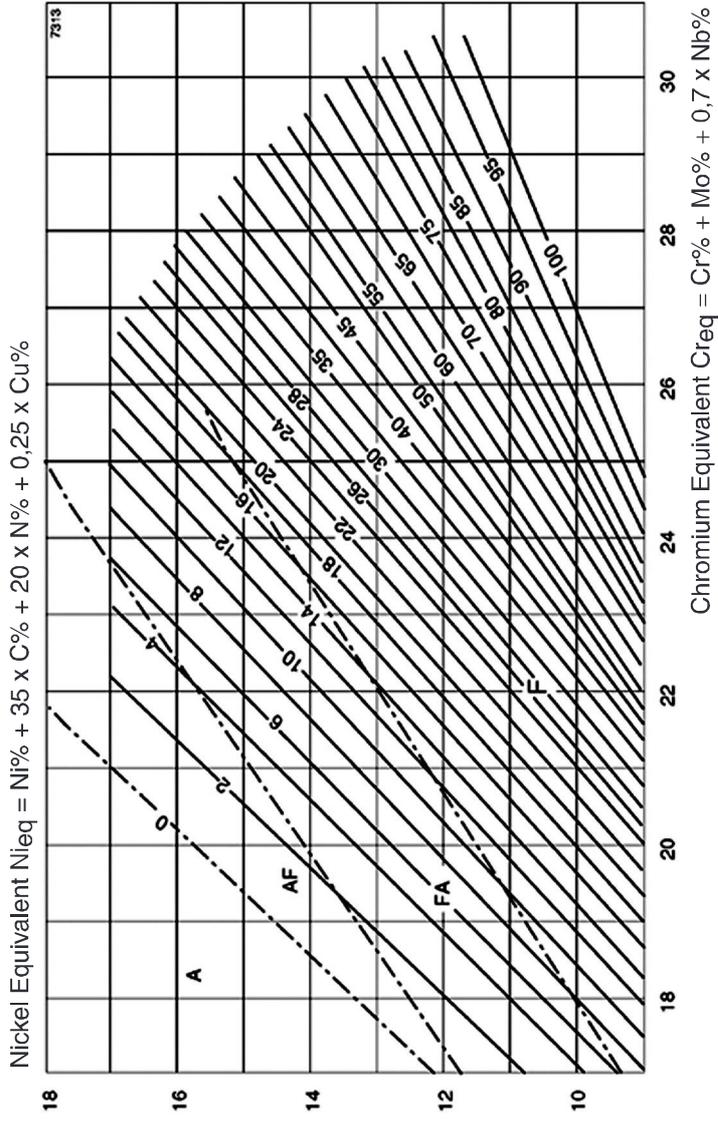




Notes: Effective Nitrogen amount shall be considered. If this amount is not known, the values below can be considered depending on the methods:

- a) MIG/TIG weld metal 0,08% (except flux-cored wires without shielding gas 0,12%)
- b) All other welding methods 0,06%

WRC Diagram



Welding of Austenitic Chromium-Nickel Stainless Steels

The composition of austenitic chromium-nickel stainless steels contains 12-25% Cr and 8-25% Ni. Various alloy elements are added to these steels, which are antiferromagnetic, to increase their corrosion resistance. These stainless steels have very good weldability. However, the physical qualities they have that are mentioned before should be taken into consideration during welding. In welding of these steels, more tension is seen than the welding of low-alloy carbon steels. The possibility of hot cracks at the two-sided inside corner fillet seam of these steels is very high at the welding of these stainless steels.

SCHAEFFLER diagram and DE LONG diagram that is the advanced version of it is used while calculating the amount of ferrite in the weld metal at welding of these stainless steels. Ferrite making elements Cr, Mo, Si, and Nb are put to the horizontal axis as chromium equivalent to detect the amount of delta ferrite that will be in the composition of the weld metal with the help of these diagrams. "Ferrite numbers" and hence the ferrite percentage can be read from the De Long diagram. With the help of these diagrams, the problems that can occur in the weld metal in cases of arc welding with flux-coated electrodes are known beforehand, and the required precautions can be taken.

Another metallurgical problem in welding of austenitic chromium-nickel stainless steels is the chromium-carbide precipitation that is caused in HAZ when this zone is heated for a long time at 500-900 °C. Chromium-carbides precipitate at grain boundaries and make the steel vulnerable to intergranular corrosion. Hence, the carbon content of the austenitic chromium-nickel stainless steels that will be welded should be maximum 0.06% and, optimally, 0.03%. For this reason, it is advised that the amount of carbon of the products is decreased and the corrosion resistance is increased.

Another method to prevent the chromium-carbide precipitation is to add stabilization elements such as Ti, Nb and Ta to the composition of the steel. Niobium is preferred in electrodes because of its deprivation in titanium arc.

GeKa product range developed has been enriched with rutile and basic-coated electrodes to be used in the arc welding of austenitic chromium-nickel stainless steels. They contain stabilization elements in their coating-fluxes. The points that are considered in case of using of basic-coated electrodes for welding of mild steels should also be considered in both arc start and welding with basic-coated electrodes in this case, too.

The lowest-diameter electrode possible should be chosen and the lowest strength amount of current should be chosen when austenitic chromium-nickel steels are arc-welded with flux-coated electrodes. The electrodes should not be oscillated. In case of multi-pass welding, the joint should be cooled down to room temperature after each pass, which should be followed by the second pass following pass should be done after that, and, then, by the application of rapid cooling should be performed. The crater that formed in the end of the weld should be filled and enclosed.

GEDIK WELDING produces flux-coated various stainless steel electrodes for welding of austenitic stainless steels. Some of them are the GeKa electrodes ELOX R 308, ELOX R 316, ELOX R 318, ELOX R 347 and ELOX R 310. In addition to these, gas-shielded (TIG or MIG) or submerged arc welding wires of GEDIK WELDING meet all your requirements. Expert staff of GEDIK WELDING is at your service in case of a problem.

GeKa GeKaTeK TIG-MIG Wires and Submerged Wire-Powder Combination for Welding of Ferritic Chromium Steels

W-No	Material Definition	ASTM AISI UNS	Product Groups																				
			ELOX SG 307 (TIG-MIG)	GEKA ELOX SG 308 L (TIG)	GEKA ELOX SG 308 L Si (MIG)	GEKA ELOX SG 309 L (TIG-MIG)	GEKA ELOX SG 312 (TIG-MIG)	GEKA ELOX SG 316 L Si (MIG)	GEKA ELOX SG 316 L (TIG)	ELOX SG 347 (TIG)	ELOX SG 347 Si (MIG)	ELOX SG 318 (TIG)	ELOX SG 318 Si (MIG)	GEKA ELOX SG 430 (MIG)	GEKA TEK 430 (MIG)	GEKA TEK 430 LNB SG	GEKA TEK 308 L Si (MIG)	GEKA TEK 308 L (TIG)	GEKA TEK 316 L Si (MIG)	GEKA TEK 316 L (TIG)	GEKA TEK 7015 SG	GEKA ELOX UP 308 L / ELIFLUX B88	GEKA ELOX UP 316 L / ELIFLUX B88
1.4000	X6Cr13	403	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4001	X7Cr14	429	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4001	G-X7Cr14		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4002	X6CrAl13	405	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4003	X2CrNi12		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4006	X12Cr13	410	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4008	GX8CrNi13	CA 15	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4016	X6Cr17	430	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4021	X20Cr13	420	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4024	X15Cr13	410	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4027	GX20Cr14	A 217	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4034	X46Cr13		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4034	G-X46Cr13	420	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4057	X17CrNi16-2	431	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4059	GX22CrNi17	A 743	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4113	X6CrMo17-1	434	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4120	X20CrMo13		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4120	GX20CrMo13		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4122	X39CrMo17-1		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
1.4122	GX35CrMo17-1		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Prod. Groups
 GEKA TIG-MIG WIRE
 GEKATEK TIG-MIG WIRE
 GeKa Submerged Wire-Powder Combination

Explanations
 Substance and the additional metal have the same properties
 Additional metals have higher alloys than the substance

GeKa-GeKaTek Electrodes for Welding of Chemical Resistant Steels

W-No	Material Definition	ASTM AISI UNS	Electrode Groups														
			ELOX R 317 L	ELOX B 410 NiMo	ELOX B 410	ELOX BS 410 NiMo	ELOX B 385 / ELOX R 385	ELOX B 2209 / ELOX R 2209	ELOX B 308 L / ELOX R 308 L	ELOX R 316 L / ELOX B 316 L	ELOX B 347 / ELOX R 347	ELOXR 318 / ELOX B 318	ELOX B 430	NIBAZ B 65	GK 410 HD	GK 308 L	GK 316 L
1.3952	X2CrNiMoN18-14-3																
1.3964	X2CrNiMnMoNb21-16-5-3	S20910															
1.4301	X5CrNi18-10	304															
1.4303	X4CrNi18-12	305															
1.4306	X2CrNi19-11	304L															
1.4308	GX5CrNi19-10																
1.4311	X2CrNiN18-10	304LN															
1.4312	GX10CrNi18-8																
1.4313	X3CrNiMo13-4	S41500															
1.4317	G-X 4CrNi 13-4																
1.4361	X1CrNiSi18-15-4																
1.4401	X5CrNiMo17-12-2	316															
1.4404	X2CrNiMo17-12-2	316 L															
1.4406	X2CrNiMo17-11-2	316 L															
1.4407	G-X5CrNiMo13-4	CAGNM															
1.4408	G-X5CrNiMo19-11-2																
1.4409	GX2CrNiMo19-11-2																
1.4429	X2CrNiMoN17-13-3	315LN															
1.4435	X2CrNiMo18-14-13	317L															
1.4436	X3CrNiMo17-13-3	S31600															
1.4437	GX6CrNiMo18-12	S31600															
1.4438	X2CrNiMo18-15-4	S31703															
1.4439	X2CrNiMoN17-13-5	S31726															
1.4446	GX2CrNiMoN17-13-4																
1.4448	GX6CrNiMo17-3																
1.4462	X2CrNiMoN22-5-3	S31803															
1.4500	GX7NiCrMoCuNb25-20																
1.4505	X4NiCrMoCuNb20-18-2																
1.4506	X5CrNiMoCuTi20-18																
1.4510	X3CrTi17	430 Ti															
1.4511	X3CrNb17	430 Nb															
1.4512	X2CrTi12	S40900															
1.4529	X1NiCrMoCuN25-20-7	N08925															
1.4531	GX2NiCrMoCuN20-18																
1.4536	GX2NiCrMoCuN25-20																
1.4539	X1NiCrMoCu25-20-5	N08904															
1.4541	X6CrNiTi18-10	321															
1.4550	X6CrNiNb18-10	347															
1.4552	GX5CrNiNb19-11	CF8C															
1.4558	X2NiCrAlTi32-20	B407															
1.4571	X6CrNiMoTi17-12-2	316 Ti															
1.4577	X3CrNiMoTi25-25	S31640															
1.4580	X6CrNiMoNb17-12-2	316 Nb															
1.4581	GX5CrNiMoNb19-11-2																
1.4583	X10CrNiMoNb18-12	316 Nb															
1.4585	GX7CrNiMoCuNb18-18																
1.4586	X3NiCrMoCuNb22-18																
2.4858	NiCr22Mo6Nb	N06625															
2.4858	NiCr21Mo	N06825															

Product Groups GEKA GEKATEK

Explanations Substance and the additional metal have the same properties Additional metals have higher alloys than the substance

GeKa GEKATEK TIG-MIG Wires and Submerged Wire-Powder Combination for Welding of Chemical Resistant Steels

W-No	Material Definition	ASTM AISI UNS	ELOX SG 308 L Si (MIG)		ELOX SG 347 (TIG)		ELOX SG 316 L Si (MIG)		ELOX SG 318 (TIG)		ELOX SG 430 (MIG)		GEKATEK 308 L Si (MIG)		GEKATEK 316 L Si (MIG)		GEKATEK 7015 SG		ELOX UP 308 L / ELIFLUX BSS		ELOX UP 316 L / ELIFLUX BSS	
			●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○
1.4301	X5CrNi18-10	304	●	○	○	○							●	○					●	○		
1.4303	X4CrNi18-12	305	●	○	○	○							●	○					●	○		
1.4306	X2CrNi19-11	304L	●	○	○	○							●	○					●	○		
1.4308	GX5CrNi19-10		●	○	○	○							●	○					●	○		
1.4311	X2CrNiN18-10	304LN	●	○	○	○							●	○					●	○		
1.4312	GX10CrNi18-8		●	○	○	○							●	○					●	○		
1.4401	X5CrNiMo17-12-2	316					●	○							●	○					●	○
1.4404	X2CrNiMo17-12-2	316 L					●	○							●	○					●	○
1.4406	X2CrNiMo17-11-2	316 L					●	○							●	○					●	○
1.4407	G-X5CrNiMo13-4	CA6NM																				
1.4408	G-X5CrNiMo19-11-2																					
1.4409	GX2CrNiMo19-11-2																					
1.4429	X2CrNiMo17-13-3	315LN					●	○							●	○					●	○
1.4435	X2CrNiMo18-14-13	317L					●	○							●	○					●	○
1.4436	X3CrNiMo17-13-3	S31600					●	○							●	○					●	○
1.4437	GX6CrNiMo18-12	S31600					●	○							●	○					●	○
1.4510	X3CrTi17	430 Ti									●											
1.4511	X3CrNb17	430 Cb	○	○							●		○							○		
1.4512	X2CrTi12	S40900									○											
1.4529	X1NiCrMoCuN25-20-7	N08925																○				
1.4536	GX2NiCrMoCuN25-20																			○		
1.4539	X1NiCrMoCu25-20-5	N08904																		○		
1.4541	X6CrNiTi18-10	321	○	○			●						○	○						○	○	
1.4550	X6CrNiNb18-10	347	○	○			●						○	○						○	○	
1.4552	GX5CrNiNb19-11	CF8C	○	○			●						○	○						○	○	
1.4558	X2NiCrAlTi32-20	B407																				
1.4571	X6CrNiMoTi17-12-2	316 Ti									●				○						○	
1.4577	X3CrNiMoTi25-25	S31640									●				○						○	
1.4580	X6CrNiMoNb17-12-2	316 Cb									●				○						○	
1.4581	GX5CrNiMoNb19-11-2										●				○						○	
1.4583	X10CrNiMoNb18-12	316 Cb									●				○						○	
2.4856	NiCr22Mo6Nb	N06625																		○		
2.4858	NiCr21Mo	N08825																		○		

Product Groups GeKa TIG MIG Wire GeKaTek TIG MIG Wire GeKa Submerged Wire-Powder Combination

Explanations Substance and the additional metal have the same properties Additional metals have higher alloys than the substance

GeKa-GEKATEK Branded Electrodes and TIG-MIG Wires for Welding of Heat Resisting Steels

Material Definition	W-No	ASTM AISI UNS	Service Temperature °C	ELOX B 327	ELOX B 309	ELOX B 310	ELOX R 310	ELOX B 347	ELOX R 347	ELOX B 307	NIBAS B 70	GEKATEK 309 Mo	GK 310	GK UNIBASE 660 HD	GK ANTIRACK 7015	ELOX SG 310 (TIG-MIG)	ELOX SG 307 (TIG-MIG)	GEKA ELOX SG 309 L (TIG-MIG)	GEKATEK 309 L St (MIG)	GEKATEK 7015 SG
Heat resisting steels	1.4710		850	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4712		850	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4713		800	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4724	405	850	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4729		900	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4740		950	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4742	430	1050	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4745		1050	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4762	446	1200	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4821	327	1100	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4822		1100	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4825	A 297, Gr. CF20	800	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4826	A 287, Gr. HF	950	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4828	308	1050	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4832		1000	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4837	A 297, Gr. HH	1150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4841	314, 310	1150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4845	310	1050	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4851		1200	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4864	330	1100	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4865	330	1120	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4876	B153	1150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.4878	321	800	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	1.0569			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Product Groups



Explanations



Substance and the additional metal have the same properties

Additional metals have higher alloys than the substance

Welding of High-Manganese Austenitic Hard Steels

High-manganese austenitic steels that are named as Haldfield steel in Anglo-Saxon literature, and are widely used in contemporary technology are tough, ductile, durable, abrasion resisting, antimagnetic materials that have high strain hardening, and contain 11-14% Mn and 0.7-1.4% C. Cr, Mo, V, Cu, Ti and Ba is added as the alloy element to these steels in order to acquire some additional qualities.

These steels are used in the production of the joints that take impact and are worn out of the heavy construction equipments such as excavator buckets, baggers, grader and dozer blades, crusher jaws.

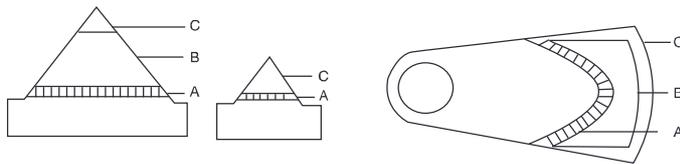
High-manganese austenitic hard steels can easily be welded because of their austenitic structure although their thermal conductivity is very low and their thermal expansion is high. They become brittle because of carbide formation when they stay at 400-800 °C temperature for a long time, and their tendency to crack increases. Thus, these steels are welded only with electrical arc welding by applying as little heat input as possible. Each pass is cooled down by spraying water or wiping with a wet cloth after welding. Big pieces are welded by putting them into a water bath in such a way that only the weld zone is out of water.

Distortions and deformations in welding of the manganese austenitic hard steels are severer than the welding of carbon steels because of their high thermal expansion and low thermal conductivity. Even though cooling process decreases the severity of this problem, hammering the weld bead after cooling is very useful both for reducing the internal stress and for increasing the abrasion resistance as a result of deformation hardening.

Build-Up

Making worn out machine parts usable with build-up is very economical. As the types of electrodes increased, it is no longer necessary to use an electrode that is made up of the same material as the material of the joint that will be repaired. There is a possibility of applying filler welding with a material that is much more durable.

Before the filler welding of a worn out joint, surfaces that will be filled should be processed until all the abrasion cracks are removed with grinding or machining. If base metal and electrode are made up of different materials, using ELOX B 307 electrode that is ductile, that can remove the post welding internal stresses by changing its shape, and, that can prevent the fusion zone that can have undesired characteristics as the buffer layer is recommended. Filling processed is applied with ELHARD 14 Mn electrode by cooling and hammering each pass on the buffer layer made up



A-Buffer Welding with ELOX B 307
 B- Build-Up with ELHARD 14 Mn
 C- Hardfacing with ELHARD 600

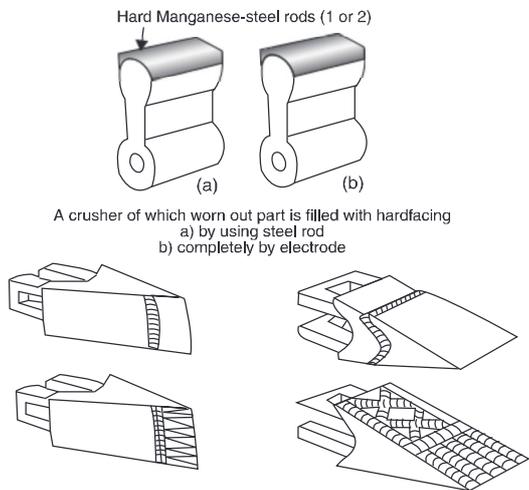
It would be safer if the last three passes are built up with **ELHARD 600** in order for build-up layer to be more abrasion and impact resisting.

If the joints are small and lightly abraded, **ELHARD 600** can be directly used on top of the buffer layer that is made with **ELOX B 307**. To have a more effective outcome in breaker and crusher jaws, the pass that is made with **ELHARD 600** should be hot hammered. Although cooling the hot weld bead by putting it in water is also recommended to increase hardness, this process can only be applied to small joints that have a small filling zone.

If the top layer has to be very hard, **ELHARD 60/63/65** can be used instead of **ELHARD 600**. However, this type of electrodes should not be applied in more than two passes in filling processes, and cooling and hammering processes should not be applied to them.

Joint Welding

Manganese austenitic hard steels can be welded with the same steels or with low-alloy steels. Chromium-nickel-manganese alloyed **ELOX B 307** should be preferred instead of a high-manganese electrode that fits the composition of the base metal for this process. This electrode has an excellent abrasion resistance and removes tensions by changing its shape with its high ductility. Welding process should be made by applying as little heat input as possible and a cooling process. Short passes should be applied by changing directions, and each pass should be hammered after it cooled down.



Hardfacing application in repair and maintenance of bucket teeth that are made up of manganese austenitic hard steel.

Welding of Cast Irons

Cast irons are iron alloys that generally contain 1.7-4% C, 3.5% Si, Mn, S, and P. The facts that cast irons can flow well when they are liquid, their melting point is low, they are not affected by carbon catching during melting made them unique cast material. Cast irons contain carbon in unbound form, in carbide and a little in ferrite. The type and the characteristics of cast irons are determined by the form of the carbon. The significant types of cast irons for welding that are highly used in industry are gray cast iron and nodular cast iron.

Welding of Gray Cast Irons

Gray cast iron has an internal structure that is composed of unbound graphite that is scattered in the form of platelets in a matrix that resembles low-alloy unbound-carbon steels. The reason for the gray cast iron not to have transformation capability, to have low strength and to be brittle is the graphite platelets in its internal structure.

Two significant points affect the weldability of gray cast iron;

- 1- Since the melted zone rapidly cools down because of its high carbon content, weld bead is very hard, brittle and rich in cementite.
- 2- Deformation caused by regional heating and cooling during welding causes the cast iron joint that is very brittle to crack from the weakest point.

There are two solutions for the welding of cast iron.

-It is possible to prevent both the hard structure that is caused by rapid cooling and the danger of cracking caused by welding stress by applying preheating at a very high temperature (600-700 °C). Electric arc welding and oxy-acetylene welding with a metal that has the suitable composition to the base metal can be applied in this process, which can be named as hot welding.

-The bases of the welding process of gray casting irons that is named as cold welding is to apply heat low enough to prevent the formation of high amounts of cementite and martensite and formation of the stress that can cause fracture in the course of heating, and, to use a weld metal that does not cause martensite and cementite formation. Pure nickel, copper-nickel, iron-nickel alloy coated electrodes are used in this method.

V, X and U grooves in 80-90° angle is applied to joint that will be welded. Cast spunk along the grooves is cleaned. It is necessary to obey the following conditions in this welding method during welding to prevent the danger of heat stress cracking, to narrow transition zone and to decrease the hardening in this zone.

Heat input should be decreased by using the thinnest electrode and the lowest strength of current possible.

Weld bead length should be limited to 25mm in order for the base metal not to warm too much.

Each pass should be hammered with a round head hammer before it cools down to decrease the stress the weld metal causes by shrinking.

Welding should be paused after each weld bead until the joint cools down to a temperature at which one can touch it by hand.

Electrode should be started on the prior seam when welder starts a new seam.

Arc should always be directed to the piled metal during welding and welder should go back a little while they put out the arc. They should retract the electrode slowly.

In order to decrease the stresses in the multi pass welding of thick joints, welding should be applied in width and length.

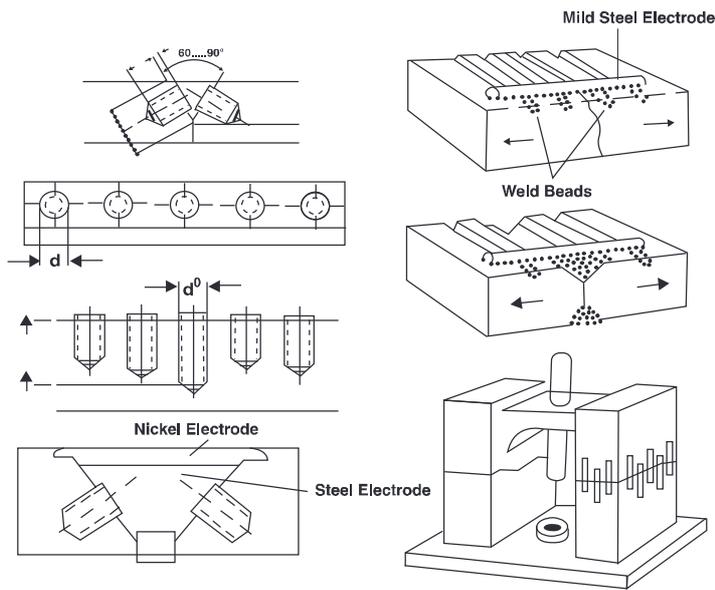
Geka developed pure nickel **ELNIKEL**, copper-nickel **ELMONEL** and ferronickel **ELNIFER** electrodes for the cold welding of cast irons.

It is possible to apply the weld joint quicker, with less risk and with longer seams using electrodes above and a preheating at 150-250 °C in the cases where the size, shape and the type of the cast iron joint are appropriate. In the method that is called half-hot welding, the hardness of the HAZ does not exceed 200 Vickers.

In the cases where the weld zone does not have to be processed, an experienced welder can get a satisfactory result with **LASER B 50** or **ELFER** basic electrodes if they obey the conditions above. However, hard zones that can exceed 450 Vickers can be seen in the HAZ in these conditions.

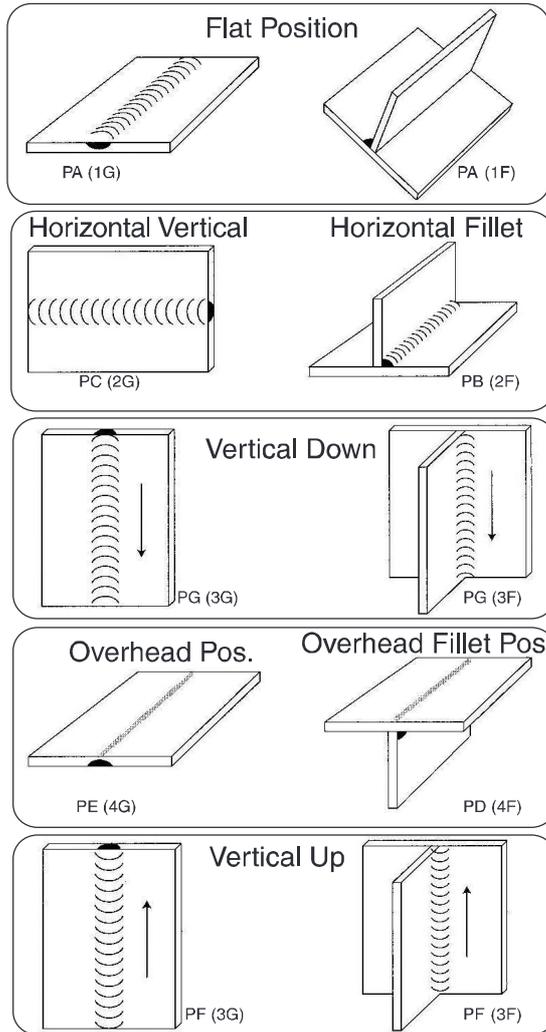
Welding of Nodular Cast Irons

Long studies showed that ferronickel based electrode **ELNIFER** is the most appropriate electrode for the welding of nodular cast iron. Although nodular cast irons can be welded with low heat input, the most appropriate results are gotten in the applications with a preheating at 300 °C. The joint should be tempered at 700-750 °C right after the welding.



Examples of reinforced stud welding of cast iron joints

Welding Positions according to EN and AWS Standards

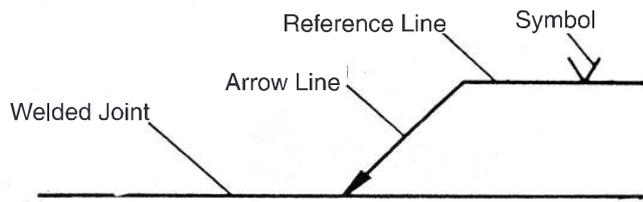


Symbols for the Designation of Weld Beads in Projects

Usage of welding symbols and supporting elements adopted and standardized to make graphing and reapplication of welded constructions easier. TS 3004 is published on this issue in Turkey. However, conductors do not completely obey this standard. Thus, our craftsmen should be knowledgeable.

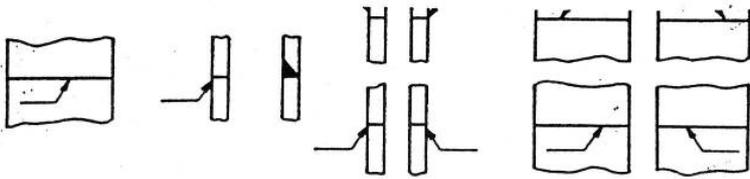
Illustrations that are the most important part of the welding plan should reflect all properties of weld beads.

There are an elementary symbol, an arrow line that has an arrow that shows the joint at the end of it, and a reference line in illustrations



Designation that is used in weld joints

The side of the joint where the arrow put is called "arrow side of the joint", the other side is called "other side of the joint".



Various designations

The position of the arrow line with respect to the weld is generally of no special significance. However, the arrow line should point towards the plate which is prepared for welding.

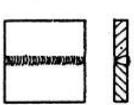
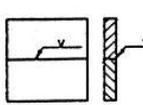
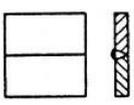
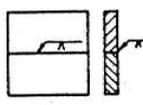
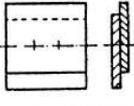
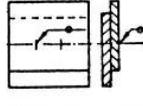
The reference line should be drawn parallel to the bottom edge of the drawing,

Positions of the symbols in relation to the reference line are defined according to E (first angle) and A (third angle) methods.

One should look into TS 3004 if they have to graph or read welding construction illustrations that are graphed using A method.

Although the symbols that are used in the illustrations of welded constructions have some differences depending on the symbols of the countries, they can show the information that determine the construction such as groove and seam surface from easily, clearly and in a simple way.

Position of the symbols according to E Method

Illustration	Figure	Figure Position of the symbols	Definition of Position of the symbols
			The symbol is placed above the reference line if the weld face is on the arrow side of the joint
			If the exterior surface of the weld is on the other side of the joint, below the reference line
			If welding is not made in the junction plane, on the reference line

Note: In the case of spot welds made by projection welding, the projection surface is to be considered as the external surface of the weld.

Notation of Elementary Symbols in Standards

Designation	illustration	Symbol			
		TS	DIN	AWS	BS
Butt weld between plates with raised edges		∧	∧	∧	∧
Butt weld between plates with raised edge				∩	
Square butt weld		∥	∥	∥	∥
Single-V butt weld		∨	∨	∨	∨
Convoluted Single-V butt weld				∩	
Single-bevel butt weld		∇	∇	∇	∇
Single-V butt weld with broad root face		Y	Y	Y	Y
Single-bevel butt weld with broad root face		∇	∇	∇	∇
Single-U butt weld		∩	∩	∩	∩
Single-J butt weld		∩	∩	∩	∩
Backing weld		∩	∩	∩	∩
Fillet weld		∇	∇	∇	∇
Plug weld		∩	∩	∩	∩
Spot weld		○	○	○	○
Seam weld		⊕	⊕	⊕	⊕
Steep-flanked single-V butt weld			∇		
Steep-flanked single-bevel butt weld			∇		
Edge weld			∥		
Surfacing			∩	∩	

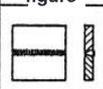
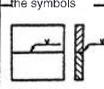
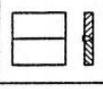
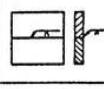
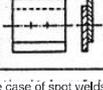
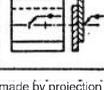
Examples of Elementary Symbols in a Combined Way

Designation	illustration	Symbol			
		TS	DIN	AWS	BS
Double-V butt weld (X weld)		X	X	X	X
Double-bevel butt weld		K	K	K	K
Double-V butt weld with broad root face		Y	Y	Y	Y
Double-bevel butt weld with broad root face		K	K	K	K
Double-U butt weld		Y	Y	Y	Y
Double-J butt weld		K	K	K	K
V-U Butt weld		Y	Y	Y	Y
Single-V butt weld with broad root face and backing run		Z	Z	Z	Z
Double- Fillet weld		D	D	D	D

Supplementary symbols

Shape of the welded surface	Symbol
Flat	
Convex	
Concave	
Toes shall be blended smoothly	

Position of the symbols according to E Method

Illustration	figure	Position of the symbols	Definition of Position of the symbols
			If the exterior surface of the weld is on the arrow side of the joint, above the reference line
			If the exterior surface of the weld is on the other side of the joint, below the reference line
			If welding is not made in the junction plane, on the reference line

Note: In the case of spot welds made by projection welding, the projection surface is to be considered as the external surface of the weld.

Weld symbols are generally examined under three groups:

- a) Elementary Symbols
- b) Combined Symbols
- c) Supplementary symbols

We can look at the notation of these in various country symbols.

a) Elementary Symbols

Examples for the usage of elementary symbols to show the welding type are also given in the table. These symbols are generally similar to the shape of the weld seam. Hence they can be easily remembered.

b) Combined Symbols

These symbols are shown in the table for the examples of elementary symbols in a combined way.

c) Supplementary symbols

Elementary symbols can be completed with the supplementary symbols that show the shape of surface of the weld seam. Welded surfaces are generally made flat. Since there is no need to show the welding surface completely, it is normal that supplementary symbols are not used.

Designation	illustration	Symbol
Flat single-V butt weld		
Convex double-V weld		
Concave fillet weld		
Flat single-V butt weld with flat backing run		

Examples of application of supplementary symbols

Certain dimensions can be shown next to each welding symbol.
 The main dimension of the cross section should be written on the left side of the symbol.
 Lengthwise dimensions (length of the weld bead) should be written on the right side of it.

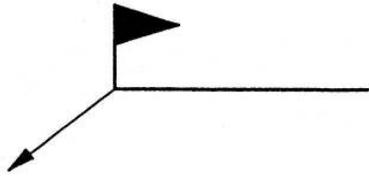
The principles for these dimensions are shown in the table. More significant dimensions can be shown when necessary.

In case of flat weld joints, it is understood that welding is made without opening a root along the joint.

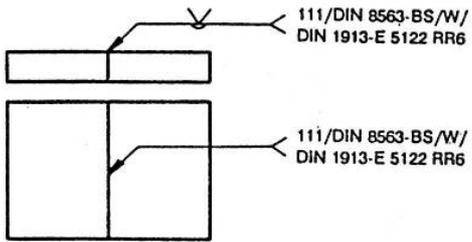
Basic Dimensions

No.	Welding Method
1	Arc welding
11	Metal-arc welding without gas protection
111	Metal-arc welding with coated electrode
12	Submerged arc welding
13	Gas-shielded metal-arc welding
131	MIG welding
135	MAG welding
141	TIG welding
15	Plasma arc welding
2	Resistance welding
21	Spot welding
22	Seam welding
23	Projection welding
24	Flash welding
3	Gas welding
311	Oxy-acetylene welding
4	Pressure welding
41	Ultrasonic welding
42	Friction welding
441	Explosive welding
45	Diffusion welding
71	Thermic welding
72	Electro-slag welding
73	Electro-gas welding
751	Laser beam welding
76	Electron beam welding
9	Brazing, soldering and braze welding

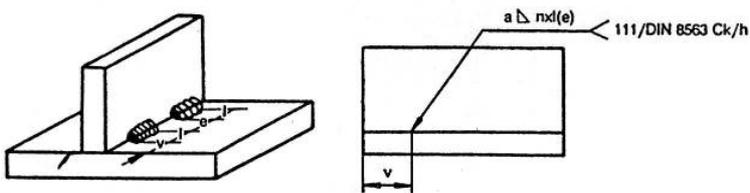
According to DIN 1912, assessment group of the welding is shown right after the welding method in between slashes.



Flag symbol that is used to indicate the field or site weld



Welding position and the designation of the electrode that is used



An example of an intermittent fillet weld

ELECTRODE CONSUMPTION CALCULATION

In order to calculate the welding cost, the amount of electrodes that will be used should be calculated since it is the most important input. Although there are computer programs for this purpose, this can also be approximately calculated with the eight tables that are given below. In the first seven of these tables, the diameters of the electrodes that are recommended are also given considering the plate thickness and the weight of 1 meter welding seam and the welding position in fillet welds. The number of electrodes that are needed is calculated for root and filler passes from table 8 in relation to the electrode diameter and length with the help of 1 meter seam weight that is calculated from those tables. The discarded stem length is considered to be 30mm and the loss that is caused by spattering and burning is considered to be 10% in this table. This value changes between 87% and 93% in practice depending on the type of electrode and the strength of current.

Since the efficiency of electrodes that have iron powder is higher the number of electrodes that are used in practice is lower than the number that is determined according to the table. Hence the number that is calculated with the help of the table is multiplied with 0.8 for 100-120% efficiency electrodes and 0.6 for 160% efficiency electrodes.

Example 1: Calculation of the required number of electrodes for 1 meters welding seam when a 6mm plate is welded with a V groove in a horizontal position.

The weight of 1 meter welding seam is calculated as 0.10kg when 350mm long electrode that has 3.25mm long diameter is used for root pass according to table 1.

The weight of 1 meter welding seam is calculated as 0.12kg when 350mm long electrode that has 4mm long diameter is used for filler pass.

The number of electrodes according to table 8.

$0.10\text{kg} = 5.3$ ($\varnothing 3.25 \times 350\text{mm}$ electrodes)

$0.12\text{kg} = 0.10 + 0.02\text{kg} = 3.5 + 0.7 = 4.2$ ($\varnothing 4.00 \times 350\text{mm}$ electrodes)

Example 2: Calculation of the required number of electrodes when a 16mm plate is welded with a V groove and its root is also welded from underside in a horizontal position.

The weight of 1 meter welding seam is calculated as 0.12kg when 450mm long electrode that has 4mm long diameter is used for root pass according to table 1.

In case of a root pass underside, 1 meter welding seam is calculated as 0.12kg for 450mm long electrode that has 4mm long diameter.

The weight of 1 meter welding seam is calculated as 1.3kg when 450mm long electrode that has 5mm long diameter is used for filler pass.

The number of electrodes according to table 8.

Root pass: $0.12 = 0.10 + 0.02 = 2.7 + 0.5 = 3.2$ ($\varnothing 4.00 \times 450\text{mm}$ electrodes)

Underside Root Pass: $0.12 = 0.10 + 0.02 = 2.7 + 0.5 = 3.2$ ($\varnothing 4.00 \times 450\text{mm}$ electrodes)

Filler Pass: $1.3 = 1 + 0.3 = 17.2 + 5.2 = 22.4$ ($\varnothing 5.00 \times 450\text{mm}$ electrodes)

Note: These calculations are for normal electrodes. For example, if the same welding processed is made with a 160% efficient iron powder coated electrode, the number should be multiplied with 0.6. In case of basic electrodes, it should be multiplied with 0.8.

Weld Bead Weight in V groove in horizontal and flat positions

V-Groove

Horizontal and flat position
Groove angle: 60°

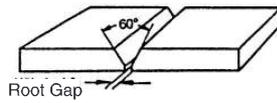


Plate Thickness (mm)	Root Gap (mm)	Electrode Diameter (mm)	Approximate Seam Cross-Section (mm)	Seam Weight (kg/m)
3	1	2,5	8,5	0,07
4	1	2,5 or 3,25	13,5	0,11
5	1	3,25	19,5	0,16
6	1	W 3,25 D 4	27	0,10 0,12
7	1,5	W 3,25 D 4	39	0,10 0,21
8	1,5	W 3,25 D 4 or 5	49	0,10 0,29
9	1,5	W 3,25 D 4 or 5	60,5	0,10 0,38
10	2	W 3,25 D 4 or 5	77,5	0,10 0,51
11	2	W 3,25 D 4 or 5	92	0,10 0,62
12	2	W 3,25 D 4 or 5	108	0,10 0,75
13	2	W 3,25 D 4 or 5	123	0,10 0,87
14	2	W 3,25 D 4 or 5	142	0,10 1,02
15	2	W 4 D 5 or 16	161	0,12 1,14
16	2	W 4 D 5 or 16	180	0,12 1,30
17	2	W 4 D 5 or 16	201	0,12 1,46
18	2	W 4 D 5 or 16	223	0,12 1,72
19	2	W 4 D 5 or 16	246	0,12 1,81
20	2	W 4 D 5 or 16	271	0,12 2,01

W: Root Pass

D: Filler Pass

Half of the seam weight is added in the case of welding of plates that are up to 5mm for root welding from underside. At least the weight of the root pass should be added for the plates that are thicker than 5mm.

Half of the plate thickness is taken in case of welding seam weight for double-V groove. Double of the required V-groove is taken and opposing welding of the root side is added to this.

Weld Bead Weight in V butt welding in vertical position

V-Groove

Horizontal and flat position
Groove angle: 60°

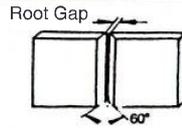


Plate Thickness (mm)	Root Gap (mm)	Electrode Diameter (mm)	Approximate Seam Cross-Section (mm)	Seam Weight (kg/m)
3	1	2,5 or 3,25	8,5	0,09
4	1	3,25	13,5	0,14
5	1	3,25	19,5	0,20
6	1	3,25	27	0,26
7	1,5	3,25	39	0,36
8	1,5	3,25	49	0,45
9	1,5	W 3,25 D 4	60,5	0,20 0,34
10	2	W 3,25 D 4	77,5	0,20 0,47
11	2	W 3,25 D 4	92	0,20 0,59
12	2	W 3,25 D 4	108	0,20 0,73
13	2	W 3,25 D 4	123	0,20 0,85
14	2	W 3,25 D 4	142	0,20 1,00
15	2	W 3,25 D 4	161	0,20 1,14
16	2	W 3,25 D 4	180	0,20 1,30
17	2	W 3,25 D 4	201	0,20 1,47
18	2	W 3,25 D 4	223	0,20 1,73
19	2	W 3,25 D 4	246	0,20 1,83
20	2	W 3,25 D 4	271	0,20 2,01

W: Root Pass

D: Filler Pass

Half of the seam weight is added in the case of welding of plates that are up to 8mm for root welding from underside. At least the weight of the root pass should be added for the plates that are thicker than 8mm.

Half of the plate thickness is taken in case of welding seam weight for double-V groove. Double of the required V-groove is taken and opposing welding of the root side is added to this.

Weld Bead in V butt welding in overhead, vertical and horizontal vertical positions

V-Groove

Overhead, vertical and horizontal vertical positions Groove angle: 70°

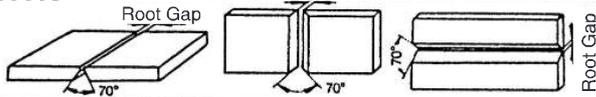


Plate Thickness (mm)	Root Gap (mm)	Electrode Diameter (mm)	Approximate Seam Cross-Section (mm)	Seam Weight (kg/m)
3	1	2,5	9,5	0,10
4	1	2,5 or 3,25	16	0,16
5	1	3,25	22,5	0,22
6	1	3,25	31	0,29
7	1,5	3,25	45	0,41
8	1,5	3,25	57	0,51
9	1,5	W 3,25 D 4	70,5	0,20 0,42
10	2	W 3,25 D 4	90,5	0,20 0,57
11	2	W 3,25 D 4	107	0,20 0,71
12	2	W 3,25 D 4	125,5	0,20 0,87
13	2	W 3,25 D 4	138	0,20 0,97
14	2	W 3,25 D 4	165	0,20 1,18
15	2	W 3,25 D 4	188	0,20 1,36
16	2	W 3,25 D 4	211	0,20 1,54
17	2	W 3,25 D 4	236	0,20 1,74
18	2	W 3,25 D 4	263	0,20 1,95
19	2	W 3,25 D 4	291	0,20 2,18
20	2	W 3,25 D 4	320	0,20 2,41

W: Root Pass

D: Filler Pass

Half of the seam weight is added in the case of welding of plates that are up to 8mm for root welding from underside. At least the weight of the root pass should be added for the plates that are thicker than 8mm.

Half of the plate thickness is taken in case of welding seam weight for double-V groove. Double of the required V-groove is taken and opposing welding of the root side is added to this.

Weld Bead Weight in fillet welding in horizontal and flat positions

Fillet Welding

Horizontal and flat position

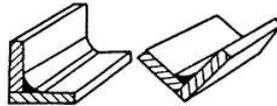


Plate Thickness (mm)	Electrode Diameter (mm)	Approximate Seam Cross-Section (mm)	Seam Weight (kg/m)
2	2,5	4	0,038
2,5	2,5 or 3,25	6,5	0,058
3	3,25 or 4	9	0,082
3,5	3,25 or 4	12,5	0,115
4	3,25 or 4	16	0,15
4,5	3,25 or 4	20,5	0,18
5	3,25 or 4	25	0,23
5,5	3,25 or 4	30,5	0,28
6	3,25 or 4	36	0,33
6,5	3,25 or 4	42,5	0,39
7	3,25 or 4	49	0,45
7,5	3,25 or 4	56,5	0,52
8	W 4 D 5	64	0,18 0,41
8,5	W 4 D 5	72,5	0,18 0,48
9	W 4 D 5	81	0,18 0,56
9,5	W 4 D 5	90,5	0,18 0,65
10	W 4 D 5 or 6	100	0,18 0,73
11	W 4 D 5 or 6	121	0,18 0,92
12	W 4 D 5 or 6	144	0,18 1,14
13	W 4 D 5 or 6	169	0,18 1,37
14	W 4 D 5 or 6	196	0,18 1,60
15	W 4 D 5 or 6	225	0,18 1,89
16	W 4 D 5 or 6	256	0,18 2,14

W: Root Pass

D: Filler Pass

Weld Bead Weight in fillet welding in vertical position

Fillet Welding

Vertical position

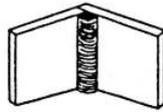


Plate Thickness (mm)	Electrode Diameter (mm)	Approximate Seam Cross-Section (mm)	Seam Weight (kg/m)
2	2 or 2,5	4	0,040
2,5	2 or 2,5	6,5	0,061
3	2,5 or 3,25	9	0,086
3,5	3,25	12,5	0,12
4	3,25	16	0,16
4,5	3,25	20,5	0,19
5	W 3,25 D 4	25	0,10 0,14
5,5	W 3,25 D 4	30,5	0,10 0,19
6	W 3,25 D 4	36	0,10 0,25
6,5	W 3,25 D 4	42,5	0,10 0,31
7	W 3,25 D 4	49	0,10 0,37
7,5	4	56,5	0,55
8	4	64	0,62
8,5	4	72,5	0,69
9	4	81	0,78
9,5	4	90,5	0,87
10	4	100	0,96
11	4	121	1,16
12	4	144	1,39
13	4	169	1,63
14	4	196	1,87
15	4	225	2,17
16	4	256	2,44

W: Root Pass **D: Filler Pass**

Weld Bead Weight in I-butt welding of thin plates in horizontal position

I-Groove of Thin Plates

Plate Thickness (mm)	Root Gap (mm)	Electrode Diameter (mm)	Seam Weight of Convex Seams (kg/m)
1,5	0,5	2	0,015
2	1	2	0,030
2,5	1,2	2,5	0,060
3	1,5	2,5 (3,25)	0,075
3,5	1,5	3,25	0,090

Labor Costs

Labor is not only the wage of the welder. It is one-hour labor cost that is calculated by adding wages of everybody that contributes to the application of that welding seam in a certain rate. This labor cost is divided to the one meter long welding seam. The following formula is used in calculation.

$$\text{Labor Costs/meter welding} = \frac{I_g \cdot KMA}{EG \cdot \eta_i} \quad (\text{TL/meter welding})$$

- I_g : One hour cost (TL)
- KMA : Weight of the one meter long welding metal (Kg)
- EG : Melting power of electrodes (Kg/h)
- η_i : Operation factor

Number of electrodes for each Kg/m bead weight

(Efficiency is considered to be 90% and discarded stem length is considered to be 30mm)

Seam Weight (kg/m)	Electrode diameters and lengths									
	1,5 250	2 250	2,5 250	2,5 350	3,25 350	3,25 450	4 350	4 450	5 450	6 450
0,01	3,6	2,0	1,3	0,9	0,5	0,4	0,4	0,3	0,2	0,1
0,02	7,3	4,1	2,6	1,8	1,1	0,8	0,7	0,5	0,3	0,2
0,03	10,9	6,1	3,9	2,7	1,6	1,2	1,1	0,8	0,5	0,4
0,04	14,5	8,2	5,3	3,6	2,1	1,6	1,4	1,1	0,7	0,5
0,05	18,2	10,2	6,5	4,5	2,7	2,0	1,8	1,3	0,9	0,6
0,06	21,8	12,3	7,9	5,4	3,2	2,4	2,1	1,6	1,0	0,7
0,07	25,4	14,3	9,2	6,3	3,7	2,9	2,5	1,9	1,2	0,9
0,08	29,1	16,4	10,5	7,2	4,3	3,3	2,8	2,2	1,4	1,0
0,09	32,7	18,4	11,8	8,1	4,8	3,7	3,2	2,4	1,5	1,1
0,10	36,4	20,4	13,1	9,0	5,3	4,1	3,5	2,7	1,7	1,2
0,15	54,5	30,7	19,7	13,5	8,0	6,1	5,3	4,0	2,6	1,8
0,20	72,8	40,9	26,2	18,1	10,7	8,1	7,0	5,4	3,4	2,4
0,25	91,0	51,1	32,8	22,6	13,3	10,2	8,8	6,7	4,3	3,0
0,30	109	61,3	39,4	27,1	16,0	12,2	10,6	8,1	5,2	3,6
0,35	127	71,5	46,0	31,6	18,7	14,2	12,3	9,4	6,0	4,2
0,40	145	81,8	52,5	36,2	21,4	16,3	14,1	10,8	6,9	4,8
0,45	164	92,0	59,1	40,7	24,0	18,3	15,8	12,1	7,7	5,4
0,50	182	102	65,6	45,2	26,7	20,3	17,6	13,4	8,6	6,0
0,55	200	113	72,2	49,7	29,4	22,4	19,4	14,8	9,4	6,6
0,60	218	123	78,8	54,3	32,0	24,4	21,1	16,1	10,3	7,2
0,65	236	133	85,4	58,8	34,7	26,4	22,9	17,5	11,1	7,7
0,70	254	143	92,0	63,3	37,4	28,5	24,6	18,8	12,0	8,3
0,75	273	153	98,5	67,8	40,0	30,5	26,4	20,2	12,9	8,9
0,80	291	164	105	72,2	42,7	32,5	28,2	21,5	13,7	9,5
0,85	309	174	112	76,9	45,4	34,6	30,0	22,8	14,6	10,1
0,90	327	184	118	81,4	48,0	36,6	31,7	24,2	15,4	10,7
0,95	346	194	125	85,9	50,7	38,6	33,5	25,6	16,3	11,3
1,00	364	204	131	90,4	53,4	40,7	35,2	26,9	17,2	11,9
2,00	728	409	262	181	107	81,3	70,4	53,8	34,3	23,8
3,00	1090	613	394	271	160	122	106	80,7	51,5	35,7
4,00	1450	818	460	362	214	162	141	108	68,6	47,6
5,00	1820	1020	525	452	267	203	176	134	85,7	59,5
6,00	2180	1230	788	543	320	244	211	161	103	71,5
7,00	2540	1430	920	633	374	285	246	188	120	83,4
8,00	2910	1640	1050	723	427	325	288	215	137	95,3
9,00	3270	1840	1180	814	480	366	317	242	154	107
10,00	3640	2040	1310	904	534	407	352	269	172	119

W: Root Pass

D: Filler Pass

BRINELL, ROCKWELL, VICKERS HARDNESS COMPARISION TABLE

Impact Strength	Vickers Hardness	Brinell Hardness	Rockwell Hardness							
			HRB	HRF	HRC	HRA	HRD	HR 15 N	HR 30 N	HR 45 N
255	80	76.0	-	-	-	-	-	-	-	-
270	85	80.7	41.0	-	-	-	-	-	-	-
285	90	85.5	48.0	82.6	-	-	-	-	-	-
305	95	90.2	52.0	-	-	-	-	-	-	-
320	100	95.0	56.2	87.0	-	-	-	-	-	-
335	105	99.8	-	-	-	-	-	-	-	-
350	110	105	62.3	90.5	-	-	-	-	-	-
370	115	109	-	-	-	-	-	-	-	-
385	120	114	66.7	93.6	-	-	-	-	-	-
400	125	119	-	-	-	-	-	-	-	-
415	130	124	71.2	96.4	-	-	-	-	-	-
430	135	128	-	-	-	-	-	-	-	-
450	140	133	75.0	99.0	-	-	-	-	-	-
465	145	138	-	-	-	-	-	-	-	-
480	150	143	78.7	101.4	-	-	-	-	-	-
495	155	147	-	-	-	-	-	-	-	-
510	160	152	81.7	103.6	-	-	-	-	-	-
530	165	156	-	-	-	-	-	-	-	-
545	170	162	85.0	105.5	-	-	-	-	-	-
560	175	166	-	-	-	-	-	-	-	-
575	180	171	87.1	107.2	-	-	-	-	-	-
595	185	176	-	-	-	-	-	-	-	-
610	190	181	89.5	105.5	-	-	-	-	-	-
625	195	185	-	-	-	-	-	-	-	-
640	200	190	91.5	110.1	-	-	-	-	-	-
660	205	195	92.5	-	-	-	-	-	-	-
675	210	199	93.5	111.3	-	-	-	-	-	-
690	215	204	94.0	-	-	-	-	-	-	-
705	220	209	95.0	112.4	-	-	-	-	-	-
720	225	214	96.0	-	-	-	-	-	-	-
740	230	219	96.7	113.4	-	-	-	-	-	-
755	235	223	-	-	-	-	-	-	-	-
770	240	228	98.1	114.3	20.3	60.7	40.3	69.6	41.7	19.9
785	245	233	-	-	21.3	61.2	41.1	70.1	42.5	21.1
800	250	238	99.5	115.1	22.2	61.6	41.7	70.6	43.4	22.2
820	255	242	-	-	23.1	62.0	42.2	71.1	44.2	23.2
835	260	247	(101)	-	24.0	62.4	43.1	71.6	45.0	24.3
850	265	252	-	-	24.8	62.7	43.7	72.1	45.7	25.2
865	270	257	(102)	-	25.6	63.1	44.3	72.6	46.4	26.2
880	275	261	-	-	26.4	63.5	44.9	73.0	47.2	27.1
900	280	266	(104)	-	27.1	63.8	45.3	73.4	47.8	27.9
915	285	271	-	-	27.8	64.2	46.0	73.8	48.4	28.7
930	290	276	(105)	-	28.5	64.5	46.5	74.2	49.0	29.5
950	295	280	-	-	29.2	64.8	47.1	74.6	49.7	30.4
965	300	285	-	-	29.8	65.2	47.5	74.9	50.2	31.1
995	305	295	-	-	31.0	65.8	48.4	75.6	51.3	32.5
1030	310	304	-	-	32.2	66.4	49.4	76.2	52.3	33.9
1060	315	314	-	-	33.3	67.0	50.2	76.8	53.6	35.2
1095	320	323	-	-	34.4	67.6	51.1	77.4	54.4	36.5
1125	325	333	-	-	35.5	68.1	51.9	78.0	55.4	37.8

BRINELL, ROCKWELL, VICKERS HARDNESS COMPARISION TABLE

Impact Strength	Vickers Hardness	Brinell Hardness	Rockwell Hardness							
			HRB	HRF	HRC	HRA	HRD	HR 15 N	HR 30 N	HR 45 N
1155	360	342	-	-	36.6	68.7	52.8	78.6	56.4	39.1
1190	370	352	-	-	37.7	69.2	53.6	79.2	57.4	40.4
1220	380	361	-	-	38.8	69.8	54.4	79.8	58.4	41.7
1255	390	371	-	-	39.8	70.3	55.3	80.3	59.3	42.9
1290	400	380	-	-	40.8	70.8	56.0	80.8	60.2	44.1
1320	410	390	-	-	41.8	71.4	56.8	81.4	61.1	45.3
1350	420	399	-	-	42.7	71.8	57.5	81.8	61.9	46.4
1385	430	409	-	-	43.6	72.3	58.2	82.3	62.7	47.4
1420	440	418	-	-	44.5	72.8	58.8	82.8	63.5	48.4
1455	450	428	-	-	45.3	73.3	59.4	83.2	64.3	49.4
1485	460	437	-	-	46.1	73.6	60.1	83.6	64.9	50.4
1520	470	447	-	-	46.9	74.1	60.7	83.9	65.7	51.3
1555	480	(456)	-	-	47.7	74.5	61.3	84.3	66.4	52.2
1595	490	(466)	-	-	48.4	74.9	61.6	84.7	67.1	53.1
1630	500	(475)	-	-	49.1	75.3	62.2	85.0	67.7	53.9
1665	510	(485)	-	-	49.8	75.7	62.9	85.4	68.3	54.6
1700	520	(494)	-	-	50.5	76.1	63.5	85.7	69.0	55.6
1740	530	(504)	-	-	51.1	76.4	63.9	86.0	69.5	56.2
1775	540	(513)	-	-	51.7	76.7	64.4	86.3	70.0	57.0
1810	550	(523)	-	-	52.3	77.0	64.8	86.6	70.5	57.8
1845	560	(532)	-	-	53.0	77.4	65.4	86.9	71.2	58.6
1880	570	(542)	-	-	53.6	77.8	65.8	87.2	71.7	59.3
1920	580	(551)	-	-	54.1	78.0	66.2	87.5	72.1	59.9
1955	590	(561)	-	-	54.7	78.4	66.7	87.8	72.7	60.5
1995	600	(570)	-	-	55.2	78.6	67.0	88.0	73.2	61.2
2030	610	(580)	-	-	55.7	78.9	67.5	88.2	73.7	61.7
2070	620	(589)	-	-	56.3	79.2	67.9	88.5	74.2	62.4
2105	630	(599)	-	-	56.8	79.5	68.3	88.8	74.6	63.0
2145	640	(608)	-	-	57.3	79.8	68.7	89.0	75.1	63.5
2180	650	(618)	-	-	57.8	80.0	69.0	89.2	75.5	64.1
-	660	-	-	-	58.3	80.3	69.4	89.5	75.9	64.7
-	670	-	-	-	58.8	80.6	69.8	89.7	76.4	65.3
-	680	-	-	-	59.2	80.8	70.1	89.8	76.8	65.7
-	690	-	-	-	59.7	81.1	70.5	90.1	77.2	66.2
-	700	-	-	-	60.1	81.3	70.8	90.3	77.6	66.7
-	720	-	-	-	61.0	81.8	71.5	90.7	78.4	67.7
-	740	-	-	-	61.8	82.2	72.1	91.0	79.1	68.6
-	760	-	-	-	62.5	82.6	72.6	91.2	79.7	69.4
-	780	-	-	-	63.3	83.0	73.3	91.5	80.4	70.2
-	800	-	-	-	64.0	83.4	73.8	91.8	81.1	71.0
-	820	-	-	-	64.7	83.8	74.3	92.1	81.7	71.8
-	840	-	-	-	65.3	84.1	74.8	92.3	82.2	72.2
-	860	-	-	-	65.9	84.4	75.3	92.5	82.7	73.1
-	880	-	-	-	66.4	84.7	75.7	92.7	83.1	73.6
-	900	-	-	-	67.0	85.0	76.1	92.9	83.6	74.2
-	920	-	-	-	67.5	85.3	76.5	93.0	84.0	74.8
-	940	-	-	-	68.0	85.6	76.9	93.2	84.4	75.4

DRYING TEMPERATURES AND DURATIONS OF GEKA ELECTRODES

Standard	Material to which the electrode is applied	Coating Type	Drying Process (1-2)	Drying Temperature (2) °C	Drying Duration (3) (hour)
EN 499 DIN 1913 AWS 5.1	Unalloyed and low-alloy steels	A, AR, C R (C), R, RR RR (B)	not required	-	-
		B (R), B	required	300 - 350	2 - 10
EN 757 DIN 8529 AWS 5.5	High-strength fine-grained structural steels	B	required	300 - 350	2 - 10
EN 1599 DIN 8575 AWS 5.5	Heat resisting steels	R	not required	-	-
		B	required	300 - 350	2 - 10
EN 1600 DIN 8556 AWS 5.4	Stainless Heat resisting steels	R	recommended	100 - 200	2 - 10
		B (R), B	not required	-	-
	Mild Martensitic Steels	B	required	300 - 350	2 - 10
	Double phase Steels	(R) B	required	250 - 350	2 - 10
EN 14700 DIN 8555 AWS 5.13	hardfacing	R	not required	-	-
		B (R), B	required	300 - 350	2 - 10
		special	on producer's recommendation		
TS EN 14700 DIN1736 AWS 5.11	nickel based alloys	all types	when necessary	120 - 300	2 - 10

- 1) Electrodes in special can packages can be used without a drying process in 8 hours after the can is opened. In establishments that are more than 70% humid, electrodes should be put into special hot boxes at 100-200 °C after the package is opened.
- 2) Please follow the recommendations of the producer for special circumstances.
- 3) The maximum value is the sum of the durations of drying processes when electrode is dried multiple times (in different dates)



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