

LOCTITE[®] PC 7117

Known as LOCTITE[®] 7117
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PRODUCT DESCRIPTION

LOCTITE[®] PC 7117 provides the following product characteristics:

| | |
|--|---|
| Technology | Epoxy |
| Chemical Type | Epoxy |
| Appearance (Resin) | Black paste |
| Appearance (Hardener) | Amber to transparent liquid |
| Appearance (Mixed) | Black |
| Components | Two part - Resin & Hardener |
| Mix Ratio, by weight - Resin : Hardener | 100 : 16 |
| Mix Ratio, (by volume) Resin : Hardener | 100 : 30 |
| Cure | Room temperature cure after mixing |
| Application | Coating |
| Application Temperature | 15 to 40°C (59 to 104°F) |
| Service Temperature (Dry) | 110°C (230°F) |
| Service Temperature (Wet) | 60°C (140°F) |
| Specific Benefits | <ul style="list-style-type: none"> • Resurfacing and repairing of worn or corroded metal parts • Protecting metal surfaces against chemicals, abrasive and corrosive agents • High wear resistance • High chemical resistance • Gloss finish to reduce friction and turbulence • Excellent adhesion |

LOCTITE[®] PC 7117 brushable ceramic is a solvent-free ceramic filled two part epoxy coating. It is designed to protect metal surfaces against abrasive and corrosive agents. It can be used as smooth, protective coating on metal surfaces or as a low friction top coat over Loctite[®] wear resistant compounds. Typical applications are repairing and protecting of heat exchangers, condensers, lining tanks, chutes, valve bodies or pump impellers and housings.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Resin:

| | |
|---|---------|
| Specific Gravity @ 23 °C | 2 |
| Viscosity, Plate to Plate, mPa·s (cP): | |
| Temperature: 25 °C, Shear Rate: 0.3 s ⁻¹ | 520,000 |
| Temperature: 25 °C, Shear Rate: 40 s ⁻¹ | 67,000 |

Hardener:

| | |
|--|-----|
| Specific Gravity @ 23 °C | 1.1 |
| Viscosity, Cone & Plate, mPa·s (cP): | |
| Temperature: 25 °C, Shear Rate: 40 s ⁻¹ | 770 |

Mixed Properties:

| | |
|---|--------|
| Specific Gravity @ 23 °C | 1.72 |
| Viscosity, Plate to Plate, mPa·s (cP): | |
| Temperature: 25 °C, Shear Rate: 0.3 s ⁻¹ | 65,000 |
| Temperature: 25 °C, Shear Rate: 40 s ⁻¹ | 27,000 |
| Vertical Sag Resistance, 25 °C, μm ISO 16862 | 500 |

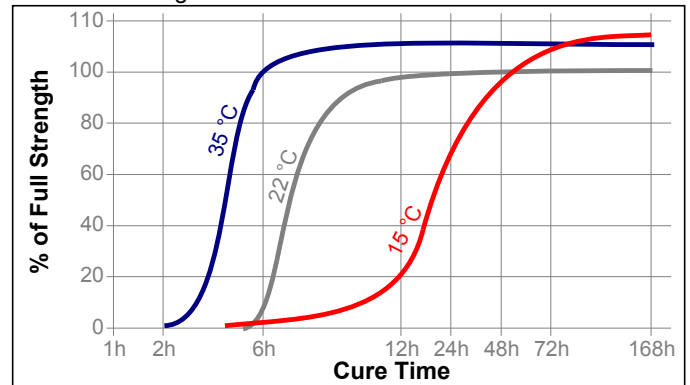
TYPICAL CURING PERFORMANCE

Curing Properties

| | |
|---|----|
| Gel Time, ASTM D2471, minutes | 79 |
| Pot life (1,000 gm mass), @ 25°C, minutes ISO 9514 | 45 |
| Recoat Time @ 25 °C, hours | 2 |

Cure Speed vs. Temperature

The graph below shows the shear strength developed with time on grit blasted steel lap shears at different temperatures and tested according to ISO 4587.



TYPICAL PERFORMANCE OF CURED MATERIAL

Physical Properties:

| | |
|---|--|
| Glass Transition Temperature, ISO 11357-2, °C | 63 |
| Heat Deflection, DIN EN ISO 75-2 °C | 55 |
| Shore Hardness, ISO 868, Shore D | 85 |
| Elongation, ASTM 638, % | 1 |
| Tensile Strength, ISO 527-2 | N/mm ² 51.1 (psi) (7,400) |
| Tensile Modulus, ISO 527-2 | N/mm ² 5,331 (psi) (773,000) |
| Volume Shrinkage, ISO 1675 % | -1.6 |
| Taber Abrasion Resistance, ASTM D4060: 1 Kg load, CS-17 wheels, 1000 cycles | 53 |

Electrical Properties:

| | |
|---|----------------------|
| Dielectric strength, ASTM D149, kV/mm | 7.69 |
| Surface Resistivity, IEC 60093, ohms | 42×10 ¹⁵ |
| Volume Resistivity, IEC 60093, ohm-cm | 260×10 ¹² |
| Cathodic Disbondment, Penetration, mm: ASTM G95, 90 day test | 0 |

Adhesive Properties:

| | | |
|----------------------------------|-------------------|----------------------|
| Lap Shear Strength, ISO 4587: | | |
| Aluminum | N/mm ² | 9.2 (psi) (1,300) |
| Mild Steel (grit blasted) | N/mm ² | 23 (psi) (3,320) |
| Stainless Steel | N/mm ² | 21 (psi) (3,000) |

TYPICAL ENVIRONMENTAL RESISTANCE**Dry Service Temperature Resistance,**

| | |
|--|-----|
| CSA-Z245.20-06/CSA-Z245.21-06 Rating 1, °C | 110 |
|--|-----|

Wet Service Temperature Resistance,

| | |
|--|----|
| CSA-Z245.20-06/CSA-Z245.21-06 Rating 1, °C | 60 |
|--|----|

After storage in hot air for 28 days at 110°C the coating applied on a metal panel:

Rating 1: cannot be removed cleanly

Chemical Resistance

Tables below show chemical resistance @ 25°C, immersed up to 5,000 hours. Please refer to the chemical resistance chart for more detailed description.

Acids

| | | |
|---------------|------|--------------------------------|
| Sulfuric Acid | 40 % | Continuous long term immersion |
|---------------|------|--------------------------------|

Alkalis

| | | |
|--------------------|------|--------------------------------|
| Ammonium Hydroxide | 25 % | Continuous long term immersion |
|--------------------|------|--------------------------------|

Solvents

| | | |
|-----------------|-------|--------------------------------------|
| Deionized Water | 100 % | Continuous long term immersion |
| Salt Water | 10 % | Continuous long term immersion |
| Methanol | 100 % | Spill, splash with immediate cleanup |

Hydrocarbons

| | | |
|-----------------|-------|--------------------------------------|
| Kerosene | 100 % | Continuous long term immersion |
| Petrol Unleaded | 100 % | Spill, splash with immediate cleanup |

GENERAL INFORMATION

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.

For safe handling information on this product, consult the Safety Data Sheet (SDS).

Directions For Use:**Surface Preparation**

Proper surface preparation is critical to the long-term performance of this product. The exact requirements vary with the severity of the application, expected service life, and initial substrate conditions.

- Remove dirt, oil, grease etc with a suitable cleaner, e.g. high pressure water cleaning system using LOCTITE® cleaner/degreaser.
- All skip welds, weld spatter, buckshot, and other surface roughness must be ground down; undercuts and pinholes must be ground and filled. All projections, sharp edges, high points and fillets must be ground to a radius of at least 3mm and all corners must be likewise rounded to maximize product performance.
- Blast all surfaces to be coated with a sharp edged angular grit to a depth of profile of 75 to 100microns, and a degree of cleanliness of Near White Metal (SIS SA 2½ /SSPC-SP 10). For immersion service, a degree of cleanliness of White Metal (SIS SA 3/SSPC-SP 5) is required. Alternately, power tool cleaning methods can be used such as bristle blasting, buffing or equivalent for less severe applications.
- After blasting, metal surfaces should be cleaned, e.g. with a LOCTITE® solvent based, residue free cleaner, and be coated before any oxidation or contamination takes place.
- Metal that has been in contact with salt solutions, e.g. seawater, should be grit blasted and high-pressure water blasted, left for 24 hours to allow any salts in the metal to sweat to the surface. A test for chloride contamination should be performed. The procedure should be repeated until chloride concentration on the surface is below 30mg/m³ (3µg/cm³). Then blast and clean the surface as described on point 3 and 4 above.

Application:

- Add hardener content to resin in a mixed ratio of 100:16 by weight (100:30 by volume), mix it thoroughly until the uniform color is obtained.
- Film thickness per coat: 300 to 500 microns (12 to 20 mils). Minimum of 2 coats is recommended to avoid any pin holes. Layering of two different colors may be used as a wear indicator for re-application.
- Additional coat application may be carried out, if final thickness cannot be achieved or any void spot or pinhole observed or pitted surface with one application wet on wet (during open time window). If this time has elapsed, light abrasive scratching is required, followed by a solvent wash to remove any abrasive residues.
- Ambient and substrate temperature range: 15 to 40 °C (59 to 104 °F).
- Relative humidity: <85 %; substrate temperature must

always be 3 °C higher than the dew point.

- Apply material to prepared surface by first forcing a thin layer deep into the texture of the substrate.
- Then immediately build up to the desired finished thickness.

Inspection

- Visually inspect for pinholes and voids just after application.
- Once the coating has cured, repeat visual inspection to confirm absence of pinholes, voids or damaged areas.
- Control thickness of the coating, especially in the critical areas.
- Perform a test with a holiday detector to confirm coating continuity.

Color

- Color shade variation is possible between the batches and will not affect the performance of the product.

Coverage

To achieve a 0.3 millimeter (12 mils) thickness, the coverage rate will be 1.9 m² 20.5 (ft²) for 1 kg 2.2 (lb), excluding overthicknesses, repairs, etc

Repairs

Any voids, pinholes, low thickness areas found in the coating should be repaired by lightly abrading, cleaning and applying additional product.

Clean-up:

Immediately after use clean tools with a LOCTITE® solvent base cleaner. Once cured, the material can only be removed mechanically.

Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

Optimal Storage: 8 °C to 21 °C. Storage below 8 °C or greater than 28 °C can adversely affect product properties. Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Product Specification

The technical data contained herein are intended as reference only and are not considered specifications for the product. Product specifications are located on the Certificate of Analysis. Please contact a Henkel representative for more information.

Approval and Certificate

Please contact Henkel representative for related approval or certificate of this product.

Data Ranges

The data contained herein may be reported as a typical value. Values are based on actual test data and are verified on a periodic basis.

Temperature/Humidity Ranges: 23 °C / 50% RH = 23+2 °C / 50+5% RH.

Conversions

(°C x 1.8) + 32 = °F
 kV/mm x 25.4 = V/mil
 mm / 25.4 = inches
 µm / 25.4 = mil
 N x 0.225 = lb
 N/mm x 5.71 = lb/in
 N/mm² x 145 = psi
 MPa x 145 = psi
 N·m x 8.851 = lb·in
 N·m x 0.738 = lb·ft
 N·mm x 0.142 = oz·in
 mPa·s = cP

Note:

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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Reference 1.4

