



# LOCTITE® 7117™

June 2012

## PRODUCT DESCRIPTION

LOCTITE® 7117™ provides the following product characteristics:

<b>Technology</b>	Epoxy
<b>Chemical Type</b>	Epoxy
<b>Appearance (Resin)</b>	Black paste
<b>Appearance (Hardener)</b>	Amber to transparent liquid
<b>Appearance (Mixture)</b>	Black
<b>Components</b>	Two part - Resin & Hardener
<b>Mix Ratio, by volume - Resin : Hardener</b>	100 : 30
<b>Mix Ratio, by weight - Resin : Hardener</b>	100 : 16
<b>Cure</b>	Room temperature cure after mixing
<b>Application</b>	Coating
<b>Product Benefits</b>	<ul style="list-style-type: none"> <li>• High wear resistance</li> <li>• High chemical resistance</li> <li>• Gloss finish to reduce friction and turbulence</li> <li>• Excellent adhesion</li> </ul>
<b>Specific Application</b>	<ul style="list-style-type: none"> <li>• Resurfacing and repairing of worn or corroded metal parts</li> <li>• Protecting metal surfaces against abrasive and corrosive agents</li> </ul>

LOCTITE® 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® Nordbak® 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

Density @ 25 °C, g/cm <sup>3</sup>	1.97 to 2.12
Viscosity, Plate to Plate, mPa·s (cP):	
Temperature: 25 °C, Shear Rate: 0.3 s <sup>-1</sup>	520,000
Temperature: 25 °C, Shear Rate: 40 s <sup>-1</sup>	67,000

### Hardener

Density @ 25 °C, g/cm <sup>3</sup>	0.95 to 1.15
Viscosity, Cone & Plate, mPa·s (cP):	
Temperature: 25 °C, Shear Rate: 40 s <sup>-1</sup>	770

## Mixed

Density @ 22 °C	1.72
Viscosity, Plate to Plate, mPa·s (cP):	
Temperature: 25 °C, Shear Rate: 0.3 s <sup>-1</sup>	65,000
Temperature: 25 °C, Shear Rate: 40 s <sup>-1</sup>	27,000
Vertical Sag Resistance, 25 °C, ISO 16862, µm:	500
Flash Point - See MSDS	

## TYPICAL CURING PERFORMANCE

Pot life (1,000 g mass), ISO 9514, minutes:	35 to 55
Recoat time, @ 25 °C, ISO 4587, hours:	1 to 3

## Surface Drying Time - ISO 1517

@ 5 °C, hours	54
@ 15 °C, hours	4
@ 22 °C, hours	3.5
@ 35 °C, minutes	75
@ 45 °C, minutes	45

## TYPICAL PROPERTIES OF CURED MATERIAL

Cured for 7 days @ 22 °C

### Physical Properties:

Glass Transition Temperature, °C:	
(T <sub>g</sub> ) by TMA ISO 11359-2	63
Shore Hardness, ISO 868, Durometer D	86
Compressive Strength, ISO 604	N/mm <sup>2</sup> 105
	(psi) (15,200)
Compressive Modulus, ISO 604	N/mm <sup>2</sup> 4,500
	(psi) (652,500)

### Electrical Properties:

Dielectric Strength, IEC 60243-1, kV/mm	0.63
Dielectric Constant / Dissipation Factor, IEC 60250:	
@ 1kHz	8.91/0.024
@ 10kHz	8.7/0.019
@ 1MHz	8.27/0.019

## TYPICAL PERFORMANCE OF CURED MATERIAL

Cured for 7 days @ 22 °C



Lap Shear Strength, ISO 4587, N/mm <sup>2</sup> : Grit Blasted Mild Steel	23
Cathodic Disbondment, Penetration, mm: (ASTM G 95, 90 day test)	0
Dry Service Temperature Resistance, °C (CSA-Z245.20-06/CSA-Z245.21-06 Rating 1)	110
Wet Service Temperature Resistance, °C (CSA-Z245.20-06/CSA-Z245.21-06 Rating 1)	60
Miller Wear Resistance, Volume Lost, mm <sup>3</sup> (ASTM G75, alumina F220, 6 hour test)	354

- Blast all surfaces to be coated with a sharp edged angular grit to a depth of profile of 75 to 100 microns, 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.
- After blasting, metal surfaces should be cleaned, e.g. with Loctite® 7063™ or Loctite® ODC Free Cleaner and Degreaser, 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 40 ppm.

## TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 7 days @ 22 °C

### Chemical Resistance

Tables below show chemical resistance @ 22°C. Tested on product specimens, immersed up to 5,000 hours @ 22°C in fluids indicated.

#### Acids

10 % hydrochloric	Continuous long term immersion
36 % hydrochloric	Continuous long term immersion
10 % sulphuric	Continuous long term immersion
10 % nitric	Continuous long term immersion
5 % phosphoric	Continuous long term immersion

#### Alkalis

40 % sodium hydroxide	Continuous long term immersion
25 % ammonium hydroxide	Continuous long term immersion
36 % ammonium sulphate	Continuous long term immersion
30 % hydrogen peroxide	Short term or intermittent immersion

#### Solvents

Deionized Water	Continuous long term immersion
10% Salt Water	Continuous long term immersion
Methanol	Spill, splash with immediate cleanup
Methylethylketone (MEK)	Spill, splash with immediate cleanup
Xylene	Continuous long term immersion

## 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 Material Safety Data Sheet (MSDS).**

### 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® 7840™ or Loctite® Natural Blue® cleaner/degreaser.
- All skip welds, weld splatter, buckshot, and other surface roughness must be ground down and smoothed; undercuts and pinholes must be ground smooth and filled. All projections, sharp edges, high points and fillets must be ground smooth to a radius of at least 3mm and all corners must be likewise rounded to maximize product performance.

### Application:

- Film thickness per coat: 300 to 500 microns.
- Ambient and substrate temperature range: 15 to 40 °C.
- Relative humidity: <85 %; substrate temperature must always be 3 °C higher than the dew point.

### Mixing:

- Material temperature should be between 20 °C to 40 °C.
- Add hardener contents to resin. Mix material vigorously until uniform in color. Be sure to mix along the bottom and sides of mixing container. Mix three to five minutes.

Multiple coat application may be carried out, once the film has gelled, but not cured beyond the maximum recoat time. If this time has elapsed, light abrasive blasting is required, followed by a solvent wash to remove any abrasive residues.

### Inspection

- Visually inspect for pinholes and misses just after application.
- Once the coating has cured, repeat visual inspection to confirm freedom from pinholes, misses and mechanical damages.
- Control thickness of the coating, especially in the critical points.
- Perform a test with a holiday detector to confirm coating continuity.

### Repairs

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

### Clean-up

1. Immediately after use clean tools with suitable cleaner, e.g. Terostat® 8550. Once cured, the material can only be removed mechanically.

### Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on specifications for this product.

### Storage

Store product in the unopened container in a dry location. Material removed from containers may be contaminated during use. Do not return liquid to original container. 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.**

Henkel cannot assume responsibility for product which has been contaminated or stored under conditions other than those recommended. If additional information is required, please

contact your local Technical Service Center or Customer Service Representative.

**Conversions**

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$

$\text{kV/mm} \times 25.4 = \text{V/mil}$

$\text{mm} / 25.4 = \text{inches}$

$\mu\text{m} / 25.4 = \text{mil}$

$\text{N} \times 0.225 = \text{lb}$

$\text{N/mm} \times 5.71 = \text{lb/in}$

$\text{N/mm}^2 \times 145 = \text{psi}$

$\text{MPa} \times 145 = \text{psi}$

$\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$

$\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$

$\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$

$\text{mPa}\cdot\text{s} = \text{cP}$

**Note**

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Reference 0.1