

LOCTITE® PC 3473

Known as LOCTITE® Fixmaster® Fast Set Steel Putty
December 2013

PRODUCT DESCRIPTION

LOCTITE® PC 3473 provides the following product characteristics:

Technology	Epoxy
Appearance (uncured)	Steel Colored Paste ^{LMS}
Mix Ratio, by volume - Resin : Hardener	1 : 1
Mix Ratio, by weight - Resin : Hardener	100 : 56.5
Cure	Room temperature cure
Application	Industrial maintenance
Specific Benefit	<ul style="list-style-type: none"> • Hardens in ten minutes • Non sagging • Steel filled system - cures to metal-like finish • Bonds to steel, cast iron, stainless steel, concrete, copper, aluminum, and clean and abraded bronze

LOCTITE® PC 3473 is a fast curing, steel reinforced, two-part epoxy designed for making fast and curable repairs to a variety of metals. This product is typically used in applications with an operating range of -30 °C to 95 °C (-22F to 200F). Typical applications include stripped threads, repairing leaks on pipes and elbows, rebuilding worn shafts and work surfaces in pumps and coating metal surfaces subject to wear.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Resin:

Weight per volume	kg/L	2.5 to 2.64
	(lbs/gal)	(20.9 to 21.99 ^{LMS})

Flash Point - See SDS

Hardener:

Weight per volume	kg/L	1.5 to 1.54
	(lbs/gal)	(12.5 to 12.8 ^{LMS})

Flash Point - See SDS

Mixed:

Coverage	370 cm ² @ 6 mm thick per 454 gm container (57 in ² @ 0.25 in thick per 1 lb container)
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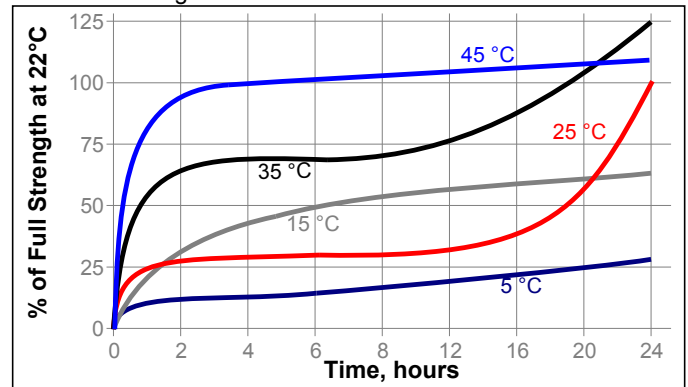
TYPICAL CURING PERFORMANCE

Curing Properties

Cure Time @ 25 °C, minutes	10
Gel Time @ 21 °C, minutes	3.5 to 4

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 PROPERTIES OF CURED MATERIAL

Cured @ 25 °C except where noted

Physical Properties:

Abrasion Resistance, ASTM D4060: mg 1 Kg load, CS-10 wheels, Weight of Material Lost	149
Shore Hardness, ISO 868, Shore D	80
Flexural strength, ASTM D790	N/mm ² 32 (psi) (4,660)
Flexural modulus, ASTM D790	N/mm ² 1,655 (psi) (240,130)
Compressive Strength, ISO 604	N/mm ² 51 (psi) (7,380)
Compressive Modulus, ISO 604	N/mm ² 2,075 (psi) (300,820)
Tensile Strength, ISO 527-2	N/mm ² 27 (psi) (3,970)
Tensile Modulus, ISO 527-2	N/mm ² 6,710 (psi) (972,830)
Elongation, ISO 527-2, %	0.56

Coefficient of Thermal Conductivity ASTM F 433, W/(m·K)	0.511
Glass Transition Temperature, ASTM E 1640, °C	24
Coefficient of Thermal Expansion, ISO 11359-2 K ⁻¹ :	
Below Tg	33×10 ⁻⁰⁶
Above Tg	120×10 ⁻⁰⁶

Electrical Properties:

Volume Resistivity, IEC 60093, ohm-cm	120×10 ¹²
Surface Resistivity, IEC 60093, ohms	3.3×10 ¹⁵

TYPICAL PERFORMANCE OF CURED MATERIAL**Shear Strength**

Lap Shear Strength, ISO 4587:	
Grit Blasted Mild Steel (GBMS)	N/mm ² 15 (psi) (2,190)

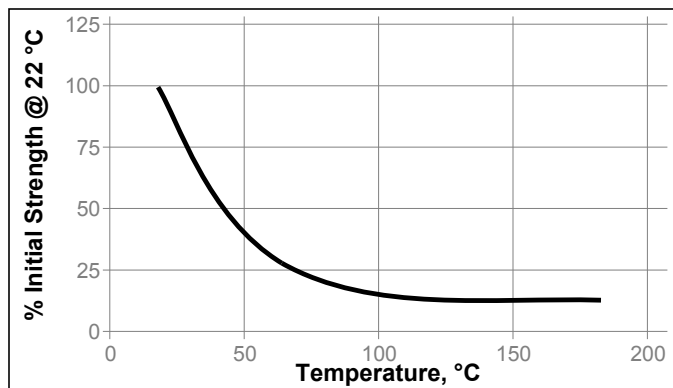
TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 72 hours @ 21 °C

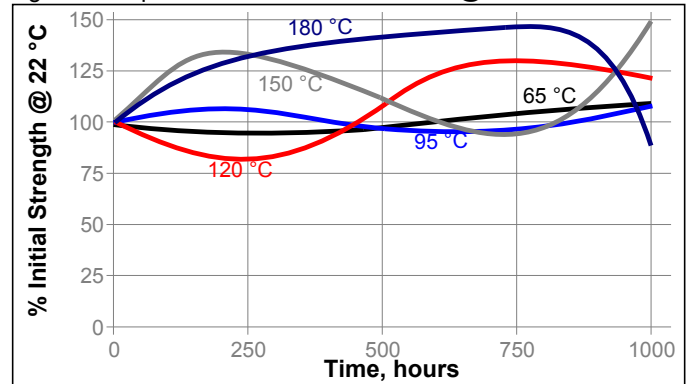
Lap Shear Strength, ISO 4587:	
Grit Blasted Mild Steel (GBMS)	

Hot Strength

Tested at temperature

**Heat Aging**

Aged at temperature indicated and tested @ 22 °C

**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.

Metal:

1. Clean, dry and abrade application surface. The more thorough the degree of surface preparation the better the performance of the application. If possible, it is recommended that the surface be grit-blasted to a Near White Metal (SSPC-SP10/NACE No. 2) Standard. For less severe applications, roughening the surface with hand tools is suitable.
2. Solvent cleaning with a residue-free solvent is recommended at the final step to aid in adhesion.

Mixing:

1. Mix 1 part resin to 1 part hardener by volume (100 to 56.5 by weight), or transfer entire kit onto a clean and dry mixing surface and mix thoroughly until color is consistent.

Application Method:

1. Apply fully mixed material to the prepared surface .
2. At 25 °C working time is 3 minutes and functional cure time is 10 minutes.

If using to rebuild shaft, the following applies:

1. Machine the worn area down 0.3mm (0.125 in) to produce a square shoulder on part. The material is stronger with a square edge versus a feathered edge.
2. Machine a spiral cut in bottom of area to be repaired to provide mechanical keying into surface.
3. Apply excess product to ensure small shrinkage during cure does not produce depression.
4. Machine the surface to original dimensions prior to full cure, as the product is very wear resistant.

Technical Tips for Working With Epoxies

Working time and cure depends on temperature and mass:

- The higher the temperature, the faster the cure.
- The larger the mass of material, the faster the cure.

To speed the cure of epoxies at low temperatures:

- Store epoxy at room temperature.
- Pre-heat repair surface until warm to the touch.

To slow the cure of epoxies at high temperatures:

- Mix epoxy in small masses to prevent rapid curing.
- Cool resin/hardener component(s).

Loctite Material Specification^{LMS}

LMS dated February 13, 2003 (Resin) and LMS dated July 3, 2001 (Hardener). Test reports for each batch are available for the indicated properties. LMS test reports include selected QC test parameters considered appropriate to specifications for customer use. Additionally, comprehensive controls are in place to assure product quality and consistency. Special customer specification requirements may be coordinated through Henkel Loctite Quality.

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.

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:

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 0.2