LOCTITE® Nordbak® Pneu-Wear™

July 2015

PRODUCT DESCRIPTION

LOCTITE® Nordbak® Pneu-Wear™ provides the following product characteristics:

Technology	Epoxy
Chemical Type	Epoxy
Appearance (Resin)	Grey[LMS]
Appearance (Hardener)	Grey[LMS]
Components	Two component - requires mixing
Mix Ratio, by weight - Resin : Hardener	4 : 1
Mix Ratio, by volume - Resin : Hardener	4 : 1
Cure	Room temperature cure
Application	Abrasion resistance
Specific Benefit	• Small ceramic bead filled - resists fine particle abrasion • Prolongs equipment life • Easy to mix and use • Renews worn surfaces fast - reduces downtime • Non sag - provides abrasion resistance on over-head and vertical surfaces

LOCTITE® Nordbak® Pneu-Wear™ is a small ceramic bead filled two-part epoxy putty, designed to protect equipment from fine particle abrasion in wet and dry service. Typical applications include providing a protective lining in pneumatic conveyor systems and repairing and providing abrasion resistance in elbows, slurry pumps, hoppers, cyclones and dust collectors under service temperatures of -30 to 120°C (-20 to 250F).

TYPICAL PROPERTIES OF UNCURED MATERIAL

Resin:

Weight per volume	kg/L (lbs/gal)	2.02 to 2.15 (16.8 to 17.9[LMS])
Flash Point - See SDS		

Hardener:

Weight per volume	kg/L (lbs/gal)	2.07 to 2.19 (17.2 to 18.2[LMS])
Flash Point - See SDS		

Mixed:

Density @ 23 °C, g/cm³	2.02
Coverage	0.8 m² @ 0.63 cm thick/11 kg (8.7 ft² @ 0.25 inch thick/25 lb)

Flash Point - See SDS

TYPICAL CURING PERFORMANCE

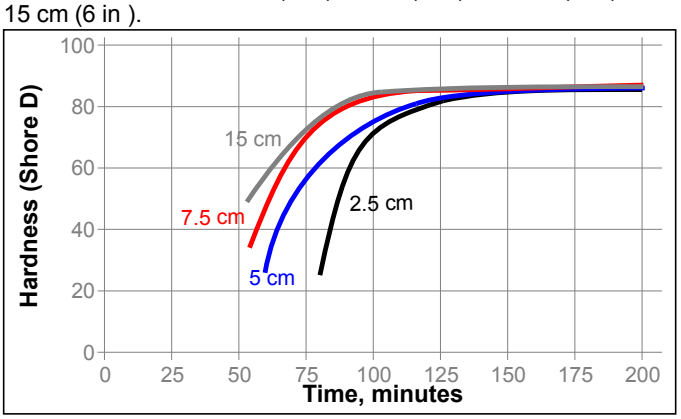
Curing Properties

Working Time @ 25 °C, minutes	30
Gel Time @ 25 °C, minutes	35 to 55[LMS]
Cure Time @ 25 °C, hours	6

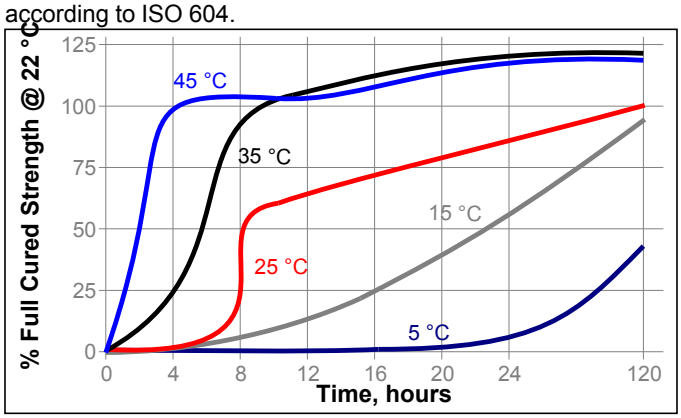
Time until Hard to touch (Shore D = 20), @ 23°C, minutes:	
2.5 cm (1 in) surface depth	75
5 cm (2 in) surface depth	65
7.5 cm (3 in) surface depth	60
15 cm (6 in) surface depth	55
Finishing Time (time material can be smoothed), @23°C, minutes:	
2.5 cm (1 in) surface depth	60
5 cm (2 in) surface depth	55
7.5 cm (3 in) surface depth	50
15 cm (6 in) surface depth	45

Hardness

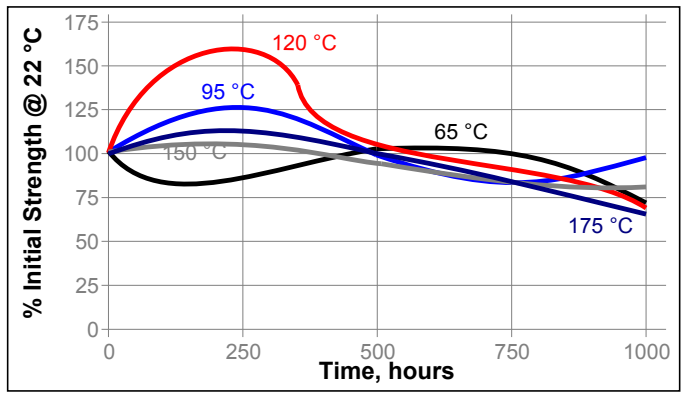
The graph below shows the development of hardness as a function of time and surface thickness. Surface thicknesses were 2.5 cm (1 in), 5 cm (2 in), 7.5 cm (3 in), and 15 cm (6 in).



Cure Speed vs. Temperature
The graph below shows the compressive shear strength developed with time at different temperatures and tested according to ISO 604.



Heat Aging
Aged at temperature indicated and tested @ 22 °C



TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties:

Hardness (Shore D), ASTM D2240		86
Coefficient of Thermal Conductivity ASTM F 433, W/(m·K)		0.891
Glass Transition Temperature ISO 11359-2, °C		61
Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}:		
Below Tg		25×10^{-06}
Above Tg		78×10^{-06}
Compressive Strength, ISO 604	N/mm² (psi)	103 (14,900)
Compressive Modulus, ISO 604	N/mm² (psi)	5,120 (742,200)
Tensile Strength, ISO 527-2	N/mm² (psi)	17.5 (2,550)
Tensile Modulus, ISO 527-2	N/mm² (psi)	6,610 (958,600)
Elongation at break, %	0.3	
Flexural strength , ASTM D790	N/mm² (psi)	56 (8,150)
Flexural modulus , ASTM D790	N/mm² (psi)	5,410 (784,620)

Electrical Properties:

Volume Resistivity, IEC 60093, ohm-cm	20×10^{12}
Surface Resistivity, IEC 60093, ohms	1.1×10^{15}

TYPICAL PERFORMANCE OF CURED MATERIAL

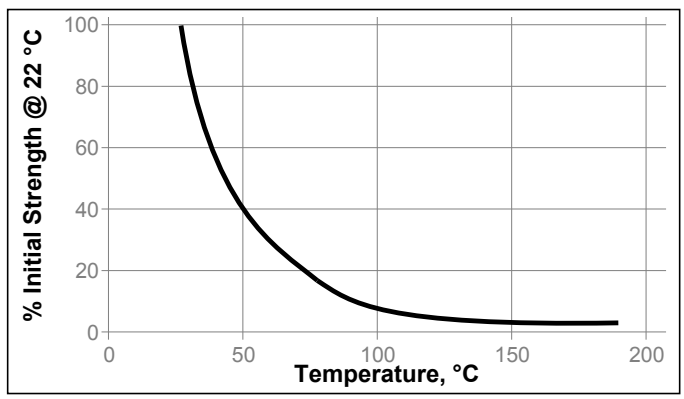
Lap Shear Strength, ISO 4587:

Grit Blasted Mild Steel (GBMS)	N/mm² (psi)	5.5 (795)

TYPICAL ENVIRONMENTAL RESISTANCE

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

Hot Strength
Tested at temperature
Compressive Shear Strength, ISO 604



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.

1. Thoroughly clean and abrade surfaces (grit blast if possible), finally clean with a Loctite® cleaning solvent, e.g. Loctite® 7063™ or Loctite® ODC-Free Cleaner & Degreaser. The more thorough the degree of surface preparation the better the performance of the application.
2. Optionally, a low viscosity epoxy material such as Loctite® 7227™ or Loctite® Brushable Ceramic™ may be used

as a primer on the surface.

3. On vertical or overhead areas, it is recommended to tack expanded metal mesh to substrate before application of LOCTITE® Nordbak® Pneu-Wear™.

Mixing:

1. Measure 4 parts resin to 1 parts hardener by volume or weight.
2. Transfer measured quantities or entire kit onto a clean and dry mixing surface and mix together with a trowel until uniform in color.
3. If mixing larger quantities, a spiral mixing blade attached to a high torque electric or pneumatic drill can be used.
4. If resin and hardener temperatures are 15 °C or below, preheat resin only to about 32 °C but not to exceed 38 °C.

Application Method:

1. Apply fully mixed material to the prepared surface .
2. With gloved hand, take a 25mm (1in) ball of mixed material and rub the surface to apply a scratch coat. By wetting out the surface, it ensures the best possible surface contact and avoids air entrapment.
3. Build up to desired thickness (minimum 6 mm), avoid air entrapment.
4. At 25 °C working time is 30 minutes and functional cure time is 6 hours.

Smoothing:

If a smooth surface is desired, there are three possible ways to accomplish it.

1. For small or curved areas, apply a small amount of isopropanol alcohol or acetone to the top of the compound and smooth using either a gloved hand or trowel, as the solvent prevents sticking. Do not use water as it produces a white film on the finished surface and do not mix the solvent into the epoxy.
2. For large or flat areas, a sheet of non-stick Polyethylene or Polypropylene can be applied to the surface. Once the material has been cured, it can be pulled off, leaving a smooth surface.
3. A top coat of Brushable Ceramic can be applied on the surface once cured. Ideally, this should be done while the surface is still tacky.

Caution: Use approved, positive-pressure, supplied-air respirator when welding or torch cutting near cured compound. Use approved self-contained breathing apparatus when burning, welding, or torch cutting indoors near cured compound. Use approved respirator for dusts and mists when grinding or machining cured compound. **DO NOT** use open flame on compound. See other cautions on Material Safety Data Sheet.

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 July 03, 2001 (Resin) and LMS dated July 03, 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. 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

(°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

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Reference 0.3