LOCTITE® Nordbak® Chemical Resistant Coating™

February 2013

PRODUCT DESCRIPTION

LOCTITE® Nordbak® Chemical Resistant Coating™ provides the following product characteristics:

Technology	Epoxy
Chemical Type	Epoxy
Appearance (Resin)	Grey[LMS]
Appearance (Hardener)	Amber[LMS]
Appearance (Mixture)	Grey Liquid
Components	Two component - requires mixing
Mix Ratio, by weight - Resin : Hardener	3.4 : 1
Mix Ratio, by volume - Resin : Hardener	2.3 : 1
Cure	Room temperature cure
Application	Chemical resistance
Specific Benefit	• Protects surfaces from extreme chemical attack • Easy to mix and use • Brush applied • Smooth finish protects against friction and turbulence • Superior adhesion - bonds well to all metal substrates

LOCTITE® Nordbak® Chemical Resistant Coating™ is designed to protect equipment and concrete against extreme corrosion caused by chemical exposure, especially to sulfuric acid. LOCTITE® Nordbak® Chemical Resistant Coating™ forms a glossy, low friction surface under typical service temperatures of -29 to 65 °C. Typical applications include coating equipment to prevent corrosion, line tanks and chutes, chemical containment areas, concrete pits, tanks, floors and foundations.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Resin:

Viscosity, Brookfield - RV, 25 °C, mPa·s (cP):
Spindle 7, speed 20 rpm: 40,000 to 60,000[LMS]

Weight per volume: kg/L 1.55 to 1.62; (lbs/gal) (12.9 to 13.5[LMS])

Flash Point - See SDS

Hardener:

Viscosity, Brookfield - RV, 25 °C, mPa·s (cP):
Spindle 3, speed 20 rpm: 400 to 850[LMS]

Weight per volume: kg/L 1.03 to 1.09; (lbs/gal) (8.6 to 9.1[LMS])

Flash Point - See SDS

Mixed:

Viscosity, Cone & Plate, 25 °C, mPa·s (cP):
Shear rate 10 s^{-1}: 5,000

Density @ 23 °C, g/cm³: 1.43

Coverage: 6.8 m² @ 0.5 mm thick/5.5 kg (74 ft² @ 20 mil thick/12 lb)

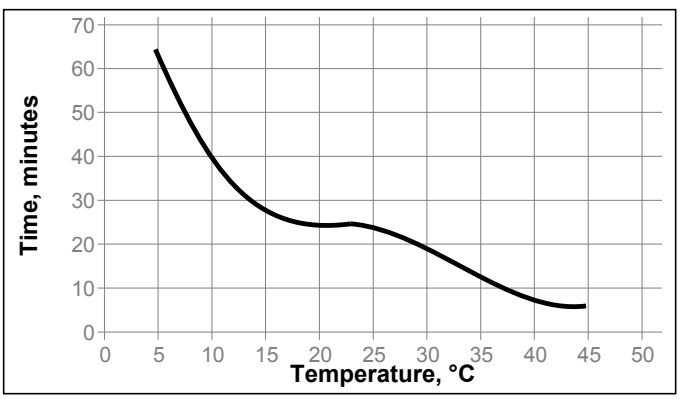
Flash Point - See SDS

TYPICAL CURING PERFORMANCE

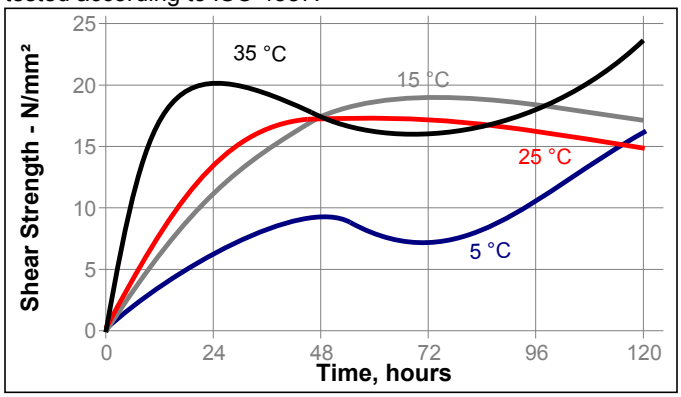
Curing Properties

Gel Time @ 25 °C, hours	28 to 40[LMS]
Recoat Time @ 25 °C, hours	1 to 4
Wet Temperature Resistance, °C	>93

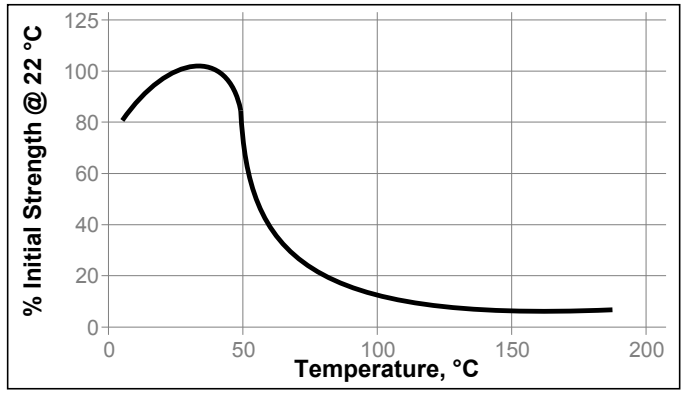
Working Life



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.



Hot Strength
Tested at temperature



TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties:

Shore Hardness, ISO 868, Shore D			85
Abrasion Resistance, ASTM D4060: mg 1 Kg load, CS-10 wheels, Weight of Material Lost			49.1
Coefficient of Thermal Conductivity ASTM F 433, W/(m·K)			0.421
Glass Transition Temperature ISO 11359-2, °C			56
Coefficient of Thermal Expansion, ISO 11359-2 K^{-1}:			
Below Tg			51×10^{-06}
Above Tg			137×10^{-06}
Compressive Strength, ISO 604		N/mm² (psi)	68 (9,840)
Compressive Modulus, ISO 604		N/mm² (psi)	3,740 (542,250)
Tensile Strength, ISO 527-2		N/mm² (psi)	33 (4,760)
Tensile Modulus, ISO 527-2		N/mm² (psi)	4,450 (645,100)
Elongation at break, %	1.0		
Flexural strength , ASTM D790		N/mm² (psi)	56 (8,120)
Flexural modulus , ASTM D790		N/mm² (psi)	3,815 (553,300)

Electrical Properties:

Volume Resistivity, IEC 60093, ohm-cm	350×10^{12}
Surface Resistivity, IEC 60093, ohms	0.3×10^{15}

TYPICAL PERFORMANCE OF CURED MATERIAL

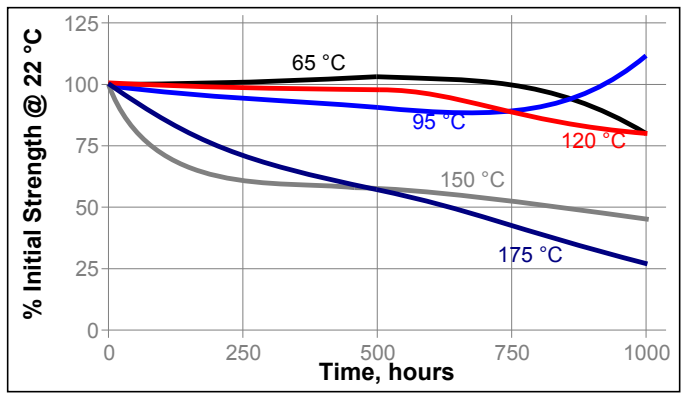
Lap Shear Strength, ISO 4587:

Grit Blasted Mild Steel (GBMS)	N/mm² (psi)	18.2 (2,650)

TYPICAL ENVIRONMENTAL RESISTANCE

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

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

Concrete:

1. Concrete must be cured for at least 30 days.
2. Remove all grease, oil and dirt by washing thoroughly. Remove all surface contaminants such as old coating, loose conrete and dust by dry abrasive blasting, water blasting, scarifying or by acid etching and thoroughly rinsing.
3. Prepared surface must be rough with no excess of water. Surface profile CSP3 to CSP5 (ICRI - standard guideline 03732).
4. All surface irregularities, such as joints, holes, pores and cracks must be filled.
5. Concrete must be completely dry prior to application of product.

Mixing:

1. Material temperature should be between 18 to 27 °C.
2. Mix the entire contents of resin and hardener. If smaller amounts are required, mix 2.3 parts resin to 1 part hardener by volume, or 3.4 parts resin to 1 Part hardener by weight.
3. Mix vigorously, 3 to 5 minutes, until a uniform color is obtained.

Application Method:

1. Apply fully mixed material to the prepared surface .
2. Material can be applied with a brush or a 3/8 nap roller with a good core.
3. Immediately clean any contaminated skin or clothing with soap and water.

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 June 26, 2001 (Resin) and LMS dated June 27, 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 1.4