



# LOCTITE<sup>®</sup> Nordbak<sup>®</sup> Brushable Ceramic Gray

June 2012

## PRODUCT DESCRIPTION

LOCTITE<sup>®</sup> Nordbak<sup>®</sup> Brushable Ceramic Gray provides the following product characteristics:

<b>Technology</b>	Epoxy
<b>Chemical Type</b>	Epoxy
<b>Appearance (Resin)</b>	Grey <sup>LMS</sup>
<b>Appearance (Hardener)</b>	Amber <sup>LMS</sup>
<b>Appearance (Mixture)</b>	Gray flowable liquid
<b>Components</b>	Two component - requires mixing
<b>Mix Ratio, by volume - Resin : Hardener</b>	2.75 : 1
<b>Mix Ratio, by weight - Resin : Hardener</b>	4.8 : 1
<b>Cure</b>	Room temperature cure
<b>Application</b>	Coating
<b>Specific Benefit</b>	<ul style="list-style-type: none"> <li>• Ceramic and silicon carbide filled - to provide maximum protection</li> <li>• Ultra-smooth brushable consistency</li> <li>• Easy to mix and use</li> <li>• Reduces downtime</li> <li>• Superior adhesion - forms a solid bond</li> </ul>

LOCTITE<sup>®</sup> Nordbak<sup>®</sup> Brushable Ceramic Gray is an ultra smooth, ceramic reinforced epoxy that provides a high gloss, low friction coating designed to protect against turbulence and abrasion under typical dry service temperatures of -29 °C to 120 °C. Used by itself, LOCTITE<sup>®</sup> Nordbak<sup>®</sup> Brushable Ceramic Gray is recommended for sealing and protecting equipment from corrosion and wear. It also works as a top coat over Loctite<sup>®</sup> Nordbak<sup>®</sup> Wearing Compounds for applications requiring surface rebuilding and lasting protection. Typical applications include providing a smooth, protective abrasion resistant coating, repairing heat exchangers and condensers, lining tanks and chutes, resurfacing and repairing rudders and pintel housings, and repairing cooling pump impellers and butterfly valves.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

### Resin:

Viscosity, Brookfield - RV, 25 °C, mPa·s (cP):  
 Spindle 7, speed 10 rpm, 200,000 to 260,000<sup>LMS</sup>  
 Weight Per Gallon, lbs/gal 14.35 to 14.85<sup>LMS</sup>

### Hardener:

Viscosity, Brookfield - RV, 25 °C, mPa·s (cP):  
 Spindle 2, speed 20 rpm, 500 to 900<sup>LMS</sup>  
 Weight Per Gallon, lbs/gal 8.6 to 8.9<sup>LMS</sup>

### Mixed:

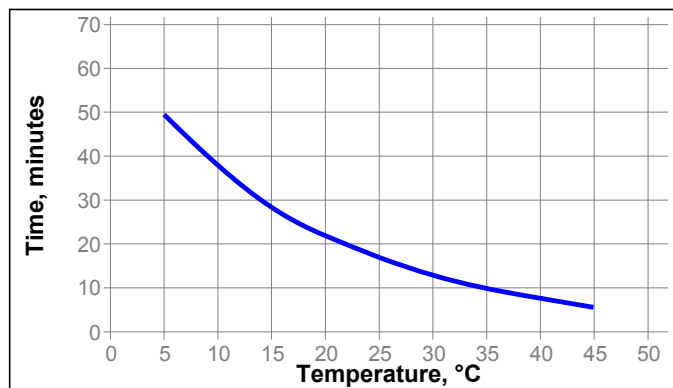
Viscosity, Cone & Plate, 25 °C, mPa·s (cP):  
 Shear rate 10 s<sup>-1</sup> 20,000  
 Coverage 1.1 m<sup>2</sup> @ 0.5 mm thick/0.9 kg  
 (12 ft<sup>2</sup> @ 20 mils thick/2 lb)

## TYPICAL CURING PERFORMANCE

### Curing Properties

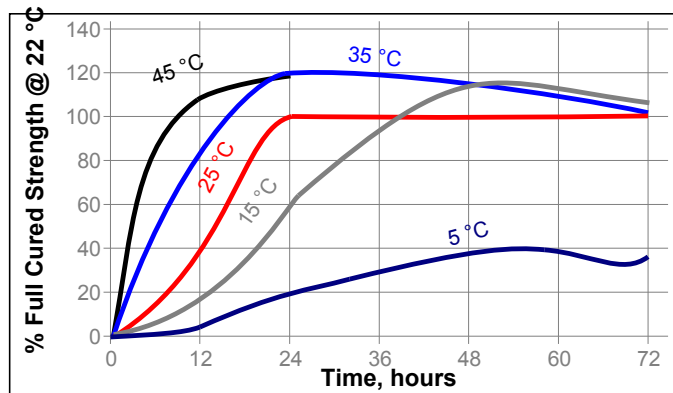
Gel Time @ 25 °C, minutes:  
 400 g mass 34 to 48<sup>LMS</sup>  
 Recoat Time @ 25 °C, hours 1 to 3

### 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.



**TYPICAL PROPERTIES OF CURED MATERIAL**

Cured for 7 days @ 25 °C

**Physical Properties:**

Compressive Strength, ISO 604	N/mm <sup>2</sup>	70
	(psi)	(10,180)
Compressive Modulus, ISO 604	N/mm <sup>2</sup>	3,855
	(psi)	(558,900)
Tensile Strength, ISO 527-2	N/mm <sup>2</sup>	30
	(psi)	(4,370)
Tensile Modulus, ISO 527-2	N/mm <sup>2</sup>	6,900
	(psi)	(1,000,930)
Flexural strength , ASTM D790	N/mm <sup>2</sup>	62
	(psi)	(9,050)
Flexural Modulus , ASTM D790	N/mm <sup>2</sup>	5,305
	(psi)	(769,200)
Elongation, at break, ISO 527-2, %		0.7
Coefficient of Thermal Expansion, ISO 11359-2 K <sup>-1</sup> :		
Pre Tg		47×10 <sup>-6</sup>
Post Tg		136×10 <sup>-6</sup>
Shore Hardness, ISO 868, Durometer D		85
Glass Transition Temperature, °C:		
(Tg) via TMA ISO 11359-2		59
Volume Shrinkage, ISO 1675, %		1.8
Water Vapor Transmission Rate, ASTM E96:		
Permeance, grams/Pa·s·m <sup>2</sup>		8.5×10 <sup>-11</sup>
Coefficient of Thermal Conductivity, ISO 8302, W/(m·K)		0.53
Abrasion Resistance, ASTM D4060: mg		12
1 Kg load, CS-10 wheels, Weight of Material Lost		
Heat Deflection Temperature, ASTM D648, °C		46
<b>Electrical Properties:</b>		
Volume Resistivity, IEC 60093, Ω·cm		3.7×10 <sup>13</sup>
Surface Resistivity, IEC 60093, Ω		5.8×10 <sup>14</sup>

**TYPICAL PERFORMANCE OF CURED MATERIAL****Adhesive Properties**

Cured for 7 days @ 25 °C

Lap Shear Strength, ISO 4587:		
Steel (grit blasted)	N/mm <sup>2</sup>	21
	(psi)	(3,020)

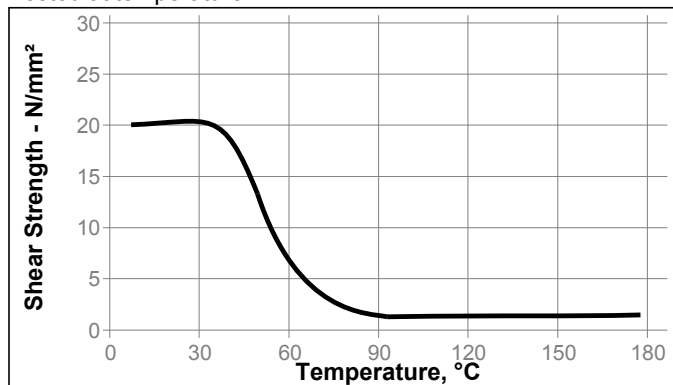
**TYPICAL ENVIRONMENTAL RESISTANCE**

Cured for 72 hours @ 25 °C

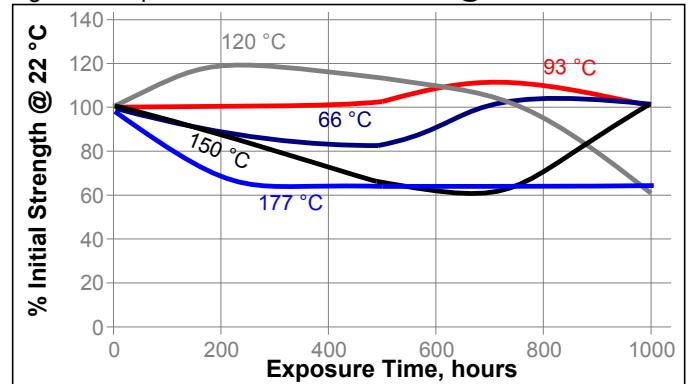
Lap Shear Strength, ISO 4587:		
Steel (grit blasted)		

**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.

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 as the final step to aid in adhesion.
3. If flash rusting occurs, it must be removed from the application surface before applying the material. Flash rusting could be prevented by immediately applying a thin film of mixed material before the corrosion appears.

**Mixing:**

1. Material temperature should be between 20 °C to 30 °C.
2. 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.
3. Proper mix ratios are essential to the performance of this material, if mixing a partial kit it is very important to calculate the proper amounts and measure the resin and hardener before mixing.

**Application Method:**

1. Apply fully mixed material to the prepared surface using a short bristle brush or plastic spatula.
2. Immediately clean tools and any contaminated skin or clothing with soap and water.

**Caution:** Use an approved, positive-pressure, supplied air respirator when welding or torch cutting near cured compound. **Do Not** use open flame on compound.

**Loctite Material Specification<sup>LMS</sup>**

LMS dated May 22, 2001 (Resin) and LMS dated May 22, 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**

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

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

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

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

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

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

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

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

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

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

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

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

**Note**

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Reference 1.3