Technical Data Sheet

LOCTITE® EA 3423™

Known as Loctite® 3423™
November 2014

PRODUCT DESCRIPTION

LOCTITE® EA 3423™ provides the following product characteristics:

Technology	Epoxy
Chemical Type	Epoxy
Appearance (Resin)	Grey paste[LMS]
Appearance (Hardener)	Beige paste[LMS]
Appearance (Mixture)	Grey paste
Components	Two part - Resin & Hardener
Viscosity	Thixotropic
Mix Ratio, (by volume) Resin : Hardener	1 : 1
Mix Ratio, by weight - Resin : Hardener	100 : 70
Cure	Room temperature cure after mixing
Application	Bonding
Key Substrates	Metals , Ceramics, Rigid plastics and Wood

LOCTITE® EA 3423™ is a two component, high viscosity, thixotropic epoxy adhesive which cures at room temperature after mixing. It is a general purpose, non sag adhesive which develops high strength on a wide range of substrates. The thixotropic properties enable this adhesive system to bond rough vertical surfaces made from metal, ceramic, rigid plastics or wood through gaps of up to 3 mm. When cured, the adhesive can be sanded to a smooth finish.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Resin Properties

Specific Gravity @ 25 °C 1.3 to 1.36[LMS]
Flash Point - See SDS
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):
Spindle 7, speed 5 rpm 100,000 to 400,000

Hardener Properties

Specific Gravity @ 25 °C 0.95 to 1[LMS]
Flash Point - See SDS
Viscosity @ 25°C, Cone & Plate Rheometer, mPa·s (cP):
Shear Gradient: 30 s^{-1} 70,000 to 110,000[LMS]
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):
Spindle 7, speed 5 rpm 200,000 to 500,000

Mixed Properties

Pot Life @ 25°C, minutes:
200 g mass 30 to 60[LMS]

TYPICAL CURING PERFORMANCE

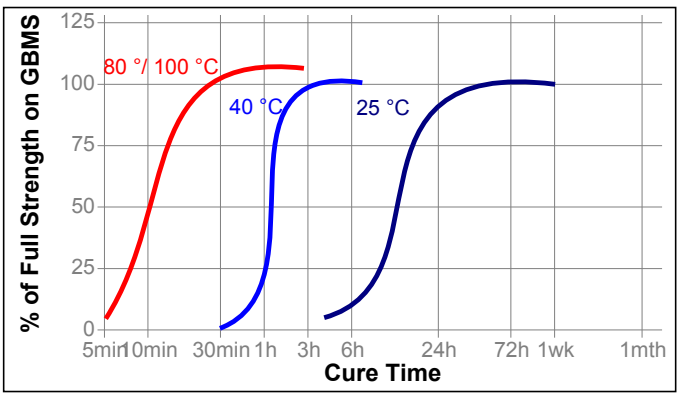
Fixture Time

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm² .

Fixture Time, @ 22°C, hours 3

Cure Speed vs. Time/Temperature

LOCTITE® EA 3423™ develops high strength at room temperature within 12 hours. The rate of cure will depend on the ambient temperature, elevated temperatures may be used to accelerate the cure. 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

4 mm thick samples cured for 7days @ 22°C
Physical Properties :
Coefficient of Thermal Expansion ISO 11359-2, K^{-1}:
Temperature Range: 20 °C to 35 °C 31×10^{-6}
Temperature Range: 85 °C to 200 °C 192×10^{-6}

1.2 mm thick samples cured for 7days @ 22°C
Physical Properties :
Coefficient of Thermal Conductivity, ISO 8302, 0.28

W/(m-K)		
Shore Hardness, ISO 868, Durometer D		70 to 80
Glass Transition Temperature, ASTM E 1640, °C		55
Elongation , ISO 527-3,%		2
Tensile Strength, ISO 527-3	N/mm²	24
	(psi)	(3,500)
Tensile Modulus , ISO 527-3	N/mm²	1,500
	(psi)	(220,000)
Compressive Strength, ISO 604	N/mm²	64
	(psi)	(9,300)

Electrical Properties :

Volume Resistivity, IEC 60093, Ω·cm	30×10^{15}
Surface Resistivity, IEC 60093, Ω	400×10^{15}
Dielectric Constant / Dissipation Factor, IEC 60250:	
1 kHz	2.9 / 0.01
1 MHz	2.7 / 0.02
10 MHz	2.7 / 0.02

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 7days @ 22°C, tested at 22 °C.

Lap Shear Strength , ISO 4587:

Steel (grit blasted)	N/mm²	15 to 19
	(psi)	(2,200 to 2,800)
Stainless steel (grit blasted)	N/mm²	13 to 17.5
	(psi)	(1,900 to 2,500)
Aluminum (abraded)	N/mm²	7 to 12
	(psi)	(1,000 to 1,700)
Aluminum (etched)	N/mm²	7 to 11
	(psi)	(1,000 to 1,600)
Galvanized Steel (HD)	N/mm²	5 to 11
	(psi)	(730 to 1,600)
Zinc dichromate	N/mm²	6.5 to 10.5
	(psi)	(940 to 1,500)
Brass	N/mm²	4 to 12
	(psi)	(580 to 1,700)
GRP (smooth skim side)	N/mm²	0.6 to 1.2
	(psi)	(90 to 170)
Phenolic	N/mm²	1 to 1.8
	(psi)	(150 to 260)
ABS	N/mm²	0.5 to 1.1
	(psi)	(70 to 160)
Polycarbonate	N/mm²	1 to 4
	(psi)	(150 to 580)
Hardwood (Mahogany)	N/mm²	5 to 13
	(psi)	(730 to 1,900)
Softwood (Red Deal)	N/mm²	6 to 12
	(psi)	(870 to 1,700)

180° Peel Strength, ISO 8510-2:

Mild Steel (grit blasted)	N/mm	2 to 3
	(lb/in)	(11.4 to 17.1)

TYPICAL ENVIRONMENTAL RESISTANCE

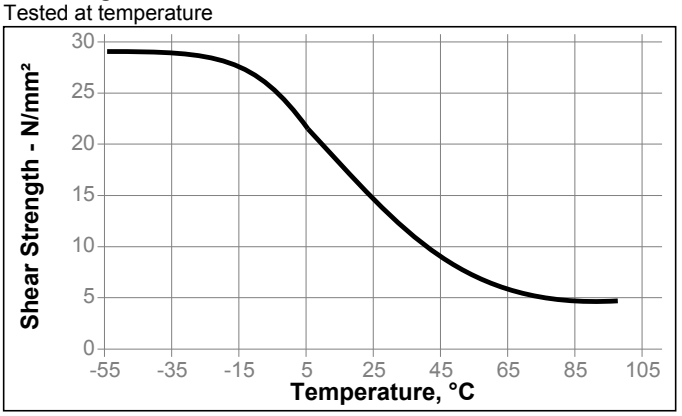
Cured for 7days @ 22°C

Lap Shear Strength , ISO 4587:

Mild Steel (grit blasted)

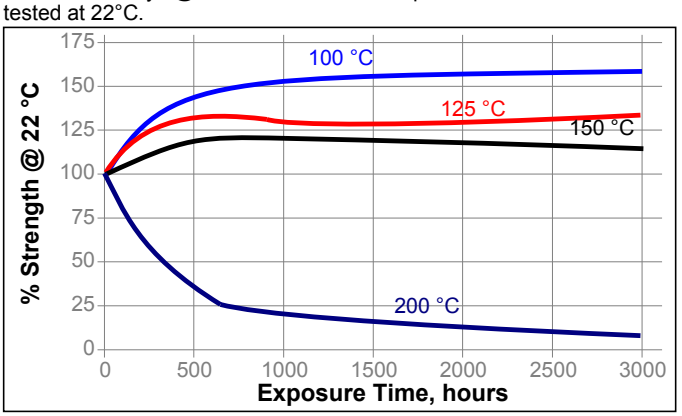
Hot Strength

Tested at temperature



Heat Aging

Cured for 5days @ 22°C. Stored at temperatures indicated and tested at 22°C.



Chemical/Solvent Resistance

Immersed in conditions indicated and tested at 22 °C.

		% of initial strength		
Environment	**°C**	**100 h**	**400 h**	**1000 h**
Motor oil	22	90	90	50
Acetic Acid, 10%	22	85	80	60
Sodium Chloride, 7.5%	22	100	100	55
Sulfuric Acid, 6.5%	22	100	90	80
Water	60	85	85	80
Water	90	90	70	60
Humidity, 98% RH	40	100	100	100

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).

Where aqueous washing systems are used to clean the surfaces before bonding, it is important to check for compatibility of the washing solution with the adhesive. In some cases these aqueous washes can affect the cure and performance of the adhesive.

Directions for use

1. For best performance surfaces for bonding should be clean, dry and free of grease. For high strength structural bonds, special surface treatments can increase the bond strength and durability.
2. To use, resin and hardener must be blended. Product can be applied directly from dual cartridges by dispensing through the mixer head supplied. Discard the first 3 to 5 cm of bead dispensed. Using bulk containers, mix thoroughly by weight or volume in the proportions specified in the Product Description Matrix. For hand mixing, weigh or measure out the desired amount of resin and hardener and mix thoroughly. Mix approximately 15seconds after uniform color is obtained.
3. It is recommended that this product is not mixed and cured in bulk quantities of greater than 4 kg as excessive heat build-up can occur. Mixing smaller quantities will minimize the heat build-up.
4. Apply the adhesive as quickly as possible after mixing to one surface to be joined. For maximum bond strength apply adhesive evenly to both surfaces. Parts should be assembled immediately after mixed adhesive has been applied.
5. For working life please see section 'Typical Properties of Uncured Material'. Higher temperatures and larger quantities will shorten this working time.
6. Keep the assembled parts from moving during cure. The joint should be allowed to develop full strength before subjecting to any service loads.
7. Excess uncured adhesive can be wiped away with organic solvent (e.g. Acetone).
8. After use and before adhesive hardens, mixing and application equipment should be cleaned with hot soapy water.

Loctite Material Specification[LMS]

LMS dated July 26, 2005. 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 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 Henkel Representative.

Conversions

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
N x 0.225 = lb/F
N/mm x 5.71 = lb/in
psi x 145 = N/mm²
MPa = N/mm²
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

Disclaimer

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. Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:
In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:
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. 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.
Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Corporation, or Henkel Canada Corporation, the following disclaimer is applicable:
The data contained herein are furnished for information only and are believed

to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

Trademark usage
Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.

Reference 1.3