

PRODUCT DESCRIPTION

Loctite Hysol 3425 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.

TYPICAL APPLICATIONS

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 3mm.

PROPERTIES OF UNCURED MATERIAL

Part A (Resin)	Value
Chemical Type	Epoxy
Appearance	Yellow/White Paste
Specific Gravity @ 25 °C	1.3-1.5
Viscosity Characteristics	Thixotropic
Brookfield Viscosity Spindle 7 @ 5rpm, mPa-s	1,500,000-3,500,000

Part B (Hardener)	Value
Chemical Type	Epoxy
Appearance	Opaque
Specific Gravity @ 25 °C	1.3-1.5
Viscosity Characteristics	Thixotropic
Brookfield Viscosity, mPa-s Spindle 7 @ 5 r/mim	100,000-300,000

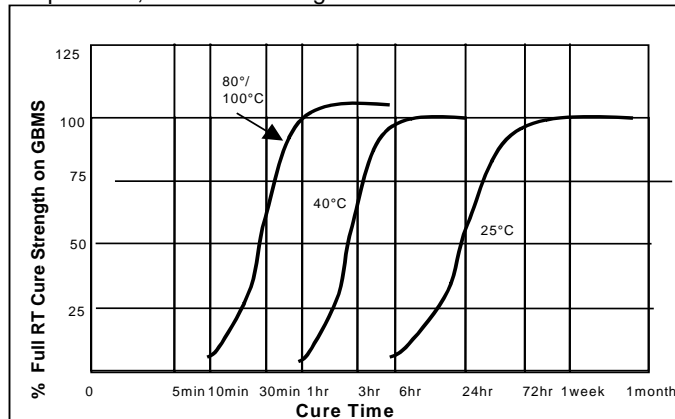
Mixed Adhesive

Appearance	Yellow/White Paste
Working Life of mixed adhesive 25 °C (6-10g mix), minutes	120
Maximum Gap Fill, mm	3
Mix Ratio by Volume	1:1
Mix Ratio by Weight (g) (Resin/Hardener)	100:100
Fixture Time (light handling, 0.1 N/mm ²) @23 °C, minutes	240

TYPICAL CURING PERFORMANCE

Cure Speed vs. time/temperature

When mixed in a 1:1 ratio by volume Hysol 3425 develops high strength at room temperature within 24 hours. Elevated temperatures may be used to accelerate the cure. The following graph indicates development of shear strength on steel lap shear with 0.05mm gap as a function of time and temperature, tested according to ASTM D1002/EN 1465.



TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties

Coefficient of thermal conductivity, (ASTM C177), W/(m-K)	0.28
Coefficient of Thermal Expansion, (ASTM E831-93), K ⁻¹ (19.4 °C to 33 °C) (55.4 °C to 199.4 °C)	44 x 10 ⁻⁶ 173 x 10 ⁻⁶
Hardness (Shore D)	70-80
Glass Transition Temperature Tg °C (ASTM E1640-99)	72
Tensile strength (ASTM D882), N/mm ²	27.2
Elongation (ASTM D882), %	2.9
Modulus (ASTM D882), N/mm ²	1353

PERFORMANCE OF CURED MATERIAL

(Cured for 7 days at 23 °C and tested at 23 °C)

	Typical	
	Value	Range
Shear Strength, ASTM D1002/EN 1465 (0.05 mm bond gap unless otherwise stated)		
Steel Grit Blasted (GB), N/mm ² (psi)	28 (4116)	25-30
Stainless Steel, (GB), N/mm ² (psi)	11.5 (1670)	10-12.5
Aluminium Abraded, N/mm ² (psi)	10 (1460)	7-13
Aluminium Etched, N/mm ² (psi)	20 (2900)	18-22
Hot Dipped Galvanised, N/mm ² (psi)	13.7 (1987)	11-16
Zinc Dichromate coated Steel N/mm ² (psi)	14 (2050)	12-15
Brass, N/mm ² (psi)	13 (1890)	9-15
GRP, N/mm ² (smooth skim side), N/mm ² (psi)	0.8 (120)	0.6-1.2
Phenolic, N/mm ² (psi)	3 (440)	2.5-3.5
ABS, N/mm ² (psi)	0.5 (73)	0.4-0.5
Polycarbonate, N/mm ² (psi)	3 (440)	2-4
Hardwood, (Mahogany) N/mm ² (psi)	12 (1760)	8-14
Softwood (Red Deal, N/mm ² (psi)	9.5 (1380)	8-10
180° Rigid Peel Strength, GBMS, ASTM D 1876, N/mm	2	1.5-2.5

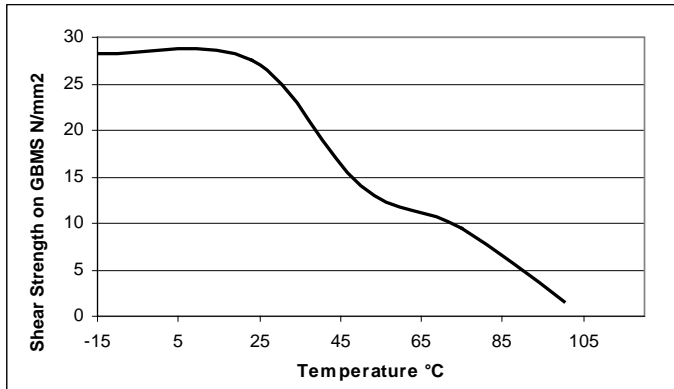
Impact Resistance, ISO 9653/ASTM D 950 GBMS blocks	kJ/m ² 15.5	ft-lbf/in ² 7.4
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TYPICAL ENVIRONMENTAL RESISTANCE

Test Procedure:	ASTM D1002/EN 1465
Substrate:	Grit blasted Mild Steel (0.05 mm bond gap)
Cure procedure:	7 days @ 23 °C

Hot Strength

Tested at temperature indicated.

**Temperature Storage**

Stored in air at temperature indicated and tested at 22 °C

Temperature	% Initial Strength retained		
	500 h	1000 h	3000 h
100 °C	106	110	108
125 °C	86	86	83
150 °C	79		80

Chemical/Solvent Resistance

Immersed in the conditions indicated and tested at 23 °C

Solvent	Temp.	% Initial Strength retained after	
		500 h	1000 h
Acetone		82	71
Motor Oil	23 °C	114	96
10% NaOH	23 °C	86	78
Acetic Acid 10%	23 °C	80	50
7.5% NaCl	23 °C	100	55
6.5% H ₂ SO ₄	23 °C	90	80
Water	60 °C	100	100
Water	90 °C	90	90
50% Water-Glycol	87 °C	15	9
Petrol	23 °C	85	82
Humidity 98% RH	40 °C	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 oxidising materials.

For safe handling information on this product, consult the Material Safety Data Sheet, (MSDS).

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 3-5 cm of bead dispensed. Using bulk containers, mix thoroughly by weight or volume in the proportions specified in Properties of Uncured Material section. For hand mixing, weigh or measure out the desired amount of resin and hardener and mix thoroughly. Mix approximately 15 seconds after uniform colour is obtained.

3. Do not mix quantities greater than 4 kg as excessive heat build-up can occur. Mixing smaller quantities will minimise 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. Working life of the mixed adhesive is 240 minutes at 25 °C. Higher temperature 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 dispensing equipment should be cleaned with hot soapy water.

Storage

Product shall be ideally stored in a cool, dry location in unopened containers at a temperature between 8 °C to 21 °C (46 °F to 70 °F) unless otherwise labelled. Optimal storage is at the lower half of this temperature range. To prevent contamination of unused product, do not return any material to its original container. For further specific shelf life information, contact your local Technical Service Centre.

Data Ranges

The data contained herein may be reported as a typical value and/or range. Values are based on actual test data and are verified on a periodic basis.

Note

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, **Loctite Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Loctite Corporation's products. Loctite 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 Loctite 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.

**Bulk Numbers: Part A: 209817
Part B: 209818**