LOCTITE®

Research, Development & Engineering
Tallaght Business Park,
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Technical Data Sheet
Hysol® 9450

July 2003

PRODUCT DESCRIPTION
Loctite Hysol® 9450 is a fast curing 2-component epoxy adhesive suitable for a wide variety of substrates like metals, ceramic, glass and most plastics. It is a non-sag paste when uncured, making it ideal for gap filling and vertical applications. Hysol 9450 cures as a translucent, slightly flexible product.

TYPICAL APPLICATIONS
Designed for use in component assembly, domestic appliances, electronics & fibre optics, and general industrial repairs. Its non-sagging formula is especially suited for use on vertical surfaces to avoid run-off.

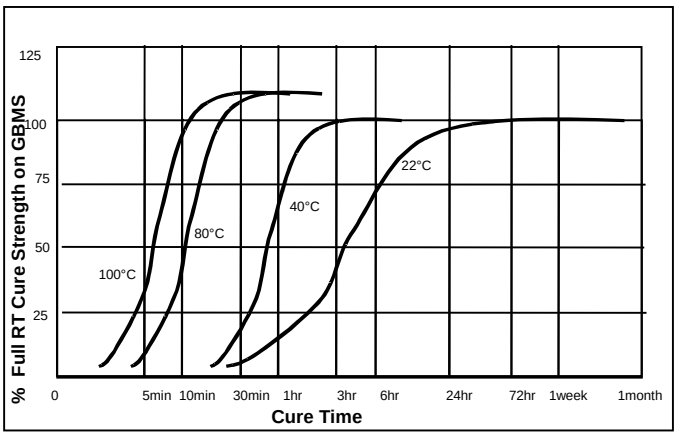
PROPERTIES OF UNCURED MATERIAL

Resin	Typical Value
Chemical Type	Epoxy
Appearance	Translucent white paste
Specific Gravity @ 25°C	1.20
Brookfield RVT viscosity @25°C Spindle 7 @2.5rpm, mPas	150,000 to 750,000
Thixotropic Index	3.2
Flash Point (TCC), °C (°F)	>93 (>200)

Hardener	Typical Value
Chemical Type	Mercaptan
Appearance	Translucent white paste
Specific Gravity @ 25°C	1.10
Brookfield RVT viscosity @25°C Spindle 7 @20rpm, mPas	15,000 to 75,000
Thixotropic Index	3.7
Flash Point (TCC), °C (°F)	>93 (>200)

Mixed Adhesive	Typical Value
Appearance	Translucent paste
Mix Ratio by Volume (Resin/Hardener)	1 :1
Mix Ratio by Weight (Resin/Hardener)	100:92
Maximum gap fill (mm)	3
Working Life of mixed adhesive @22°C (100g mix), minutes	4
Fixture Time (light handling, 0.1N/mm^2) @22°C, minutes	13

TYPICAL CURING PERFORMANCE
Cure Speed vs. time/temperature
Hysol 9450 develops high strength at room temperature within 3 to 6 hours. The assembled parts will be fixtured for light handling (0.1N/mm²) after 13-15 minutes @22°C in a 0.05mm gap. Elevated temperatures may be used to accelerate the cure. The following graph indicates development of shear strength on a grit-blasted mild steel lapshears with 0.05mm gap as a function of time and temperature, tested according to ASTM D 1002/EN 1465



TYPICAL PROPERTIES OF CURED MATERIAL
(1.2mm thick samples cured for 7days@22°C)

Physical Properties	Typical Value
Tensile Strength, ASTM D882, N/mm^2	16.6
Young's Modulus, ASTM D882, N/mm^2	1025
Elongation, ASTM D-882, %	40
Coefficient of Thermal Expansion, ASTM E831-93 (-18.5° - 25°), µm/m/°C (57° - 200°), µm/m/°C	53 192
Glass Transition Temperature, Tg., °C ASTM E 1640-99	50
Hardness, ASTM D1706, Shore D	70

PERFORMANCE OF CURED MATERIAL
(cured for 5 days @22°C, unless otherwise stated)

Shear Strength, ASTM D1002/EN 1465 (0.05mm gap unless otherwise stated)	Typical Value (N/mm²)
Steel, Grit Blasted Mild Steel (GBMS)	23
Stainless Steel	14
Aluminium, Abraded (Silicon Carbide Paper, A166 grit, P400A grade)	8.7
Aluminium, Anodised	8.1
Polycarbonate	2.5
Nylon	1.0
Wood (Fir)	9.7

Tensile Strength, ASTM D2095/EN 26922 GBMS pin to soda glass, N/mm²	10

180º Rigid Peel Strength, ASTM D1876 Steel, GBMS, N/mm	0.6

NOT FOR PRODUCT SPECIFICATIONS.
THE TECHNICAL DATA CONTAINED HEREIN ARE INTENDED AS REFERENCE ONLY.
PLEASE CONTACT LOCTITE CORPORATION QUALITY DEPARTMENT FOR ASSISTANCE AND RECOMMENDATIONS ON SPECIFICATIONS FOR THIS PRODUCT.
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TYPICAL ENVIRONMENTAL RESISTANCE

Test procedure :	ASTM D-1002/EN 1465
Substrate:	Grit Blasted Mild Steel Lapshears
Bondline gap:	0.05mm
Cure procedure:	7 days @22°C

Hot Strength

Tested at temperature indicated.

Temperature Storage

Cured for 5 days @ 22°C on GBMS lapshears with no induced gap, stored in air at temperature indicated and tested @ 22°C.

Temperature	% Initial Strength retained at	
	500 hr	1000 hr
22°C	122	104
100°C	170	157
150°C	60	43

Chemical/Solvent Resistance

Cured for 5 days @ 22°C on GBMS lapshears with no induced gap, immersed in conditions indicated and tested @22°C.

Solvent	Temp.	% Initial Strength retained at	
		500 hr	1000 hr
Motor Oil (10W-30)	87°C	91	84
Unleaded Petrol	22°C	92	91
Water/Glycol (50%/50%)	87°C	60	43
Salt/Fog ASTM B-117	22°C	23	21
98% Relative Humidity	40°C	52	52
Condensing Humidity	49°C	17	11
Water	22°C	58	33
Acetone	22°C	91	91
Isopropyl Alcohol	22°C	106	96

Tensile Strength, ASTM D2095/EN 26922, GBMS pin to soda glass			
98% Relative Humidity	40°C	10	2

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.

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 3-5cm 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 20g 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 4 minutes at 22ºC. 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 application 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: 210002**
Part B: 210003

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