



1001 Trout Brook Crossing
Rocky Hill, CT 06067-3910
Telephone: (860) 571-5100
FAX: (860) 571-5465

Technical Data Sheet

Product 4850

Industrial Version, December 2001

PRODUCT DESCRIPTION

LOCTITE® Product 4850 is a medium viscosity, flexible, single component general-purpose cyanoacrylate adhesive. It is specifically formulated to provide flexible bondlines. This product is less surface sensitive than standard cyanoacrylate adhesives.

TYPICAL APPLICATIONS

Bonding of a wide range of metal, plastic or elastomeric materials. Product 4850 is particularly suited for bonding flexible, porous or absorbent materials such as paper, leather. When used to bond rubber for example, this product maintains the full compressibility of the joint. This product can be used for the joining of fabric and weave type materials.

PROPERTIES OF UNCURED MATERIAL

	Value	Typical Range
Chemical Type	Alkyl cyanoacrylate	
Appearance	Clear Colorless liquid	
Specific Gravity @ 25°C	1.1	
Viscosity @ 25°C, mPa.s (cP) (Physica MK22 cone)	400	250 to 500
Flash Point (TCC), °C	>93	

TYPICAL CURING PERFORMANCE

Under normal conditions, the surface moisture initiates the curing process. Although functional strength is developed in a relatively short time, curing continues for at least 24 hours before full chemical/solvent resistance is developed.

Cure speed vs. substrate

The rate of cure will depend on substrate used. The table below shows the fixture time achieved on different materials at 22°C, 50% relative humidity. This is defined as the time to develop a shear strength of 0.1 N/mm² (14.5 psi) tested on specimens according to ASTM D1002/ DIN EN 1465.

Substrate	Fixture Time, seconds
Steel (grit blasted)	5 to 15
Steel (degreased)	5 to 30
Aluminum (sand blasted)	5 to 20
Aluminum (degreased)	5 to 15
Zinc dichromate	5 to 20
Nitrile rubber cord stock	5 to 15
ABS	3 to 5
PVC	3 to 10
Polycarbonate	3 to 10
Epoxy FR4	<3
Leather	5 to 20
Paper	1 to 3
Wood (Teak)	30 to 75

Cure speed vs. bond gap

The rate of cure will depend on the bondline gap. Thin bond lines favor high cure speed. Increasing the bond gap will slow down the rate of cure.

Cure speed vs. activator

Where cure speed is unacceptably long due to large gaps, applying activator to the surface will improve cure speed. However, this can reduce the ultimate strength of the bond, therefore testing is recommended to confirm effect.

TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties

Coefficient of thermal expansion, ASTM D696, K ⁻¹	100 x 10 ⁻⁶
Glass Transition temperature, ASTM E228, °C	60
Young's Modulus, ASTM D882, MPa.	595 ± 80
Hardness, ASTM D2240, Shore A	85 ± 5

Electrical Properties

	Constant	Loss
Dielectric constant & loss, 25°C, ASTM D150, measured at	100 Hz	1.09
	100 kHz	1.03
	1 MHz	0.10
Volume resistivity, ASTM D257, Ω.cm		3.32 x 10 ¹⁴
Surface resistivity, ASTM D257, Ω		> 1 x 10 ¹⁵

PERFORMANCE OF CURED MATERIAL

(After 7 days at 22°C)

	Value	Typical Range
Shear Strength, ASTM D1002, DIN EN 1465		
Grit Blasted Steel, N/mm ²	13	11 to 15
(psi)	(1885)	(1595 to 2175)
Sand Blasted Aluminum, N/mm ²	12	10 to 14
(psi)	(1740)	(1450 to 2030)
Zinc dichromate, N/mm ²	9	6 to 12
(psi)	(1305)	(870 to 1740)
ABS, N/mm ²	8	7 to 9
(psi)	(1160)	(1015 to 1305)
PVC, N/mm ²	5	3 to 7
(psi)	(725)	(435 to 1015)
Polycarbonate, N/mm ² *	8	6 to 10
(psi)	(1160)	(870 to 1450)
FR4 Epoxy, N/mm ²	14	12 to 16
(psi)	(2030)	(1740 to 2320)
Wood (Teak), N/mm ²	7	5 to 9
(psi)	(1015)	(725 to 1305)

*These data are based on failure of the substrate

Tensile Strength measured on rubber cord stock

Tested to ASTM D1414, DIN 53504	Value N/mm ²
Substrate 7mm diameter NBR	2.73 ± 0.2

TYPICAL ENVIRONMENTAL RESISTANCE

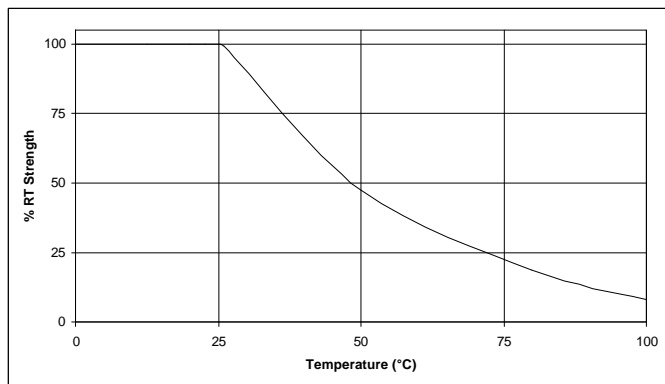
Test Procedure : Shear Strength, ASTM D1002/DIN EN 1465

Substrate: Grit blasted mild steel laps

Cure procedure: 1 week at 22°C

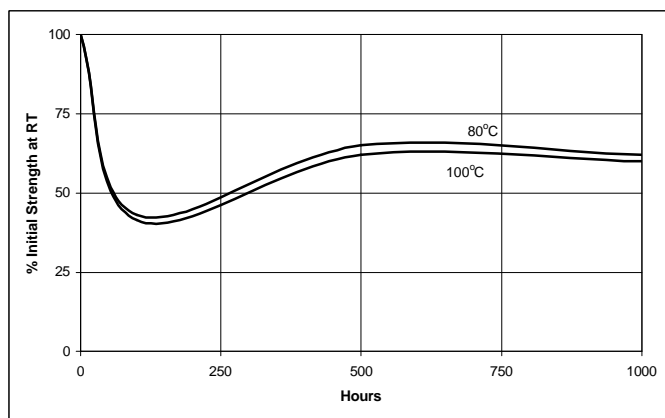
Hot Strength

Tested at temperature.



Heat Aging

Aged at temperature indicated and tested at 22°C.



Chemical / Solvent Resistance

Grit-blasted mild steel lap shears aged under conditions indicated and tested at 22°C. Tested according to ASTM D1002 / DIN EN 1465.

Solvent	Temp	% Initial strength retained at		
		100 hr	500 hr	1000hr
Motor Oil	40°C	70	80	60
Unleaded Gasoline	22°C	90	90	85
Ethanol	22°C	95	80	45
Isopropanol	22°C	105	105	90
Humidity 95% RH	40°C	50	45	40
Polycarbonate lap shears				
Humidity 95% RH	40°C	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 Material Safety Data Sheet, (MSDS).

Directions for use

For best performance surfaces should be clean and free of grease. This product performs best in thin bond gaps, (0.05mm). Excess adhesive can be dissolved with Loctite clean up solvents, nitromethane or acetone.

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 labeled. Optimal storage conditions for unopened containers of cyanoacrylate products are achieved with refrigeration: 2°C to 8°C (36°F to 46°F). Refrigerated packages shall be allowed to return to room temperature prior to opening and use. Avoid long term storage at elevated temperatures. To prevent contamination of unused product, do not return any material to its original container. For specific shelf life information contact your local Technical Service Center.

Data Ranges

The data contained herein may be reported as a typical value and/or range (based on the mean value ± 2 standard deviations). 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. One or more United States or foreign patents or patent applications may cover this product.