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Technical Data Sheet
Product 420

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PRODUCT DESCRIPTION

LOCTITE® Product 420 is a very low viscosity ethyl cyanoacrylate adhesive.

TYPICAL APPLICATIONS

Bonding rubbers. plastics and metals where penetration of adhesive is required.

PROPERTIES OF UNCURED MATERIAL

	Typical Value	Range
Chemical Type	Ethyl Cyanoacrylate	
Appearance	Colourless	
Specific Gravity @ 25°C	1.05	
Viscosity @ 25°C, mPa.s (cP)		
Brookfield LVT		
Spindle 1-30 rpm		1 to 5
Flash Point (COC), °C	>80	
Vapour pressure mbar:	<1	
Shelf life at 20°C, months	12	

FIXTURING TIME

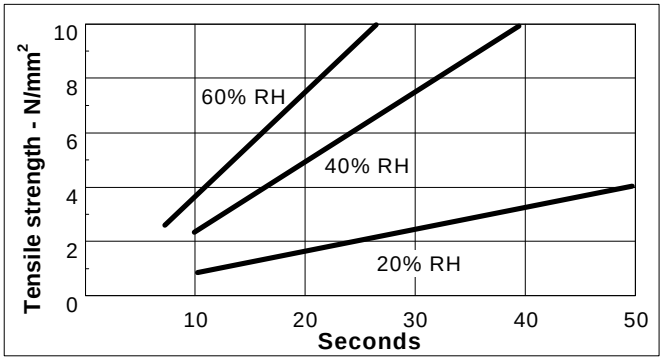
This is defined as the number of seconds after assembly when a joint develops a tensile shear strength of 0.1 N/mm^2 measured at 22°C, 50% relative humidity according to ASTM D1002 and DIN 53283. This cure speed is affected by the nature of the substrate, ambient humidity and temperature. High cure speed is favoured by thin bond lines and by avoiding excess adhesive.

Performance of Loctite Product 420 on metallic and non-metallic substrates:

Substrate	Fixture Time, seconds
Mild steel (degreased)	10 to 30
Aluminium (degreased)	5 to 15
Zinc bichromate	30 to 90
Neoprene rubber	< 5
Nitrile rubber	< 5
ABS	10 to 30
PVC	3 to 10
Polycarbonate	20 to 60
Phenolic materials	5 to 20

All surfaces were cleaned by isopropyl alcohol wipe.
Times and strengths can vary considerably for different grades of plastics, rubber and plated metals.

The effect of relative humidity on cure speed is shown in the graph, for a cyanoacrylate adhesive to a Buna N rubber.



Where cure speed is inadequate, due to low relative humidity, or large gaps, a LOCTITE ACTIVATOR may be used. This can, however, lead to a reduction in eventual strength of the bond and careful testing is recommended before use in production.

While full functional strength is developed in a relatively short time, curing continues for at least 24 hours before full chemical and solvent resistance is developed.

PHYSICAL PROPERTIES OF CURED MATERIAL

Full strength achieved after 12 hours at 22°C on most substrates.

Coefficient of thermal expansion, ASTM D696, K^{-1}	100 x 10^{-6}
Coefficient of thermal conductivity, ASTM C177, W.m^{-1}K^{-1}	0.1
Softening point, °C	165
Recommended gap, mm	0.05
Maximum gap, mm:	0.05
Cleaning solvent:	Acetone

Electrical Properties

Dielectric constant, ASTM D150 -	
100 Hz:	2 to 3.3
1kHz:	2 to 3.5
10 kHz	2 to 3.5
Dissipation factor, ASTM D150 -	
100 Hz	< 0.02
1kHz	< 0.02
10 kHz	<0.02
Volume resistivity, ASTM D257 -	
ΩCM X 10^{16}	0.2 to 1
Surface resistivity - Ω x 10^{16}	1 to 8
Dielectric strength, ASTM D149 - kV/mm:	25

PERFORMANCE OF CURED MATERIAL

Tensile shear strength, ASTM D1002, DIN 53283, N/mm^2 -

Steel *	15 to 26
Aluminium *	12 to 19
Zinc bichromate	6 to 13
ABS	6 to 20
PVC	6 to 20
Polycarbonate	5 to 20
Phenolic	5 to 15
Neoprene Rubber	5 to 15
Nitrile Rubber	5 to 15

Tensile strength, ASTM D2095, DIN 53288, N/mm^2:

Steel	12 to 25
Buna N Rubber	5 to 15

Peel strength, ASTM D1876, DIN 53282, N/mm^2

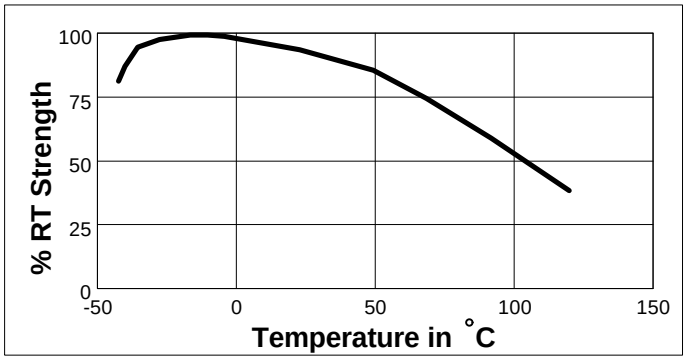
Degreased steel	<0.5

* Sand-blasted surface

TYPICAL ENVIRONMENTAL RESISTANCE

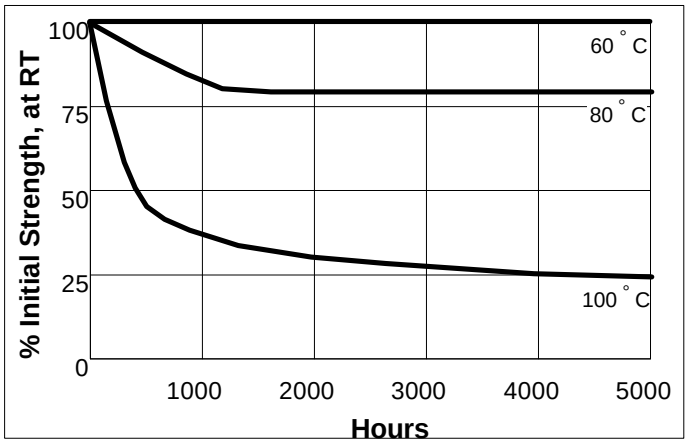
Hot Strength

Strength test procedure: ASTM D1002/DIN 53283
Substrate: Grit blasted mild steel.
Cure procedure: 1 week at 22°C.



Heat Ageing

Strength test procedure: ASTM D1002/DIN 53283
Substrate: Grit blasted mild steel.
Cure procedure: 1 week at 22°C.



CHEMICAL / SOLVENT RESISTANCE

Strength test procedure: ASTM D1002/DIN 53283
Substrate: Grit blasted mild steel.
Cure procedure: 1 week at 22°C

Solvent	Temperature	% Initial strength retained at		
		100 hr	500 hr	1000 hr
95% R.H.:	40°C	80	75	65
95% R.H. (polycarbonate)	40°C	100	100	100
Motor oil	40°C	100	100	95
Leaded petrol	22°C	100	100	100
Isopropanol	22°C	100	100	100
Ethanol	22°C	100	100	100
Freon TA	22°C	100	100	100
1.1.1. trichloroethane	22°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 oxidising 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 labelled. 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. 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 Centre.

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 licence 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.