

This safety data sheet has been prepared in accordance with the requirements of EC Directive 88/379/EEC and 91/155/EEC (and other related directives) and provides information relating to the safe handling and use of the product.

1. PRODUCT AND COMPANY INFORMATION

Product Code	0128641
Trade Name	641
Manufacturer/Supplier	Loctite UK
Address	Watchmead, Welwyn Garden City, Herts., AL71JB.
Phone Number	01 707 358800
Fax Number	01 707 358900
Emergency Phone Number	+353-1-4599301/+353-1-87-2629625/+353-1-4046444

2. COMPOSITION / INFORMATION ON INGREDIENTS

Nature Product based on polyethyleneglycol dimethacrylate.

Hazardous Components in Product for EC

Component Name	Concentration	R Phrases	Classification
N,N-Diethyl-p-Toluidine	0.10 - 1.00	R23/24/25, R33	T
N,N-Dimethyl-o-Toluidine	0.10 - 0.50	R23/24/25, R33	T
Cumene Hydroperoxide	1.00 - 5.00	R7, R21/22, R23, R34, R48/20/22, R51/53	O, T, N

3. HAZARD IDENTIFICATION

Harmful by inhalation. Irritating to respiratory system and skin. Risk of serious damage to eyes. Prolonged contact with skin, particularly damaged skin, may cause sensitization or dermatitis in sensitive individuals.

4. FIRST AID MEASURES

First Aid - Inhalation

Remove patient to fresh air and seek medical attention immediately.

First Aid - Skin

Wash with plenty of soap and water. If irritation persists, seek medical advice.

First Aid - Eyes

Flush eyes with plenty of water for at least 15 minutes. If irritation persists seek medical attention.

First Aid - Ingestion

Rinse mouth with water then give plenty of water to drink. Do not induce vomiting. Seek medical advice.

5. FIRE FIGHTING MEASURES

Non flammable product (flash point is greater than 100°C (CC)). If product is involved in fire extinguish with dry powder, foam or carbon dioxide. Trace amounts of toxic fumes may be released on incineration and the use of breathing apparatus is recommended.

6. ACCIDENTAL RELEASE MEASURES

For small spills wipe up with paper towel and place in container for disposal. For large spills absorb onto inert absorbent material and place in sealed container for disposal.

7. HANDLING AND STORAGE

Handling

Loctite applicators are recommended to minimise skin contact, particularly where workers are handling sharp or threaded parts which might result in microlaceration of sensitive areas of the skin. Prolonged or repeated skin contact should be avoided to minimise any risk of sensitisation.

Storage

Store in original containers at 8°C-21°C and do not return residual materials to containers as contamination may reduce the shelf life of the bulk product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Use in well ventilated area. Avoid inhalation of vapour. Wear suitable respiratory protection. Wear suitable protective clothing. Avoid contact with skin, eyes and clothing. Use of Loctite applicator equipment is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid.
Colour	Yellow
Odour	Characteristic.
pH	Range between 3 to 6.
Boiling Range/Point (°C)	No data.
Flash Point (CC) (°C)	>100
Specific Gravity	1.08.
Solubility in Water (kg/m³)	Immiscible.
Solubility in Acetone	Miscible
Vapour Pressure (mmHg @25°C)	<0.1
Explosion Limits (%)	No data.

10. STABILITY AND REACTIVITY

The product is relatively stable under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Inhalation

This product is harmful by inhalation. May cause irritation to respiratory system.

Skin

May cause irritation to skin. Although it is not a common sensitizer there may be a risk of sensitization on prolonged or repeated contact with damaged skin.

Eyes

May cause severe damage to eyes.

Ingestion

This product is considered to be of low toxicity having an acute oral LD50 (rat) >5000mg/kg by analogy to other similar products.

12. ECOLOGICAL INFORMATION

Does not contain substances listed on the Montreal protocol.

13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with local and national regulations. Standard procedures for 'water insoluble' non-toxic chemicals recommended.

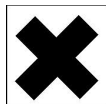
14. TRANSPORT INFORMATION

UN Number	None
Air (IATA)	Not classified.
Sea (IMO)	Not classified.
Road (ADR)/Rail (RID)	Not classified.

15. REGULATORY INFORMATION

Contains Cumene Hydroperoxide

**Labelling
Information**



Harmful

R phrases

R20 Harmful by inhalation.
R37/38 Irritating to respiratory system and skin.
R41 Risk of serious damage to eyes.

S phrases

S23 Do not breathe vapour.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28 After contact with skin, wash immediately with plenty of soap and water. S37/39 Wear suitable gloves and eye/face protection.
S51 Use only in well ventilated areas.

Voluntary Labelling

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16. OTHER INFORMATION

MSDS first issued 26 April 1996

MSDS data revised 7 June 2000

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Further Information may be obtained from:-

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The information in this safety data sheet was obtained from reputable sources and to the best of our knowledge is accurate and current at the mentioned date. Neither Loctite nor its subsidiary companies accept any liability arising out of the use of the information provided here or the use, application or processing of the product(s) described herein. Attention of users is drawn to the

16. OTHER INFORMATION

possible hazards from improper use of the product(s).

This safety data sheet was prepared in accordance with Commission Directive 98/98/EC adapting to technical progress for the 25th time Council Directive 67/548/EEC.

Supersedes Safety Data Sheet No: 4 dated 21/9/98.

PRODUCT DESCRIPTION

LOCTITE® Product 641 is a single component anaerobic retaining adhesive for cylindrical joints. The product cures when confined in the absence of air between close fitting metal surfaces. This product develops medium strength to facilitate disassembly.

TYPICAL APPLICATIONS

Used to bond cylindrical fitting parts, particularly where disassembly is required for service operations. Applications included retention of bearings onto shafts and into housings.

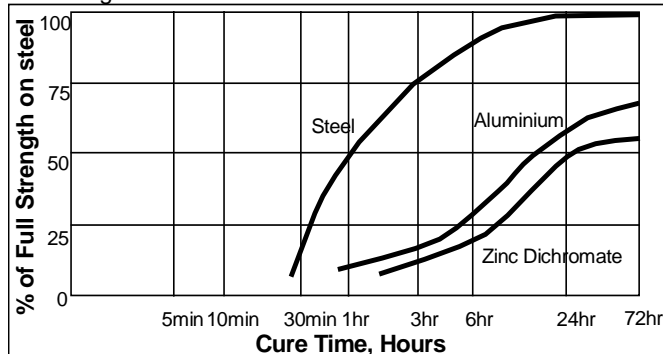
PROPERTIES OF UNCURED MATERIAL

	Value	Typical Range
Chemical Type	Methacrylate Ester	
Appearance	Yellow liquid	
Specific Gravity @ 25°C	1.07	
Viscosity @ 25°C, mPa.s (cP)		
Brookfield RVT		
Spindle 2 @ 2.5 rpm	1,950	1,300 to 2,600
@ 20 rpm	525	350 to 700
DIN 54453, MV		
D = 277 s ⁻¹ after t=180secs	135	90 to 180
Flash Point (TCC), °C	>93	

TYPICAL CURING PERFORMANCE

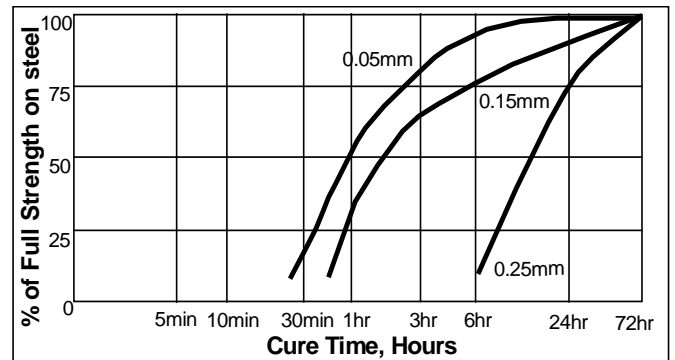
Cure speed vs. substrate

The rate of cure will depend on substrate used. The graph below shows shear strength developed with time on steel pins and collars compared to different materials and tested according to ISO 10123.



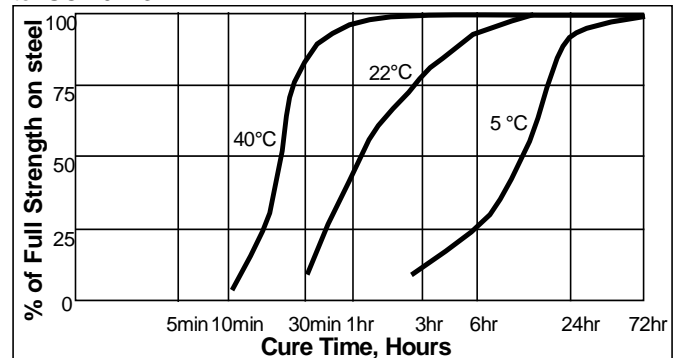
Cure speed vs. bond gap

The rate of cure will depend on the bondline gap. The following graph shows shear strength developed with time on steel pins and collars at different controlled gaps and tested according to ISO 10123.



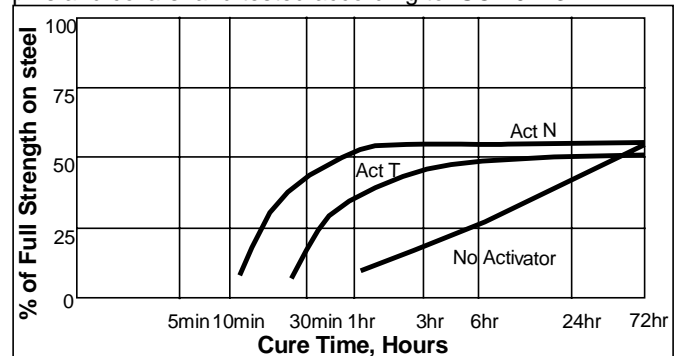
Cure speed vs. temperature

The rate of cure will depend on the ambient temperature. The graph below shows shear strength developed with time on steel pins and collars at different temperatures and tested according to ISO 10123.



Cure speed vs. activator

Where cure speed is unacceptably long, or large gaps are present, applying activator to the surface will improve cure speed. The graph below shows shear strength developed with time using ACTIVATOR N and T on zinc dichromated steel pins and collars and tested according to ISO 10123.



TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties

Coefficient of thermal expansion, ASTM D696, K ⁻¹	80 x 10 ⁻⁶
Coefficient of thermal conductivity, ASTM C177, W.m ⁻¹ K ⁻¹	0.1
Specific Heat, kJ.kg ⁻¹ K ⁻¹	0.3

PERFORMANCE OF CURED MATERIAL

(After 24 hr at 22°C on steel)

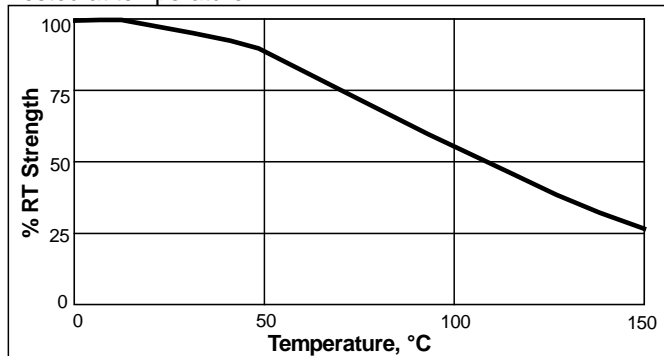
	Value	Typical Range
Shear Strength, ISO 10123, N/mm ²	11.5	7 to 16
(psi)	(1700)	(1000 to 2300)
Shear Strength, DIN 54452, N/mm ²	11.5	7 to 16
(psi)	(1700)	(1000 to 2300)

TYPICAL ENVIRONMENTAL RESISTANCE

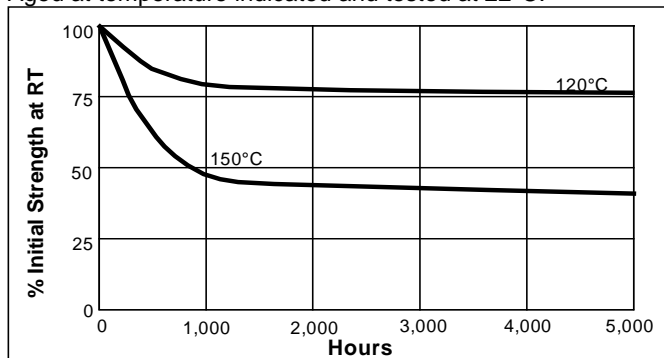
Test Procedure : Shear Strength, ISO 10123
 Substrate: Steel Pins and Collars
 Cure procedure: 1 week at 22°C

Hot Strength

Tested at temperature.

**Heat Aging**

Aged at temperature indicated and tested at 22°C.

**Chemical / Solvent Resistance**

Aged under conditions indicated and tested at 22°C.

Solvent	Temp.	% Initial Strength retained at		
		100 hr	500 hr	1000 hr
Motor Oil	125°C	95	95	90
Unleaded Petrol	22°C	100	100	95
Brake Fluid	22°C	100	100	100
Water/Glycol (50%/50%)	87°C	90	90	90
Ethanol	22°C	100	100	100
Acetone	22°C	100	80	80

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.

This product is not normally recommended for use on plastics (particularly thermoplastic materials where stress cracking of the plastic could result). Users are recommended to confirm compatibility of the product with such substrates.

Directions for use

For best performance surfaces should be clean and free of grease. Ensure joint is completely filled with adhesive. For slip fitted assemblies this is achieved by applying adhesive around the pin and the leading edge of the collar and using a rotating motion during assembly to ensure good coverage. For press fitted assemblies adhesive should be applied thoroughly to both bond surfaces and assembled at high press on rates. For shrink fitted assemblies the adhesive should be coated onto the pin, the collar should then be heated to create sufficient clearance for free assembly. Parts should not be disturbed until sufficient handling strength is achieved. For more detailed information on using retaining adhesives contact your local Technical Service Centre.

Storage

Product shall be ideally stored in a cool, dry location in unopened containers at a temperature between 8°C to 28°C (46°F to 82°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 (based on the mean value ± 2 standard deviations). Values are based on actual test data and are verified on a periodic basis.

Note

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