

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.

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## 1. PRODUCT AND COMPANY INFORMATION

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<b>Product Code</b>	0120638
<b>Trade Name</b>	638
<b>Manufacturer/Supplier</b>	Loctite UK
<b>Address</b>	Watchmead, Welwyn Garden City, Herts., AL71JB.
<b>Phone Number</b>	01 707 358800
<b>Fax Number</b>	01 707 358900
<b>Emergency Phone Number</b>	+353-1-4599301/+353-1-87-2629625/+353-1-4046444

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## 2. COMPOSITION / INFORMATION ON INGREDIENTS

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**Nature** Dimethacrylate urethane diol based sealant.

### Hazardous Components in Product for EC

<b>Component Name</b>	<b>Concentration</b>	<b>R Phrases</b>	<b>Classification</b>
1-Acetyl-2-phenylhydrazine	0.10 - 1.00	R20/21/22, R40, R38, R43	Xn
Hydroxypropyl Methacrylate	15.00 - 30.00	R36, R43	Xi
Acrylic acid	5.00 - 10.00	R10, R21/22, R35, R50	C, N
Cumene Hydroperoxide	1.00 - 3.00	R7, R21/22, R23, R34, R48/20/22, R51/53	O, T, N

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## 3. HAZARD IDENTIFICATION

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Causes burns. Irritating to respiratory system. May cause sensitisation by skin contact.

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## 4. FIRST AID MEASURES

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### First Aid - Inhalation

Should not be a problem as product is of low volatility. However, if feeling unwell remove patient to fresh air.

### First Aid - Skin

Immediately wash skin thoroughly with soap and water. Obtain medical attention.

### First Aid - Eyes

Flush eyes immediately with plenty of water for at least 15 minutes. Seek medical attention immediately.

### First Aid - Ingestion

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

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## 5. FIRE FIGHTING MEASURES

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

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## 6. ACCIDENTAL RELEASE MEASURES

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Avoid contact with skin and eyes and avoid inhalation of vapours. Wear protective clothing and

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**6. ACCIDENTAL RELEASE MEASURES**

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suitable respiratory protection. Absorb spillage onto inert absorbent material and place in a closed container, which should be partially filled (air space), for disposal.

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**7. HANDLING AND STORAGE**

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**Handling**

Wear suitable protective clothing, gloves and safety glasses. 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. Avoid contact with skin and eyes. Adequate ventilation is recommended to remove traces of odour.

**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.

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**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

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**Occupational exposure limits****Acrylic acid**

HSA (1999) C.O.P : OEL 10ppm (30mg/m<sup>3</sup>) 8h TWA.  
HSA (1999) C.O.P : OEL 20ppm (60mg/m<sup>3</sup>) 15 min  
exposure limit.

Use of Loctite applicator equipment is recommended. Avoid contact with skin and eyes. Wear suitable protective clothing.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

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<b>Physical State</b>	Liquid.
<b>Colour</b>	Green.
<b>Odour</b>	Sharp.
<b>pH</b>	Not applicable.
<b>Boiling Range/Point (°C)</b>	Not applicable.
<b>Flash Point (CC) (°C)</b>	>100
<b>Specific Gravity</b>	1.05.
<b>Solubility in Water (kg/m<sup>3</sup>)</b>	Immiscible.
<b>Solubility in Acetone</b>	Miscible
<b>Vapour Pressure (mmHg @25°C)</b>	Less than 3 at 20 °C.
<b>Explosion Limits (%)</b>	Not applicable.

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**10. STABILITY AND REACTIVITY**

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Non reactive to water. Non reactive to oxidising agents except for peroxides. Destabilised by reducing agents.

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**11. TOXICOLOGICAL INFORMATION**

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**Inhalation**

Avoid inhalation of vapours. May cause irritation to respiratory system.

**Skin**

Causes burns to skin. May cause sensitisation by skin contact.

**Eyes**

This product is corrosive to the eyes.

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**11. TOXICOLOGICAL INFORMATION**

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**Ingestion**

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

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**12. ECOLOGICAL INFORMATION**

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Does not contain substances listed on the Montreal protocol.

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**13. DISPOSAL CONSIDERATIONS**

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

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**14. TRANSPORT INFORMATION**

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<b>UN Number</b>	1760
<b>Air (IATA)</b>	Corrosive liquid n.o.s., Class 8, Pkg. Grp. III.
<b>Sea (IMO)</b>	Corrosive liquid, n.o.s., Class 8, Pkg. Grp. III. EmS 8-15 MFAG 760.
<b>Road (ADR)/Rail (RID)</b>	Corrosive liquid, Class 8, Article No. 66°(c), label No. 8.

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**15. REGULATORY INFORMATION**

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**Contains** Acrylic acid. Hydroxypropyl Methacrylate and Cumene Hydroperoxide

**Labelling Information**

Corrosive

**R phrases**

R34 Causes burns.  
R37 Irritating to respiratory system.  
R43 May cause sensitisation by skin contact.

**S phrases**

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. S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.  
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).  
S51 Use only in well ventilated areas.

**Voluntary Labelling**

N/A

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**16. OTHER INFORMATION**

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**MSDS first issued** 26 July 1995

**MSDS data revised** 1 June 2000

Prepared by:

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Health & Regulatory Affairs - Europe

Further Information may be obtained from:-

Loctite Corporation,  
International Health and Regulatory Affairs,

## 16. OTHER INFORMATION

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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 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: 8 dated 10/11/98.

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### PRODUCT DESCRIPTION

LOCTITE® Product 638 is a single component anaerobic retaining adhesive which develops high strength rapidly when confined in the absence of air between close fitting metal surfaces.

### TYPICAL APPLICATIONS

Used to bond cylindrical fitting parts, particularly where bond gaps can approach 0.25mm (0.01") and where maximum strength at room temperature is required. Applications include locking bushings and sleeves into housings and on shafts.

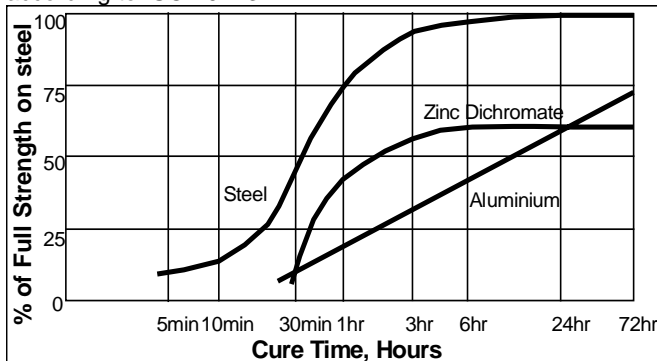
### PROPERTIES OF UNCURED MATERIAL

	Value	Typical Range
Chemical Type	Urethane methacrylate	
Appearance	Green, fluorescent liquid	
Specific Gravity @ 25°C	1.09	
Viscosity @ 25°C, mPa.s (cP)		
Brookfield RVT		
Spindle 3 @ 20 rpm	2,500	1,800 to 3,300
DIN 54453, MV		
D = 129 s <sup>-1</sup> after t=180secs	2,250	1,500 to 3,000
Flash Point (TCC), °C	>93	

### TYPICAL CURING PERFORMANCE

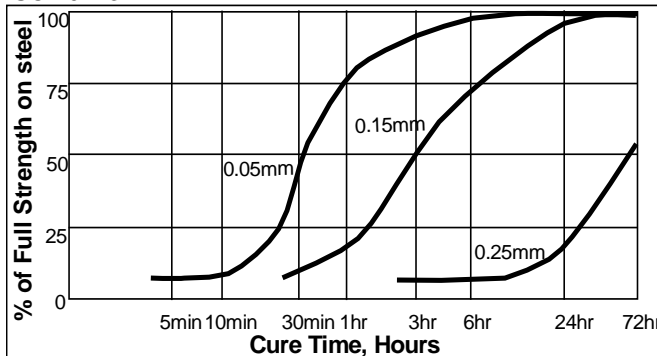
#### Cure speed vs. substrate

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.



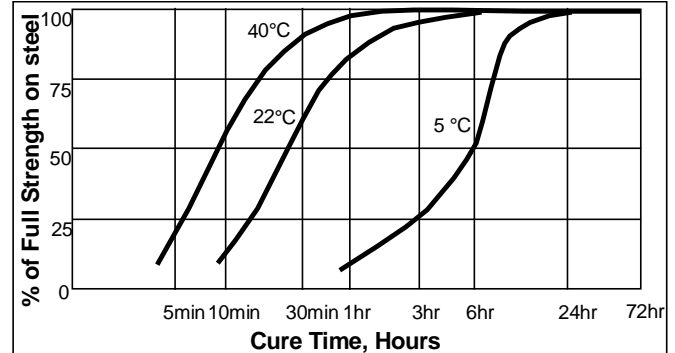
#### Cure speed vs. bond gap

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.



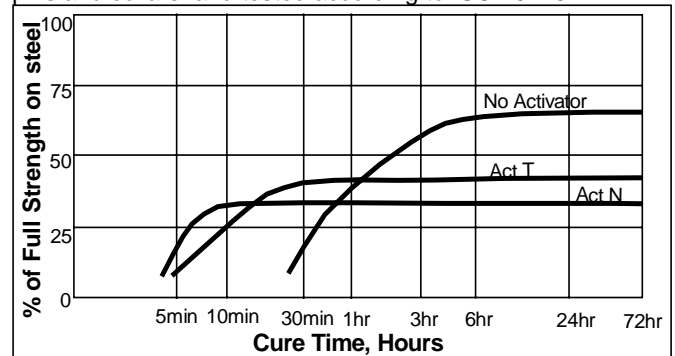
#### Cure speed vs. temperature

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 <sup>-1</sup>	80 x 10 <sup>-6</sup>
Coefficient of thermal conductivity, ASTM C177, W.m <sup>-1</sup> K <sup>-1</sup>	0.1
Specific Heat, kJ.kg <sup>-1</sup> K <sup>-1</sup>	0.3

### PERFORMANCE OF CURED MATERIAL

(After 24 hr at 22°C on steel)

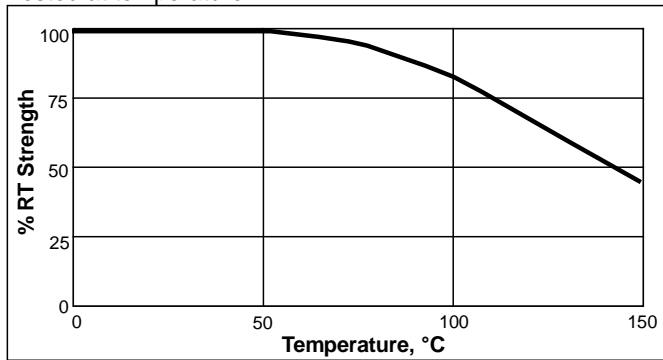
	Value	Typical Range
Shear Strength, ISO 10123, N/mm <sup>2</sup>	31	22 to 40
(psi)	(4500)	(3200 to 5900)
Shear Strength, DIN 54452, N/mm <sup>2</sup>	27.5	20 to 35
(psi)	(4000)	(2900 to 5000)

**TYPICAL ENVIRONMENTAL RESISTANCE**

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

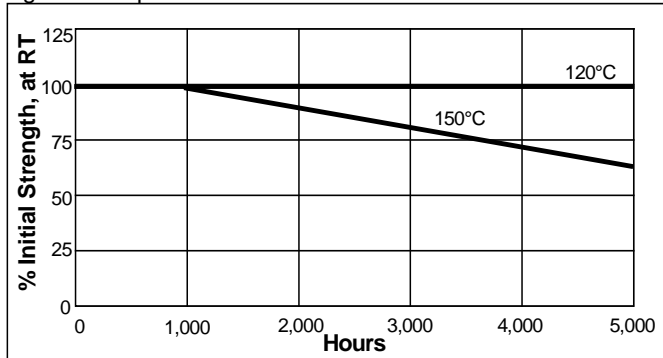
**Hot Strength**

Tested at temperature.



**Heat Ageing**

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	100	100	100
Unleaded Petrol	22°C	100	90	85
Brake Fluid	22°C	100	90	80
Water/Glycol (50%/50%)	87°C	95	80	80
Ethanol	22°C	100	100	75
Acetone	22°C	90	90	90

**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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