

## LOCTITE® 510™

June 2022

### PRODUCT DESCRIPTION

LOCTITE® 510™ provides the following product characteristics:

<b>Technology</b>	Acrylic
<b>Chemical Type</b>	Dimethacrylate ester
<b>Appearance (uncured)</b>	Opaque pink paste <sup>LMS</sup>
<b>Components</b>	One component - requires no mixing
<b>Viscosity</b>	High
<b>Cure</b>	Anaerobic
<b>Application</b>	Gasketing and sealing
<b>Strength</b>	Medium

LOCTITE® 510™ cures when confined in the absence of air between close fitting metal surfaces. This product is a general gasketing product suitable for hand dispensing or screen printing.

### NSF International

**Registered to NSF Category P1** for use as a sealant where there is no possibility of food contact in and around food processing areas. **Note:** This is a regional approval. Please contact your local Technical Service Center for more information and clarification.

**Approved by the Australian Gas Association Certificate** number 2590 Class II rated working pressure 500 kPa, working temperature -10 to 200°C. **Note:** This is a regional approval. Please contact your local Technical Service Center for more information and clarification.

### TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.1
Flash Point - See SDS	
Viscosity, Brookfield - HBT, 25°C, mPa·s (cP):	
Spindle TC, speed 2.5 rpm, Helipath	200,000 to 750,000 <sup>LMS</sup>
Spindle TC, speed 20 rpm, Helipath	40,000 to 140,000 <sup>LMS</sup>

### Instant Sealing Capability

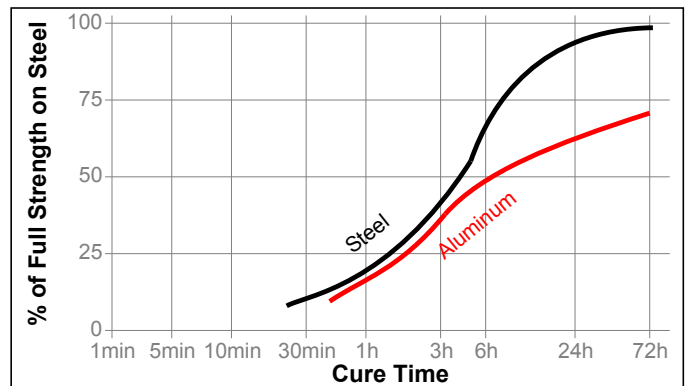
Anaerobic sealants have the ability to resist low on-line test pressures while uncured. This test was performed with uncured product immediately after assembly of an annular polycarbonate sealing surface with an internal diameter of 50 mm and an external diameter of 70 mm.

Pressure Resistance, MPa:	
Induced Gap 0 mm	0.02
Induced Gap 0.125 mm	0.01
Induced Gap 0.25 mm	0.01

### TYPICAL CURING PERFORMANCE

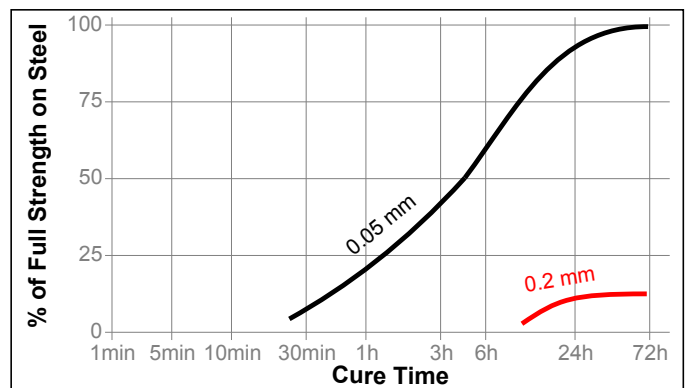
### Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The graph below shows the shear strength developed with time on grit blasted steel lap shears compared to different materials and tested according to ISO 4587.



### Cure Speed vs. Bond Gap

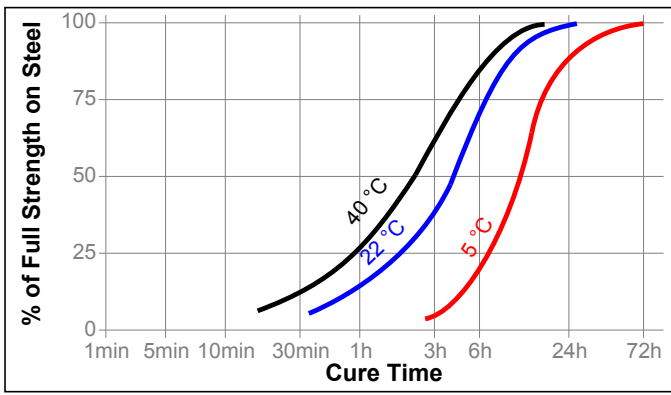
The rate of cure will depend on the bondline gap. The graph below shows the shear strength developed with time on grit blasted steel lap shears compared to different controlled gaps and tested according to ISO 4587.



### Cure Speed vs. Temperature

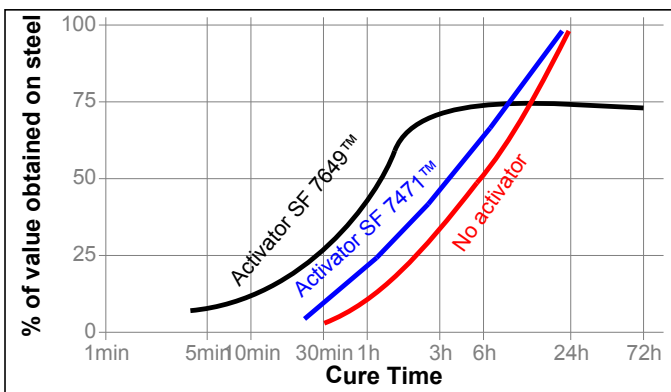
The rate of cure will depend on the temperature. The graph below shows the shear strength developed with time at different temperatures on grit blasted steel lap shears and tested according to ISO 4587.





**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 the shear strength developed with time on grit blasted steel lap shears using Activator SF 7471™ or SF 7649™ and tested according to ISO 4587.



**TYPICAL PROPERTIES OF CURED MATERIAL**

**Physical Properties:**

Coefficient of Thermal Expansion, ISO 11359-2, K <sup>-1</sup>	80×10 <sup>-6</sup>
Coefficient of Thermal Conductivity, ISO 8302, W/(m·K)	0.1
Specific Heat, kJ/(kg·K)	0.3

**TYPICAL PERFORMANCE OF CURED MATERIAL**

**Adhesive Properties**

Cured for 1 hour @ 22 °C

Compressive Shear Strength, ISO 10123:	
Steel pins and collars (degreased)	N/mm <sup>2</sup> (psi) ≥1 <sup>LMS</sup> (≥145)

Cured for 24 hours @ 22 °C

Compressive Shear Strength, ISO 10123:	
Steel pins and collars (degreased)	N/mm <sup>2</sup> (psi) ≥7.5 <sup>LMS</sup> (≥1,085)

Lap Shear Strength :

Steel (grit blasted)	N/mm <sup>2</sup> (psi) 5 (725)
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Tensile Strength, ISO 6922:

Steel (grit blasted)	N/mm <sup>2</sup> (psi) 7.5 (1,085)
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**Sealing Capability**

An annular shaped gasket with an inner diameter of 50 mm and

an external diameter of 70 mm was tested up to 1.3 MPa for leakage.

Sealed to Maximum Induced Gap, mm:

Mild steel	≤0.125
Aluminum 2011T3	≤0.125

**TYPICAL ENVIRONMENTAL RESISTANCE**

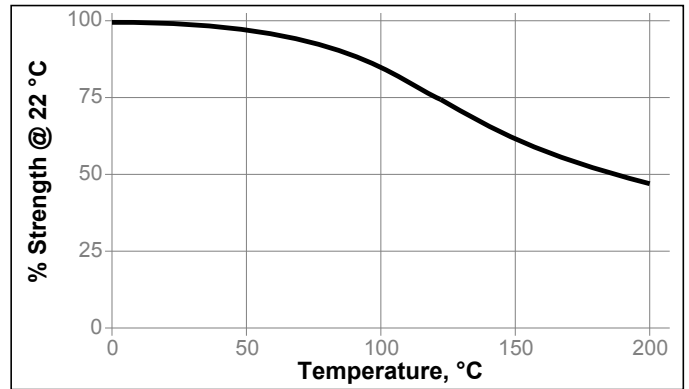
The following tests refer to the effect of environment on strength. This is not a measure of sealing performance.

Cured for 1 week @ 22°C

Lap Shear Strength :  
Steel (grit blasted)

**Hot Strength**

Tested at temperature

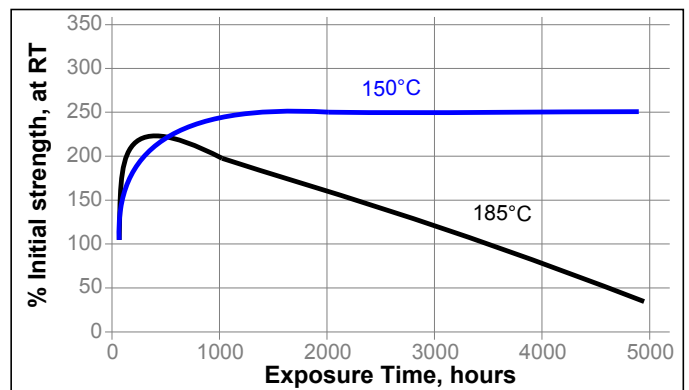


**Cold Strength**

This product has been tested to -75°C (-100 F). This product may work below this temperature, but has not been tested.

**Heat Aging**

Aged at temperature indicated and tested @ 23 °C



**Chemical/Solvent Resistance**

Aged under conditions indicated and tested @ 22°C.

Environment	°C	% of initial strength		
		100 h	500 h	1000 h
Motor oil (MIL-L-46152)	125	100	100	100
Unleaded Petrol	22	95	60	60
Water/glycol 50/50	87	160	110	110



**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 Safety Data Sheet (SDS).

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**

1. For best performance bond surfaces should be clean and free from grease.
2. The product is designed for close fitting flanged parts with gaps up to 0.25 mm ( in).
3. Apply manually as a continuous bead, a rolled film or by screen printing to one surface of the flanges. For gaps greater than 0.125mm (0.005 in) using a pen roller, a rolled film should be applied to both flange surfaces.
4. Low pressures (<0.05 MPa, psi) may be used when testing to confirm a complete seal immediately after assembly and before curing.
5. Flanges should be tightened as soon as possible after assembly to avoid shimming.

**Clean-up**

1. Cured product can be removed by soaking in a Loctite® solvent, e.g. Loctite® 7200 and mechanical removal with a soft scraper. Avoid formation of dust and aerosols. Complete the cleaning process by wiping with a soft cloth dampened with Loctite® Cleaner, e.g. Loctite® 7063 or Loctite® ODC-free cleaner.

**Loctite Material Specification<sup>LMS</sup>**

LMS dated November 13, 1998. Test reports for each batch are available for the indicated properties. LMS test reports include selected QC test parameters considered appropriate to specifications for customer use. Additionally, comprehensive controls are in place to assure product quality and consistency. Special customer specification requirements may be coordinated through Henkel Quality.

**Storage**

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

**Optimal Storage: 8 °C to 21 °C. Storage below 8 °C or greater than 28 °C can adversely affect product properties.** Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Henkel representative.

**Conversions**

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$   
 $\text{kV/mm} \times 25.4 = \text{V/mil}$   
 $\text{mm} / 25.4 = \text{inches}$   
 $\mu\text{m} / 25.4 = \text{mil}$   
 $\text{N} \times 0.225 = \text{lb}$   
 $\text{N/mm} \times 5.71 = \text{lb/in}$   
 $\text{N/mm}^2 \times 145 = \text{psi}$   
 $\text{MPa} \times 145 = \text{psi}$   
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$   
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$   
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$   
 $\text{mPa}\cdot\text{s} = \text{cP}$

**Disclaimer**

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product. Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

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Reference 0.7





## MATERIAL SAFETY DATA SHEET

### SECTION 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product name:** LOCTITE 510 FLANGE SEALANT GASKET ELIMINATOR HIGH TEMP.

**Product-Code:** 231421

**Intended use:** Anaerobic Sealant

**Supplier:**

HENKEL AUSTRALIA PTY. LIMITED  
ADHESIVE TECHNOLOGIES  
135-141 Canterbury Road  
3137 Kilsyth, Victoria

Australia

Phone: +61 (3) 9724 6444

**Emergency information:** 24 HOUR EMERGENCY CONTACT NUMBER 03 9724 6556

### SECTION 2. HAZARDS IDENTIFICATION

**STATEMENT OF HAZARDOUS NATURE:**

Hazardous according to the criteria of ASCC.

Classification of material Xi - Irritant N - Dangerous for the environment

**Risk phrases:**

R36/37 Irritating to eyes and respiratory system.

R43 May cause sensitisation by skin contact.

R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Safety phrases:**

S23 Do not breathe vapour.

S24 Avoid contact with skin.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S37 Wear suitable gloves.

S51 Use only in well-ventilated areas.

S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

**Dangerous Goods information:**

Not classified as Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

**Signal word:**

HAZARDOUS



## MATERIAL SAFETY DATA SHEET

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### Identity of ingredients:

Chemical ingredients	CAS-No.	Proportion
Polyethylene glycol 200 dimethacrylate	25852-47-5	30 - 60 %
2-Butenedioic acid (2E)-, polymer with a,a'-(1-methylethylidene)di-4,1-phenylene]bis[w-hydroxy]poly[oxy(methyl-1,2-ethanediyl)]	39382-25-7	10 - 30 %
Silica, amorphous, fumed, crystal-free	112945-52-5	< 5 %
Cumene hydroperoxide	80-15-9	< 5 %
non hazardous ingredients~		10 - 30 %

### SECTION 4. FIRST AID MEASURES

<b>Ingestion:</b>	Rinse out mouth, drink 1-2 glasses of water, do not induce vomiting. Seek medical advice.
<b>Skin:</b>	Rinse with running water and soap. Seek medical advice.
<b>Eyes:</b>	Rinse immediately with plenty of running water (for 10 minutes). Seek medical attention if necessary.
<b>Inhalation:</b>	Move to fresh air. If symptoms persist, seek medical advice.
<b>First Aid facilities:</b>	Eye wash and safety shower

### SECTION 5. FIRE FIGHTING MEASURES

<b>Suitable extinguishing media:</b>	Carbon dioxide, foam, powder
<b>Decomposition products in case of fire:</b>	Oxides of carbon, oxides of nitrogen, irritating organic vapors.
<b>Particular danger in case of fire:</b>	Do not expose to direct heat.
<b>Special protective equipment for fire-fighters:</b>	Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

<b>Personal precautions and emergency procedures:</b>	Avoid skin and eye contact.  Ensure adequate ventilation. See advice in chapter 8
<b>Environmental precautions:</b>	Do not let product enter drains.
<b>Clean-up methods:</b>	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.



## MATERIAL SAFETY DATA SHEET

### SECTION 7. HANDLING AND STORAGE

- Precautions for safe handling:** Use only in well-ventilated areas.  
Prolonged or repeated skin contact should be avoided to minimise any risk of sensitisation.
- Conditions for safe storage:** Store in original containers at 8-21°C (46.4-69.8°F) and do not return residual materials to containers as contamination may reduce the shelf life of the bulk product.

### SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**National exposure standards:**

Ingredient	form of exposure	TWA (ppm)	TWA (mg/m3)	Peak Limit. (mg/m3)	STEL (ppm)	STEL (mg/m3)
FUMED SILICA (RESPIRABLE FRACTION) 112945-52-5	Respirable fraction.		2	-	-	-

- Engineering controls:** No specific ventilation requirements noted, but forced ventilation may still be required if concentrations exceed occupational exposure limits.
- Eye protection:** Wear protective glasses.
- Skin protection:** Wear suitable protective clothing.  
Butyl rubber gloves
- Please note that in practice the working life of chemical resistant gloves may be considerably reduced as a result of many influencing factors (e.g. temperature). Suitable risk assessment should be carried out by the end user. If signs of wear and tear are noticed then the gloves should be replaced.
- Respiratory protection:** Use only in well-ventilated areas.  
If inhalation risk exists, wear a respirator or air supplied mask complying with the requirements of AS/NZS 1715 and AS/NZS 1716.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	pink gel
Odor:	Mild
Specific gravity:	1.1784
Boiling point:	> 150 °C (> 302 °F)
Flash point:	> 100 °C (> 212 °F)
Vapor pressure:	< 5 mm hg
Density:	1.178 g/cm <sup>3</sup>
Solubility:	Solvent: Water, Slight

### SECTION 10. STABILITY AND REACTIVITY

- Stability:** Stable under recommended storage conditions.
- Conditions to avoid:** Avoid contact with incompatible substances, excessive heat, flames or other ignition sources.



## MATERIAL SAFETY DATA SHEET

**Incompatible materials:** Reaction with strong acids.  
Reacts with strong oxidants.

**Hazardous decomposition products:** Irritating organic vapours.  
carbon oxides.  
Sulphur oxides  
nitrogen oxides

### SECTION 11. TOXICOLOGICAL INFORMATION

**HEALTH EFFECTS:**

**Ingestion:** Not expected to be harmful by ingestion.

**Skin:** Contact with skin can cause irritation and allergic reaction (sensitization) in some individuals.

**Eyes:** Contact with eyes will cause irritation.

**Inhalation:** Irritates the nose, throat and respiratory system.

**Chronic effects:** No chronic health effects are expected from the intended use of these products or from foreseeable handling of them in the workplace.

Acute oral toxicity: Cumene hydroperoxide LD L0 (Mouse) = 5,000 mg/kg  
80-15-9

### SECTION 12. ECOLOGICAL INFORMATION

**General ecological information:** Cured Loctite products are typical polymers and do not pose any immediate environmental hazards.  
Precautions required with respect to Environmental Hazards of articles in which this product is used should be considered.

**Ecotoxicity:** Toxic to aquatic organisms  
May cause long-term adverse effects in the aquatic environment.  
Do not empty into drains / surface water / ground water.

### SECTION 13. DISPOSAL CONSIDERATIONS

**Waste disposal of product:** Dispose of in accordance with local and national regulations.  
Contribution of this product to waste is very insignificant in comparison to article in which it is used

**Disposal for uncleaned package:** After use, tubes, cartons and bottles containing residual product should be disposed of as chemically contaminated waste in an authorised legal land fill site or incinerated.



## MATERIAL SAFETY DATA SHEET

### SECTION 14. TRANSPORT INFORMATION

#### Road and Rail Transport:

Dangerous Goods information: Not classified as Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

#### Marine transport IMDG:

UN no.: 3082  
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Diphenylmethane Bismaleimide)  
Class or division: 9  
Packaging group: III  
EmS: F-A ,S-F  
Seawater pollutant: Marine pollutant

#### Air transport IATA:

UN no.: 3082  
Proper shipping name: Environmentally hazardous substance, liquid, n.o.s. (Diphenylmethane Bismaleimide)  
Class or division: 9  
Packaging group: III  
Packaging instructions (passenger): 964  
Packaging instructions (cargo): 964  
Label: 9

### SECTION 15. REGULATORY INFORMATION

**SUSDP Poisons Schedule:** None

**AICS:** All components are listed or are exempt from listing on the Australian Inventory of Chemical Substances (AICS).

### SECTION 16. OTHER INFORMATION

**Abbreviations/acronyms:** ADGC - Australian Dangerous Goods Code  
ASCC - Australian Safety and Compensation Council  
SUSDP - Standard for the Uniform Scheduling of Drugs and Poisons  
STEL - Short term exposure limit  
TWA - Time weighted average

**Date of previous issue:** 02.08.2006

**Disclaimer:**





## MATERIAL SAFETY DATA SHEET

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