Technical Data Sheet

LOCTITE® 518™

May 2021

PRODUCT DESCRIPTION

LOCTITE® 518™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	Dimethacrylate ester
Appearance (uncured)	Red gel-like material
Fluorescence	Positive under UV light
Viscosity	Thixotropic
Cure	Anaerobic
Secondary Cure	Activator
Application	Sealing
Strength	Medium

LOCTITE® 518™ is a single component, medium strength, anaerobic sealant which cures when confined in the absence of air between close fitting metal surfaces and provides resistance to low pressures immediately after assembly of flanges. The thixotropic nature of LOCTITE® 518™ reduces the migration of liquid product after application to the substrate. LOCTITE® 518™ provides robust curing performance. It not only works on active metals (e.g. mild steel) but also on passive substrates such as aluminum with a low copper content. The product offers gap performance to 0.25 mm (0.01 in) and contamination tolerance. It cures in the presence of minor surface contaminations from various oils, such as cutting, lubrication, anti-corrosion and protection fluids and cleaners containing surfactants and corrosion inhibitors. Typical applications include sealing close fitting joints between rigid metal faces and flanges as a form-in-place gasket, e.g. gearbox and engine casings, etc.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 23 °C	1.1
Viscosity, Brookfield - HBT, 25 °C, mPa·s (cP): Spindle TC, speed 0.5 rpm, Helipath	4,000,000

Instant Sealing Capability

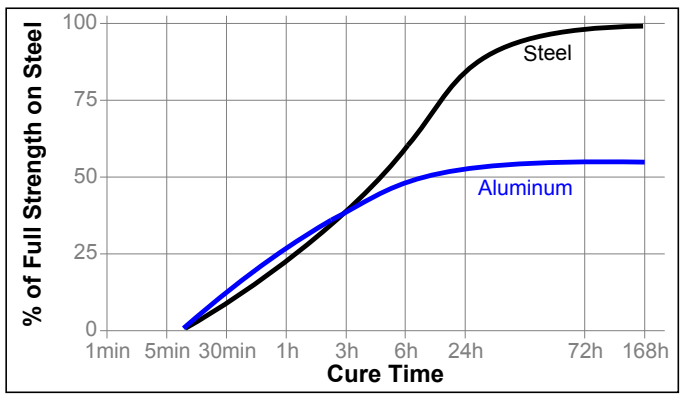
Anaerobic sealants have the ability to resist low on-line test pressures while uncured. This test was performed with uncured product immediately after assembly of an annular steel sealing surface with an internal diameter of 50 mm (2 in) and an external diameter of 70 mm (2.8 in). Note: Instant sealing capability by application of pen roller will be limited to 0.125 mm (0.005 in) due to the applied film thickness.

Pressure Resistance, MPa:	
Induced Gap 0.05 mm	1.35
Induced Gap 0.125 mm	0.14
Induced Gap 0.25 mm	0.1

TYPICAL CURING PERFORMANCE

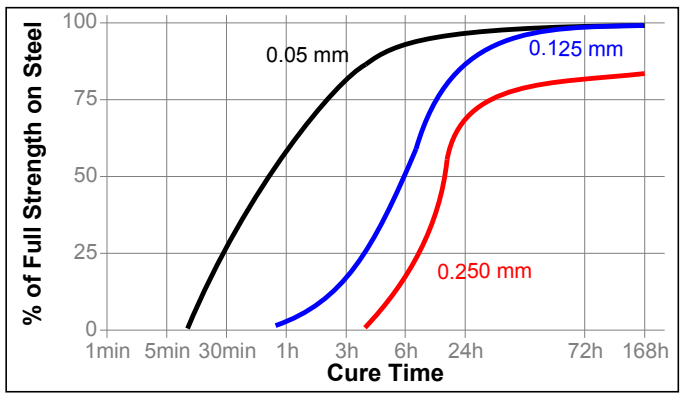
Cure Speed vs. Substrate

The rate of cure will depend on the substrate usedThe graph below shows the shear strength developed with time @ 23°C on grit blasted steel lap shears compared to different materials and tested according to ISO 4587



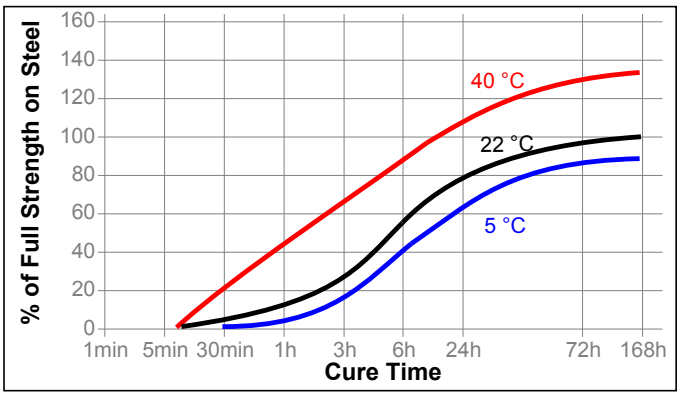
Cure Speed vs. Bond Gap

The rate of cure will depend on the bondline gap. The following graph shows shear strength developed with time @ 23°C on grit blasted steel lap shears at different controlled gaps and tested according to ISO 4587.



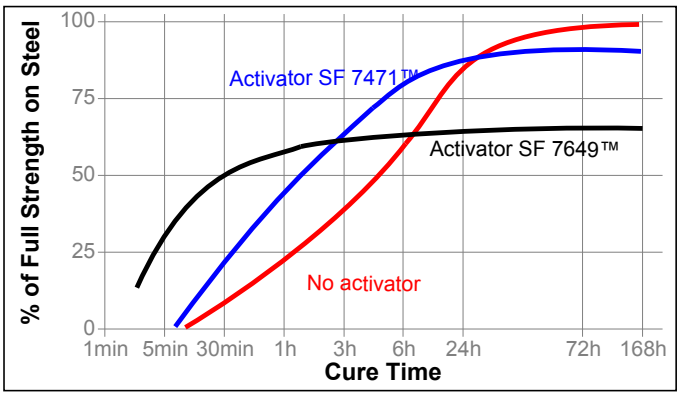
Cure Speed vs. Temperature

The rate of cure will depend on the ambient temperature. The graph below shows the shear strength developed with time @ 23°C on grit blasted steel lap shearsdifferent temperatures 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 @ 23°C on grit blasted steel lap shears using Activator SF 7471™ or SF 7649™ and tested according to ISO 4587.



TYPICAL PERFORMANCE OF CURED MATERIAL

Physical Properties

Cured for 24 hours @ 23°C

Glass Transition Temperature ISO 11359-2,°C		100
Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}:		
Below Tg		145×10^{-06}
Above Tg		160×10^{-06}
Elongation, at break, ISO 527-2, %		64
Tensile Strength, ISO 527-2	N/mm²	7.3
	(psi)	(1,060)
Tensile Modulus, ISO 527-2	N/mm²	54
	(psi)	(7,850)

Adhesive Properties

Cured for 1 hour @ 23°C

Compressive Shear Strength, ISO 10123:

Steel pins and collars	N/mm²	5
	(psi)	(730)

Cured for 24 hours @ 23°C

Compressive Shear Strength, ISO 10123:

Steel pins and collars	N/mm²	5
	(psi)	(730)

Lap Shear Strength :

Mild Steel (grit blasted)	N/mm²	8.4
	(psi)	(1,220)
Mild Steel	N/mm²	5.5
	(psi)	(800)
Aluminum	N/mm²	5.4
	(psi)	(780)
Aluminum (Alclad)	N/mm²	2.2
	(psi)	(320)
Mild Steel (grit blasted) to Aluminum	N/mm²	6.7
	(psi)	(970)

Cured for 72 hours @ 23°C

Lap Shear Strength :

Mild Steel (grit blasted)	N/mm²	11
	(psi)	(1,530)
Mild Steel	N/mm²	5.5
	(psi)	(800)
Aluminum	N/mm²	5.8
	(psi)	(840)
Aluminum (Alclad)	N/mm²	1.6
	(psi)	(230)
Mild Steel (grit blasted) to Aluminum	N/mm²	6.7
	(psi)	(970)

Tensile Strength, ISO 6922:

Grit blasted mild steel pin	N/mm²	10
	(psi)	(1,450)
Aluminum pins	N/mm²	13
	(psi)	(1,930)

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 (immersion in water for 1 minute). Product was cured for 20 hours.

Sealed to Maximum Induced Gap, mm:

Mild steel	0.25
Aluminum	0.25

TYPICAL ENVIRONMENTAL RESISTANCE

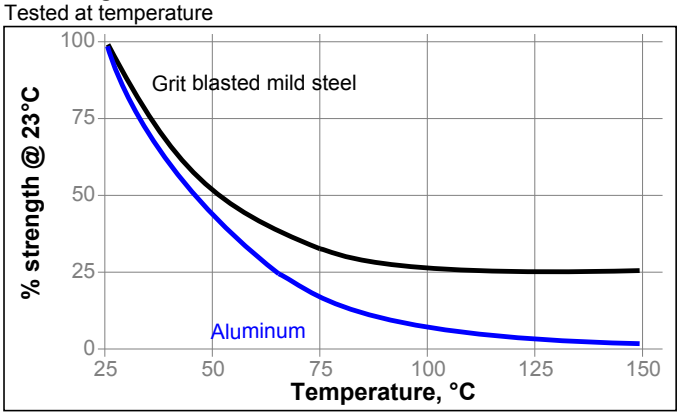
The following tests refer to the effect of environment on strength. This is not a measure of sealing performance.

Cured for 1 week @ 23°C.

Lap Shear Strength ISO 4587:

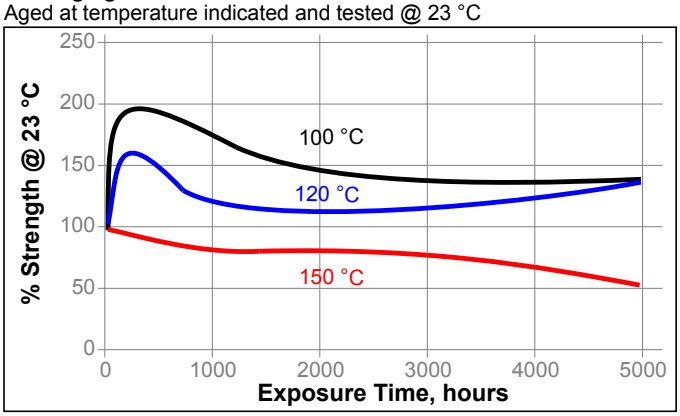
Steel (grit blasted)

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 @ 23 °C

		% of initial strength			
Environment	**°C**	**500 h**	**1000 h**	**3000 h**	**5000 h**
Motor oil (5W30 -Synthetic)	120	175	115	110	145
Motor oil (5W30 -Synthetic)	150	55	50	50	50
Water/glycol 50/50	87	80	65	65	55
ATF	120	175	100	105	140
ATF	150	60	40	40	40
Unleaded gasoline	23	15	10	10	5
DEF (AdBlue®)	23	95	65	70	85

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 and other contaminants.
2. The product is designed for close fitting flanged parts with gaps up to 0.25 mm (0.01 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, <7 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.

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.

Product Specification
The technical data contained herein are intended as reference only and are not considered specifications for the product. Product specifications are located on the Certificate of Analysis or please contact Henkel representative.

Approval and Certificate
Please contact a Henkel representative for related approval or certificate of this product.

Data Ranges
The data contained herein may be reported as a typical value and/or range. Values are based on actual test data and are verified on a periodic basis.

Temperature/Humidity Ranges: 23 °C / 50% RH = 23+2 °C / 50+5% RH.

Conversions
(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
µm / 25.4 = mil
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa x 145 = psi
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

Disclaimer
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