Technical Data Sheet

LOCTITE® SI 5031™

Known as LOCTITE® 5031™
July 2021

PRODUCT DESCRIPTION

LOCTITE® SI 5031™ provides the following product characteristics:

Technology	Silicone
Chemical Type	Acetoxy silicone
Appearance (uncured)	Light yellow, translucent liquid
Fluorescence	Positive under UV light
Viscosity	Self-levelling liquid
Cure	Ultraviolet (UV) / Visible light
Secondary Cure	Moisture for shadowed areas
Application	Potting, Coating or Sealing
Specific Benefits	Self-leveling for uniform cavity fill

LOCTITE® SI 5031™ is a one component, flowable UV and visible light curable silicone adhesive specially designed for potting, coating, and sealing of various automotive, electronic, military, and industrial components. It also has a secondary moisture cure mechanism for curing in shadowed areas. Upon exposure to sufficient UV / visible light or atmospheric moisture, this product forms a medium strength, flexible sealant.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.01
Viscosity, Brookfield - RTV, 25 °C, , mPa·s (cP): Spindle 3, speed 10 rpm	5,800

TYPICAL CURING PERFORMANCE

Normal processing conditions will include exposure to sufficient UV/visible light irradiance to effectively cure the material. Surface and/or atmospheric moisture will promote the cure of material in shadowed regions. Although functional strength is developed almost instantly due to the UV/visible curing nature of LOCTITE® SI 5031™, increased cure properties are developed during 72 hours at ambient conditions.

Surface Cure

When curing with sufficient UV/visible light irradiance, exposed material cures dry to the touch in seconds.

Skin Over Time

Skin over time is the time the surface of the adhesive forms a skin upon exposure to atmospheric moisture at 23°C/ 50% RH.

Skin Over Time, minutes Cured @ 23 °C	20

Tack Free Time

Tack Free time is the time required to achieve a tack free surface.

Tack Free Time,seconds 70 mW/cm2, measured @ 365nm	20

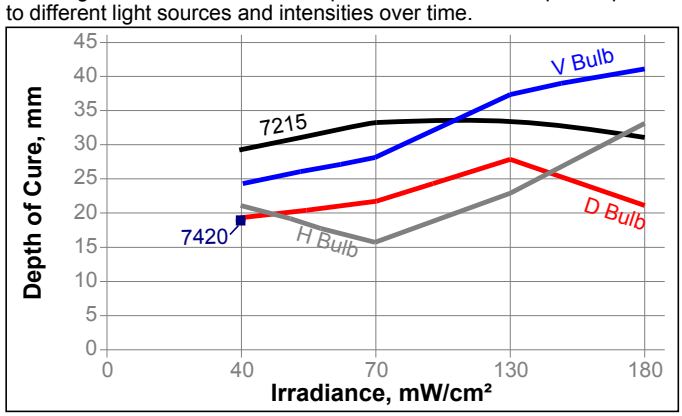
Depth of Cure

Depth of cure, mm:

90seconds @ 70 mW/cm² , measured @ 365 nm	20

Depth of Cure (light)

Shadowed areas rely on surface and/or atmospheric moisture to effect cure. Rapid depth of cure can be attained with focused UV and/or visible light. The following graph shows the cure response of some typical light sources as a function of irradiance after 60 seconds. The following data table shows the depth of cure obtained upon exposure to different light sources and intensities over time.

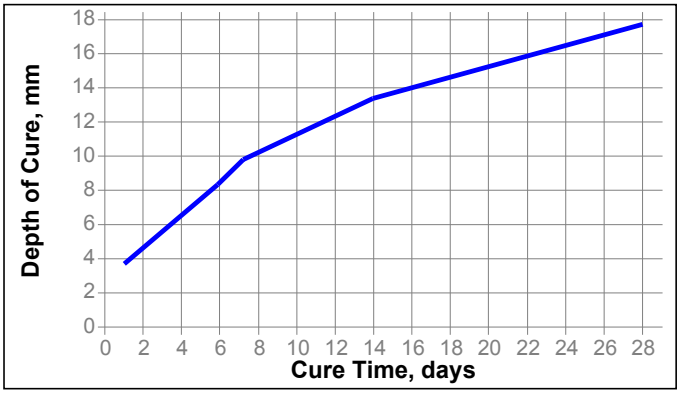


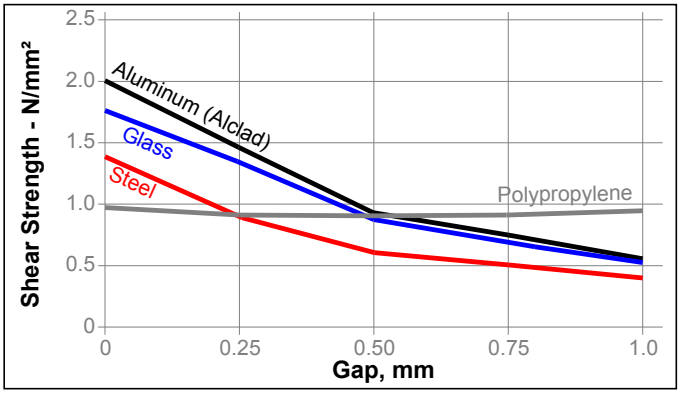
Light Source	Irradiance UV/VIS	Depth of Cure, mm 30 sec.	60 sec.	90 sec.
7411 UV (metal halide)	180/58	7	23	31
7411 V (visible enhanced metal halide)	40/98	8	20	23
7215 (300-watt medium pressure Hg arc)	75/95	23	33	41
Electrodeless V bulb	71/120	17	28	39
Electrodeless D bulb	76/50	10	22	33
Electrodeless H bulb	71/68	5	16	24
Electrodeless H+ bulb	74/64	9	21	28
7735 (50-watt high pressure Hg arc)	890/410	---	13	17
7740 (100-watt high pressure Hg arc)	800/410	3	14	17
7760 (200-watt high pressure Hg arc)	1,100/460	---	9	13
7700 (LED)	12/31	---	8	13
7420 (visible arc lamp)	20/40	8	---	27
7500 (fluorescent lamp)	40/0	---	2	4

Note: Irradiance measured with 7011-A (UV) & 7011-V (VIS) dosimeters

Depth of Cure (moisture only)

Moisture cure of shadowed areas rely on surface and/or atmospheric moisture to effect cure. The typical depth of cure from moisture only versus time (days) at 23 °C and 50% relative humidity is shown in the graph below.





TYPICAL PERFORMANCE OF CURED MATERIAL

Cured for 60seconds @ 70 mW/cm² , measured @ 365 nm, followed by 72 hours @ 23°C / 50% RH (Isopropyl alcohol wiped substrates).

Adhesive Properties

Lap Shear Strength ISO 4587:

Aluminum (Alclad) to Glass	N/mm²	2
	(psi)	(290)
Steel to Glass	N/mm²	1
	(psi)	(150)
Glass to Glass	N/mm²	2
	(psi)	(290)
Polycarbonate to Polycarbonate	N/mm²	0.1
	(psi)	(15)
Polycarbonate to Glass	N/mm²	0.4
	(psi)	(60)
Polycarbonate to Aluminum	N/mm²	0.2
	(psi)	(30)
Polycarbonate to Steel	N/mm²	0.5
	(psi)	(70)
PVC to Glass	N/mm²	0.8
	(psi)	(120)
PVC to Polycarbonate	N/mm²	0.4
	(psi)	(60)
Polybutylene Terephthalate (PBT) to Glass	N/mm²	0.8
	(psi)	(120)
Polybutylene Terephthalate (PBT) to Polycarbonate	N/mm²	0.2
	(psi)	(30)
ABS to Glass	N/mm²	0.4
	(psi)	(60)
ABS to Polycarbonate	N/mm²	0.3
	(psi)	(40)
Nylon to Glass	N/mm²	5
	(psi)	(725)
Nylon to Polycarbonate	N/mm²	0.1
	(psi)	(15)

TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 60 seconds@ 70 mW/cm² , measured @ 365 nm, followed by 7 days @ 23°C / 50% RH.

Heat Aging

Aged at temperature indicated and tested @ 23 °C

Aged @ 177 °C for 168 hours:	
Change in Durometer, Points (Initial = 36)	-8
Change in Tensile Strength, %	-6
Change in Elongation, %	18
Weight Loss, %	-3
Aged @ 233 °C for 168 hours:	
Change in Durometer, Points (Initial = 36)	24
Change in Tensile Strength, %	61
Change in Elongation, %	-66
Weight Loss, %	-3

Typical Fluid Immersion Properties

Aged @ 100 °C for 168 hours:	
Ethylene glycol/water, 50:50:	
Change in Durometer, Points (Initial = 36)	-14
Change in Tensile Strength, %	-43
Change in Elongation, %	25
Volume Swell, %	-2
Propylene glycol/water (Dex-Cool®), 50:50:	
Change in Durometer, Points (Initial = 36)	-16
Change in Tensile Strength, %	-29
Change in Elongation, %	42
Volume Swell, %	-2
Aged @ 150 °C for 70 hours:	
ASTM IRM 903 oil:	
Change in Durometer, Points (Initial = 36)	-20
Change in Tensile Strength, %	-26
Change in Elongation, %	14
Volume Swell, %	47

Shear Strength vs. Gap Thickness

Cured for 60 seconds@ 70 mW/cm² , measured @ 365 nm, followed by 7 days @ 23°C / 50% RH.

Aged @ 150 °C for 168 hours:

5W30 oil:

Change in Durometer, Points (Initial = 36)	-31
Change in Tensile Strength, %	-55
Change in Elongation, %	20
Volume Swell, %	25

ASTM IRM 901 oil:

Change in Durometer, Points (Initial = 36)	-21
Change in Tensile Strength, %	31
Change in Elongation, %	330
Volume Swell, %	6

ASTM IRM 902 oil:

Change in Durometer, Points (Initial = 36)	-13
Change in Tensile Strength, %	-16
Change in Elongation, %	23
Volume Swell, %	8

ATF (Dexron® III):

Change in Durometer, Points (Initial = 36)	-31
Change in Tensile Strength, %	-61
Change in Elongation, %	94
Volume Swell, %	23

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).

Directions For Use

1. For best performance bond surfaces should be clean and free from grease.
2. The product is light sensitive; exposure to daylight, UV light and artificial lighting should be kept to a minimum during storage and handling.
3. The product should be dispensed from applicators with black feedlines.
4. The product is designed to be initially cured with UV light at a minimum irradiance of 30 mW/cm2 for approximately 20 seconds, increased exposure may be required for curing deeper sections.
5. Functional strength is achieved almost instantly.
6. Full performance properties will develop over 72 hours.
7. Moisture curing begins immediately after the product is exposed to the atmosphere, therefore parts to be assembled should be mated within a few minutes after the product is dispensed.
8. Excess material can be easily wiped away with non-polar solvents.
9. For fully automatic applications a volumetric dispensing system is recommended.

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 your local Henkel representative for related approval or certificate of this product.

Data Ranges

The data contained herein may be reported as a typical value. 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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