LOCTITE® 5091™

December 2010

PRODUCT DESCRIPTION

LOCTITE® 5091™ provides the following product characteristics:

Technology	Silicone
Chemical Type	Acetoxy silicone
Appearance (uncured)	Translucent liquid[LMS]
Components	One component - requires no mixing
Cure	Ultraviolet (UV) light
Secondary Cure	Moisture for shadowed areas
Application	Potting, Coating or Sealing
Self-leveling	Uniform cavity fill
Flexibility	Highly flexible. Enhances load bearing & shock absorbing characteristics of the bond area.
Strength	Medium

LOCTITE® 5091™ is used for potting, coating and sealing of various automotive, electronic, military and industrial components.

UL Classification

Classified by Underwriters Laboratories Inc.® E257711 - Plastics & Components. Please visit the UL website for additional information. **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	1.01
Solids/Non-Volatile Content, %	>95
Flash Point - See MSDS	
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 3, speed 10 rpm	4,000 to 6,000[LMS]

TYPICAL CURING PERFORMANCE

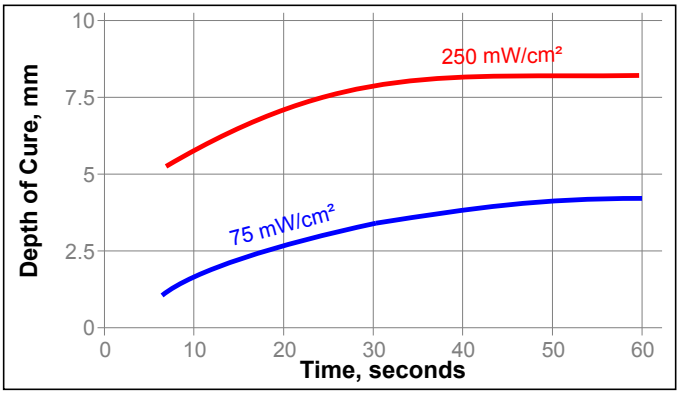
Normal processing conditions will include exposure to sufficient UV light irradiance to effectively cure the material. Surface and/or atmospheric moisture will promote the cure of material in shadowed regions. Although functional strength is developed almost instantly due to the UV curing nature of LOCTITE® 5091™, increased cure properties are developed during 72 hours at ambient conditions.

Surface Cure

Tack Free Time, seconds:	
Cured @ 75 mW/cm² ,	≤20[LMS]
Skin Over Time, minutes:	
Moisture cure only	≤15[LMS]

Depth of Cure

Shadowed areas rely on surface and/or atmospheric moisture to effect cure. Depth of cure is limited to approximately 6 millimeters and will take at least 24 hours to develop. Rapid depth of cure can be attained with focused UV light. The graph(s) below show the depth of cure obtained up to 60 seconds at two different levels of UV irradiance.



TYPICAL PROPERTIES OF CURED MATERIAL

Cured @ 40 mW/cm² , for 60 seconds per side plus 7 days @ 22 °C / 50% RH

Physical Properties:

Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}		2.82×10^{-4}
Water Absorption, ISO 62, %:		
24 hours in water @ 22 °C		0
Shrinkage, %		0.2
Tear Strength, ISO 34-1 , Die B	N/mm (lb./in.)	0.7 (4)
Water Vapor Trans. Rate, ASTM E96, g/(h·m²)		0.458
Compression Set, ASTM D 395, Method B, %:		
Aged @ 22 °C for 70 hours		5
Aged @ 75 °C for 70 hours		30
Aged @ 100 °C for 70 hours		52

Electrical Properties:

Dielectric Constant / Dissipation Factor, IEC 60250:	
100 Hz	2.87 / 0.003
100 kHz	2.88 / 0.0027
Volume Resistivity, IEC 60093, Ω·cm	3.3×10^{13}
Dielectric Breakdown Strength, IEC 60243-1, kV/mm	18

Cured @ 75 mW/cm² , measured @ 365 nm, for 60 seconds per side plus 3 days @ 22 °C / 50±5% RH

Shore Hardness, ISO 868, Durometer A		31 to 37[LMS]
Elongation, ISO 37, %		≥75[LMS]
Tensile Strength, ISO 37	N/mm² (psi)	≥0.6[LMS] (≥87)

Cured @ 75 mW/cm² , for 60 seconds per side

UV Depth of Cure, mm	≥3.7[LMS]

TYPICAL PERFORMANCE OF CURED MATERIAL

Cured @ 40 mW/cm² , for 60 seconds, plus 7 days post UV Cure @ 22 °C / 50% RH

Lap Shear Strength, ISO 4587:

Aluminum to Glass	N/mm²	0.01 to 0.1
	(psi)	(1 to 15)
Steel to Glass	N/mm²	0.1 to 0.4
	(psi)	(15 to 60)
Glass to Glass	N/mm²	0.1 to 0.6
	(psi)	(15 to 85)

180° Peel Strength, ISO 8510-2:

Aluminum	N/mm	<0.01
	(lb/in)	(<0.05)
Steel	N/mm	<0.01
	(lb/in)	(<0.05)

TYPICAL ENVIRONMENTAL RESISTANCE

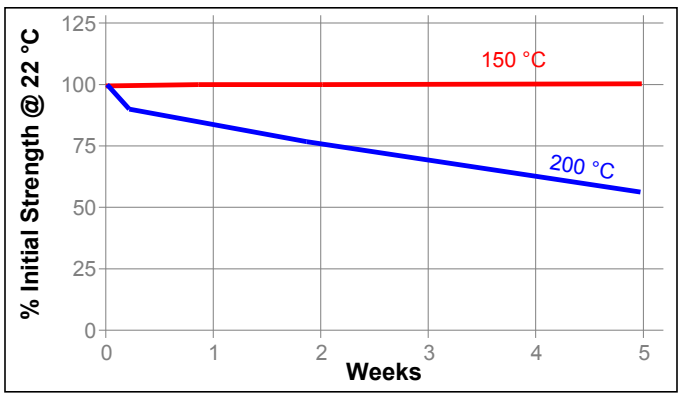
2 mm thick samples cured @ 40 mW/cm² , for 60 seconds per side

Physical Properties:

Tensile Strength, ISO 37

Heat Aging

Aged at temperature indicated and tested @ 22 °C



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 Material Safety Data Sheet (MSDS).

Directions for use:

1. For best performance bond surfaces should be clean and free from grease.
2. 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.
3. Functional strength is achieved almost instantly.
4. Full performance properties will develop over 72 hours.
5. 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.
6. Excess material can be easily wiped away with non-polar solvents.

Loctite Material Specification[LMS]

LMS dated February 3, 1997. 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 Technical Service Center or Customer Service Representative.

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

Note

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Reference 1.3