Technical Data Sheet

LOCTITE® SI 5240™

Known as LOCTITE® 5240™
January 2015

PRODUCT DESCRIPTION

LOCTITE® SI 5240™ provides the following product characteristics:

Technology	Silicone
Chemical Type	Alkoxy silicone
Appearance (uncured)	Clear liquid with yellow to green tint slight haze permissible[LMS]
Components	One component - requires no mixing
Cure	Ultraviolet (UV)/ visible light
Secondary Cure	Moisture for shadowed areas
Application	• Bonding • Potting • Coating • Sealing
Unique Flow Characteristics	Thixotropic product that will thin with shear yet provides uniform cavity fill

LOCTITE® SI 5240™ is a flowable sealant with the benefit of deep light cure capability, ultraviolet and visible, combined with a secondary neutral moisture cure mechanism for shadow curing. Upon exposure to sufficient UV light, visible light or atmospheric moisture, this product forms a medium strength, flexible rubber sealant.

ISO-10993

An ISO 10993 Test Protocol is an integral part of the Quality Program for LOCTITE® SI 5240™. LOCTITE® SI 5240™ has been qualified to Henkel's ISO 10993 Protocol as a means to assist in the selection of products for use in the medical device industry. Certificates of Compliance are available on Henkel's website or through the Henkel Quality Department.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ °C 1.06

Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):
Spindle 5, speed 10 rpm 15,000 to 35,000[LMS]

Flash Point - See SDS

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® SI 5240™, increased cure properties are developed during 72 hours at ambient conditions.

Tack Free Time

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

Tack Free Time, minutes:
Zeta® 7760:
225 mW/cm² , measured @ 320 to 400 nm 50 to 55

Zeta® 7411-S:
50 mW/cm² , measured @ 320 to 400 nm 90 to 105

Tack Free Time, seconds:
Zeta® 7215:
90 mW/cm² , measured @ 320 to 400 nm 90 to 105

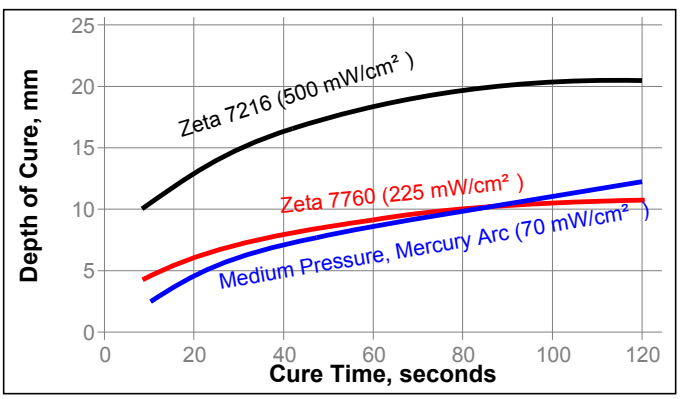
Electrodeless, H bulb:
500 mW/cm² , measured @ 320 to 400 nm 5 to 10

Depth of Cure

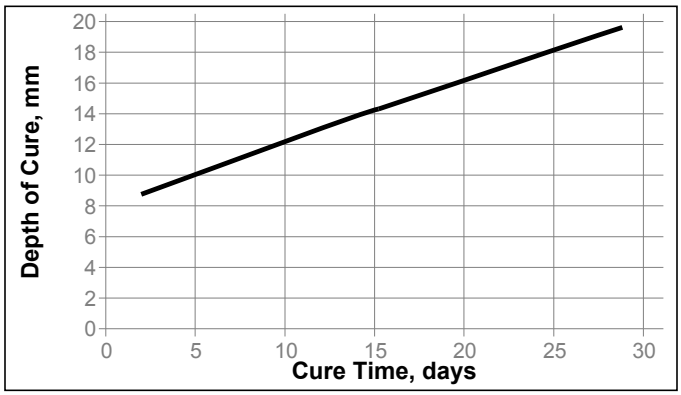
Depth of cure (cure time 60 seconds), mm:
70 mW/cm² , measured @ 365 nm, using a Zeta® 7200 light source ≥10[LMS]

Depth of Cure (light)

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 time.



Depth of Cure (moisture only)
Moisture cure of shadowed areas rely on atmospheric moisture. The depth of cure from moisture versus time at 25 °C and 50% relative humidity is shown in the graph below.



Fixture Time vs. UV Intensity

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm² .

UV Fixture Time, Glass microscope slides, seconds:

Medium Pressure Hg Arc source, Zeta® 7215:	
70 mW/cm² , measured @ 320-400 nm	5 to 10
Electrodeless system, H bulb:	
500 mW/cm² , measured @ 320-400 nm	5 to 10
Zeta® 7760 UV wand system:	
225 mW/cm² , measured @ 320-400 nm	5 to 10
Zeta® 7411-S flood system:	
50 mW/cm² , measured @ 320-400 nm	5 to 10

TYPICAL PROPERTIES OF CURED MATERIAL

Cured @ 70 mW/cm² , measured @ 365 nm for 60 seconds per side, using a medium pressure mercury arc light source, followed by 7 days @ 22 °C

Physical Properties:

Shore Hardness, ISO 868, Durometer A		≥40[LMS]
Elongation, at break, ISO 527-3, %		250 to 450[LMS]
Tensile Strength, ISO 527-3	N/mm²	≥3[LMS]
	(psi)	(≥435)
Tensile Modulus, at 100% elongation, ISO 527-2	N/mm²	1
	(psi)	(145)
Tear Strength, ISO 34-1 , Die C	N/mm	12.6
	(lb./in.)	(72)
Volume Shrinkage, ISO 1675 %		0.8
Linear Shrinkage, ISO 1675 %		0.3
Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}:		
Pre Tg		285×10^{-6}
Post Tg		390×10^{-6}

Electrical Properties:

Dielectric Breakdown Strength, IEC 60243-1, kV/mm	21
Dielectric Constant / Dissipation Factor, IEC 60250:	
1 kHz	2.8 / 0.05
1 MHz	2.8 / 0.004
Volume Resistivity, IEC 60093, Ω·cm	1.2×10^{15}
Surface Resistivity, IEC 60093, Ω	5.15×10^{15}

After 7 days @ 22 °C / 50% RH, Moisture cure only

Physical Properties:

Elongation, at break, ISO 527-3, %		730
Tensile Strength, at break, ISO 527-3	N/mm²	0.5
	(psi)	(80)
Tensile Modulus, at 100% elongation, ISO 527-3	N/mm²	0.1
	(psi)	(20)
Tear Strength, ISO 34-1 , Die C	N/mm	2
	(lb./in.)	(11)

After 14 days @ 22 °C / 50% RH, Moisture cure only

Physical Properties:

Elongation, at break, ISO 527-3, %		530
Tensile Strength, at break, ISO 527-3	N/mm²	0.7
	(psi)	(110)
Tensile Modulus, at 100% elongation, ISO 527-3	N/mm²	0.2
	(psi)	(30)
Tear Strength, ISO 34-1 , Die C	N/mm	3.7
	(lb./in.)	(21)

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured @ 70 mW/cm² , measured @ 365 nm for 60 seconds per side, using a medium pressure mercury arc light source, followed by 7 days @ 22 °C

Lap Shear Strength, ISO 4587:

Aluminum to Glass	N/mm²	1
	(psi)	(145)
Steel to Glass	N/mm²	1.1
	(psi)	(155)
Glass to Glass	N/mm²	0.6
	(psi)	(85)
PVC to Glass	N/mm²	0.9
	(psi)	(140)
ABS to Glass	N/mm²	0.7
	(psi)	(100)

TYPICAL ENVIRONMENTAL RESISTANCE

Cured @ 70 mW/cm² , measured @ 365 nm, for 60 seconds per side, using a medium pressure mercury arc light source, followed by 7 days @ 22 °C

Heat Aging

Aged at temperature indicated and tested @ 22 °C

Aged @ 85°C, 85 %RH for 168 hours :	
Change in Durometer, Points (Initial = 38)	-11
Change in Tensile Strength, %	-84
Change in Elongation, %	-64
Aged @ 60 °C for 168 hours:	
Change in Durometer, Points (Initial = 38)	4
Change in Tensile Strength, %	7
Change in Elongation, %	-9
Aged @ 100 °C for 168 hours:	
Change in Durometer, Points (Initial = 38)	10
Change in Tensile Strength, %	26
Change in Elongation, %	-26
Aged @ 150 °C for 168 hours:	
Change in Durometer, Points (Initial = 38)	-4
Change in Tensile Strength, %	-47
Change in Elongation, %	-27

Heat Aging

Aged at temperatures indicated and tested @ 22 °C

Aged @ 85°C, 85 %RH for 336 hours :	
Change in Durometer, Points (Initial = 38)	-17
Change in Tensile Strength, %	-87
Change in Elongation, %	-72
Aged @ 60 °C for 336 hours:	
Change in Durometer, Points (Initial = 38)	5
Change in Tensile Strength, %	5
Change in Elongation, %	-13
Aged @ 100 °C for 336 hours:	
Change in Durometer, Points (Initial = 38)	10
Change in Tensile Strength, %	28
Change in Elongation, %	-22
Aged @ 100 °C for 336 hours:	
Change in Durometer, Points (Initial = 38)	-3
Change in Tensile Strength, %	-34
Change in Elongation, %	-7

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 designed to be initially cured by UV/visible light at a minimum irradiance of 70 mW/cm2 for approximately 60 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 January 28, 2010. 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

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Reference 0.1