Technical Data Sheet

LOCTITE® SI 5600™ Black

Known as LOCTITE®5600™Black
June 2017

PRODUCT DESCRIPTION

LOCTITE® SI 5600™ Black provides the following product characteristics:

Technology	Silicone
Chemical Type	Alkoxy silicone
Appearance,Resin (Component A)	Black paste[LMS]
Appearance, Hardener (Component B)	White paste[LMS]
Appearance (Mixture)	Black paste
Components	Two components - requires mixing
Mix Ratio by volume: Part A: Part B	2 : 1
Viscosity	Thixotropic
Cure	Room temperature cure and Atmospheric moisture
Application	Bonding and Sealing

LOCTITE® SI 5600™ Black is a two part, fast cure silicone with excellent bond strength to glass, metals and Ceran®. LOCTITE® SI 5600™ Black has excellent hot strength up to 180°C. Typical applications include sealing/bonding glass stovetop assemblies, weld and rivet reduction in high temperature applications, and other high temperature bonding applications.

UL Classification

Classified by Underwriters Laboratories Inc.® E309695 - The adhesive systems have been tested in accordance with UL746C, "Polymeric Materials for use in Electrical Equipment Evaluations" with regard to the effect of environmental conditions, for the surfaces and temperatures indicated in the individual recognitions. Adequate adhesive bond strength must be determined for the particular application on the end product. **Note:** This is a regional approval. Please contact your local Technical Service Center for more information and clarification

TYPICAL PROPERTIES OF UNCURED MATERIAL

Part A Properties:

Specific Gravity @ 25 °C	1.2 to 1.4[LMS]
Flash Point - See SDS	
Viscosity, Cone & Plate, mPa·s (cP):	
Spindle CP20-2 Deg @ 20 s^{-1}	40,000 to 90,000[LMS]

Part B Properties:

Specific Gravity @ 25 °C	1.6 to 1.85[LMS]
Flash Point - See SDS	
Viscosity, Cone & Plate, mPa·s (cP):	
Spindle CP20-2 Deg @ 20 s^{-1}	30,000 to 50,000[LMS]

Mixed Properties:

Flash Point - See SDS

TYPICAL CURING PERFORMANCE

The mix of part A and part B initiates the reaction. There is a secondary cure with atmospheric moisture that promotes full cure over 7 days.

Skin Over Time

Skin over time is the time the surface of the adhesive forms a skin upon exposure to atmospheric moisture at 25 ± 2 °C, 50 ± 5% RH.

Skin Over Time, minutes	≤10[LMS]

Fixture Time

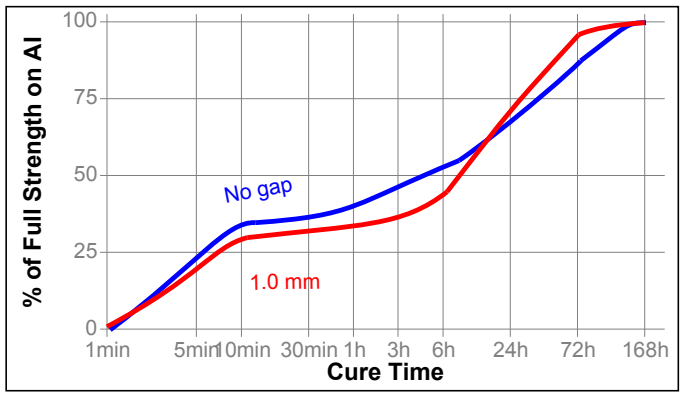
Fixture time is defined as the time to develop a shear strength of 0.1 N/mm² .

Fixture Time, ISO 4587, minutes:

Steel @ 25 °C	5 to 10
Aluminium Alclad @ 25 °C	3.5 to 4

Cure Speed vs. Time

The graph below shows the shear strength developed over time at 22 °C / 50 % RH on aluminum (Alclad) and tested according to ISO 4587.



TYPICAL PROPERTIES OF CURED MATERIAL

Cured for 7 days @ 22 °C / 50% RH

Physical Properties:

Shore Hardness, ISO 868 , Durometer A		30 to 50[LMS]
Elongation, at break, ISO 527-3, %		≥120[LMS]
Tensile Strength, ISO 527-3	N/mm²	≥1.0[LMS]
	(psi)	(≥145)
Young's Modulus, ISO 37	N/mm²	0.81

	(psi)	(118)
Tear Strength, ISO 34-1 , Die C	N/mm	7.2
	(lb./in.)	(41)
Water Absorption, ISO 62, %:		
24 hour in water @ 22 °C		0.7
Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}		2.02×10^{-4}
Volume Shrinkage, %		0.13
Linear Shrinkage, in/in		0.04

Electrical Properties:

Dielectric Constant / Dissipation Factor, IEC 60250:	
1 kHz	4.159 / 0.0375
1 MHz	4.144 / 0.0038
Volume Resistivity, IEC 60093, Ω·cm	5.5×10^{14}
Dielectric Breakdown Strength, IEC 60243-1, kV/mm	19.4

TYPICAL PERFORMANCE OF CURED MATERIAL

Cured for 7 days @ 22 °C / 50% RH, 0 gap

Adhesive Properties

180° Peel Strength, ISO 8510-2 N/mm (lb/in):

Steel	N/mm	4.2
	(lb/in)	(24)

Impact Strength, ISO 9653, J:

Aluminum (Alclad)	4.3

Shear Strength:

Lap Shear Strength :

Aluminum (Alclad)	N/mm²	≥1.0[LMS]
	(psi)	(≥145)
Steel	N/mm²	2.5
	(psi)	(360)
Stainless steel	N/mm²	2.1
	(psi)	(310)
Galvanized Steel	N/mm²	2.5
	(psi)	(360)
Enameled Steel	N/mm²	1.7
	(psi)	(240)
Glass	N/mm²	2.0
	(psi)	(300)
Polycarbonate	N/mm²	1.2
	(psi)	(180)
ABS	N/mm²	1.7
	(psi)	(240)
PBT (glass filled)	N/mm²	1.8
	(psi)	(260)
Nylon	N/mm²	2.2
	(psi)	(320)
Epoxyglass	N/mm²	2.3
	(psi)	(330)
Steel to Ceran®	N/mm²	1.8
	(psi)	(260)
Aluminum (Alclad) to Ceran®	N/mm²	2.1
	(psi)	(300)

Cured for 7 days @ 22 °C / 50% RH and 1.0 mm gap

Impact Strength, ISO 9653, J:

Aluminum (Alclad)	11.9

Shear Strength:

Lap Shear Strength , N/mm² :

Aluminum (Alclad)	N/mm²	1.7
	(psi)	(250)
Steel	N/mm²	1.6
	(psi)	(230)
Stainless steel	N/mm²	1.5
	(psi)	(220)
Galvanized Steel	N/mm²	1.5
	(psi)	(220)
Enameled Steel	N/mm²	2.1
	(psi)	(310)
Glass	N/mm²	1.1
	(psi)	(160)
Polycarbonate	N/mm²	0.4
	(psi)	(50)
ABS	N/mm²	1.5
	(psi)	(210)
PBT (glass filled)	N/mm²	1.3
	(psi)	(190)
Nylon	N/mm²	1.1
	(psi)	(160)
Epoxyglass	N/mm²	1.4
	(psi)	(210)
Steel to Ceran®	N/mm²	1.4
	(psi)	(200)
Aluminum (Alclad) to Ceran®	N/mm²	1.7
	(psi)	(250)

TYPICAL ENVIRONMENTAL RESISTANCE

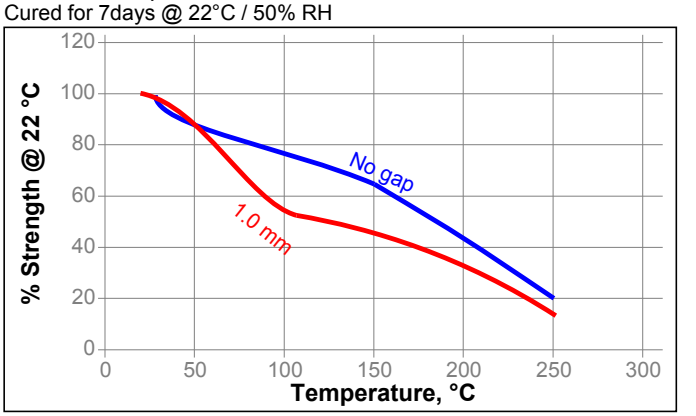
Lap Shear Strength :

Alclad

Hot Strength

Tested at temperature

Cured for 7days @ 22°C / 50% RH



Heat Aging

Aged at temperature indicated and tested @ 22 °C

Aged @ 50 °C for 1,000 hours:	
Change in Tensile Strength, %	-5
Change in Elongation, %	-30
Aged @ 100 °C for 1,000 hours:	
Change in Tensile Strength, %	-25
Change in Elongation, %	-33
Aged @ 150 °C for 1,000 hours:	
Change in Tensile Strength, %	-22
Change in Elongation, %	-30
Aged @ 200 °C for 1,000 hours:	
Change in Tensile Strength, %	14
Change in Elongation, %	-81

Chemical/Solvent Resistance

Cured for 5days @ 22°C, on Alclad with 1.0 mm gap, aged under conditions indicated and tested @ 22°C

		% of initial strength	
Environment	**°C**	**500 h**	**1000 h**
Water	25	86	66
Isopropanol	25	62	65
2% Ammonia/Water	25	83	69
Motor oil (10W30)	25	99	109
Water/glycol 50/50	25	97	88

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 the mating surface should be clean and free of grease.
2. Best results are achieved utilizing 10.7mm square, 24 element mix nozzle.
3. After dispense, mate parts immediately to ensure maximum bond strength.
4. **Dual Cartridges:** To use simply insert the cartridge into the application gun and start the plunger into the cylinders using light pressure on the trigger. Next, remove the cartridge cap and dispense the first 3-5cm of mixed adhesive to be sure both part A and part B are flowing. Attach the mix nozzle to the end of the cartridge and begin dispensing onto part. **Bulk Containers:** Utilize volumetric dispense system to ensure proper mix ratio and utilize mix nozzle to obtain adequate mixing.

Loctite Material Specification[LMS]

LMS dated October 12, 2006 (Part A) and LMS dated March 16, 2017 (Part B). 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 Loctite 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

(°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

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.

In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:
In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:
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. 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.

In case products are delivered by Henkel Corporation, or Henkel Canada Corporation, the following disclaimer is applicable:
The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be

covered by one or more United States or foreign patents or patent applications.

Trademark usage
Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.

Reference 0.2