

LOCTITE[®] SI 593[™] BLACK

Known as LOCTITE[®] Superflex[®] Black RTV Silicone or LOCTITE[®] 593
August 2014

PRODUCT DESCRIPTION

LOCTITE[®] SI 593[™] BLACK provides the following product characteristics:

Technology	Silicone
Chemical Type	Acetoxy silicone
Appearance (uncured)	Black ^{LMS}
Components	One component - requires no mixing
Viscosity	Thixotropic paste
Cure	Room temperature vulcanizing (RTV)
Odor	Acetic Acid
Application	Sealing
Specific Benefit	<ul style="list-style-type: none"> • Non-slumping • Superior adhesion and flexibility • Seals out moisture and contaminants • Fills large cracks and seams • Non-flammable • Non-toxic

LOCTITE[®] SI 593[™] BLACK is a single component, room temperature vulcanizing compound designed to provide an excellent adhesive sealant for mechanical assemblies. This material cures on exposure to moisture in the air to form a tough, flexible, silicone rubber seal. This product resists aging, weathering and thermal cycling without hardening, shrinking or cracking. Designed for superior bonding and sealing properties to most surfaces (not recommended for concrete). Formulated to withstand extreme temperature cycling, UV light and ozone. Typical applications include electrical insulation, protection of leads from mechanical shock, trim bonding, and sealing of ductwork, vents, flues, doors, and windows.

UL Classification

Classified by Underwriters Laboratories Inc.[®] UL-94 "Test for Flammability of Plastic Materials" and meets the requirements of 94HB in a 1.9 mm cross section.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.01
Extrusion Rate, g/min	≥250 ^{LMS}
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

LOCTITE[®] SI 593[™] BLACK cures on exposure to moisture in the air. The product dries tack free in 60 minutes and fully cures in 24 hours. Cure times will vary with temperature, humidity and gap.

Tack Free Time / Surface Cure

Tack Free Time, minutes	≤60 ^{LMS}
-------------------------	--------------------

TYPICAL PROPERTIES OF CURED MATERIAL

Cured for 1 week @ RT

Physical Properties:

Tensile Strength, ISO 37	N/mm ² (psi)	≥1.5 ^{LMS} (≥215)
Elongation, ISO 37, %		≥300 ^{LMS}
Shore Hardness, ISO 868, Durometer A		≥18 ^{LMS}

TYPICAL ENVIRONMENTAL RESISTANCE

Silicones provide excellent environmental resistance due to their unique chemical structure and the inherent properties of the materials.

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).

Loctite Material Specification^{LMS}

LMS dated September 1, 1995. 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.

Directions for use:

1. Clean and dry surfaces. Remove all oil and grease.
2. Apply product to surface. For bonding applications, apply to one surface only and join surfaces immediately. When using pressurized cans and cartridges, apply silicone by pushing the product in the direction of use (Forward) into the surface.
3. Wipe away excess material immediately.

Clean-up

1. Allow excess material to extend beyond the extension nozzle or aerosol tip to cure, sealing and protecting the remaining product from moisture. For reuse, simply remove the cured product from the tip.
2. Remove uncured product from parts and hand-tools with a dry cloth. If skinned over, break film with a dry cloth to remove as much as possible.
3. Clean hands with a dry cloth or hand cleaner.

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

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$
 $\text{kV/mm} \times 25.4 = \text{V/mil}$
 $\text{mm} / 25.4 = \text{inches}$
 $\mu\text{m} / 25.4 = \text{mil}$
 $\text{N} \times 0.225 = \text{lb}$
 $\text{N/mm} \times 5.71 = \text{lb/in}$
 $\text{N/mm}^2 \times 145 = \text{psi}$
 $\text{MPa} \times 145 = \text{psi}$
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$
 $\text{mPa}\cdot\text{s} = \text{cP}$

Note:

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, Resin Technology Group, Inc., 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 1.2