Technical Data Sheet

# LOCTITE® SI 5970™

Known as LOCTITE® 5970™
October 2018

## PRODUCT DESCRIPTION

LOCTITE® SI 5970™ provides the following product characteristics:

| | |
|---|---|
| **Technology** | Silicone |
| Chemical Type | Alkoxy silicone |
| Appearance (uncured) | Black paste[LMS] |
| Components | One component - requires no mixing |
| Thixotropic | Reduced migration of liquid product after application to substrate |
| **Cure** | Room temperature vulcanizing (RTV) |
| **Application** | Gasketing |
| Specific Benefit | Excellent resistance to automotive engine oils |

LOCTITE® SI 5970™ has been designed specifically for gasketing applications. It withstands on line, low pressure tests carried out before product begins to cure. Typical applications include stamped sheet metal covers (timing covers and oil sumps) where good oil resistance and the ability to withstand high joint-movement is required.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

| | |
|---|---|
| Specific Gravity @ 25 °C | 1.38 to 1.44[LMS] |
| Flash Point - See SDS | |
| Extrusion Rate, g/min: | |
| Pressure 0.62 MPa, time 15 seconds, temperature 25 °C: | |
| Semco Cartridge | 40 to 80[LMS] |

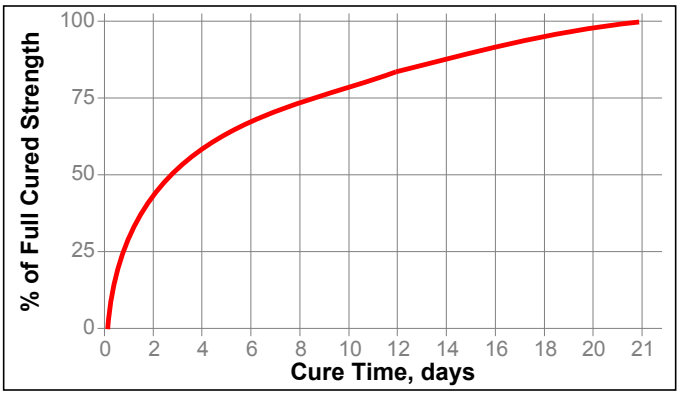
## TYPICAL CURING PERFORMANCE

### Surface Cure

LOCTITE® SI 5970™ becomes tack free on exposure to atmospheric moisture within 25 minutes at 23±2°C / 50±5%RH.

### Cure Speed

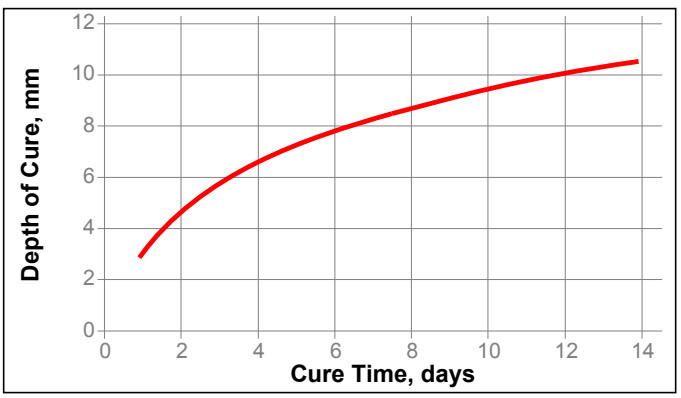
The graph below shows shear strength developed with time on Aluminum lapshears at a bond gap of 0.5 mm. Cure condition 23±2 °C, 60±5% RH. Strength is determined according to ISO 4587.




### Depth of Cure

The depth of cure depends on temperature and humidity. Depth of cure was measured on strip pulled from a ramped PTFE mold (maximum depth 10 mm).

The graph below shows the increase in depth of cure with time at 23±2 °C / 50±5 % RH.




## TYPICAL PROPERTIES OF CURED MATERIAL

**Physical Properties**:

| | | |
|---|---|---|
| Shore Hardness, ISO 868, Durometer A | | 44 |
| Elongation, ISO 37, % | | ≥200[LMS] |
| Tensile Strength, ISO 37 | N/mm² | ≥1.5[LMS] |
| | (psi) | (≥278) |

**Electrical Properties**:

| | |
|---|---|
| Surface Resistivity, IEC 60093, Ω | $1.4\times10^{16}$ |

| | |
|---|---|
| Volume Resistivity, IEC 60093, Ω·cm | $1.8\times10^{15}$ |
| Dielectric Constant / Dissipation Factor, IEC 60250: | |
| 1 kHz | $3.44 / 3.25\times10^{-3}$ |
| 100 kHz | $3.41 / 2.63\times10^{-3}$ |
| 1 MHz | $3.4 / 2.51\times10^{-3}$ |
| 10 MHz | $3.45 / 3.97\times10^{-3}$ |

## TYPICAL PERFORMANCE OF CURED MATERIAL

**Adhesive Properties**

Cured for 21 days @ 23 °C / 50±5 % RH and 0.5 mm gap

Lap Shear Strength, ISO 4587:

| | | |
|---|---|---|
| Mild steel | N/mm² | 1.3 to 2.0 |
| | (psi) | (190 to 290) |
| Aluminum 2024-T3 | N/mm² | 0.7 to 1.3 |
| | (psi) | (100 to 190) |
| Alclad | N/mm² | 1.0 to 1.8 |
| | (psi) | (145 to 260) |
| Zinc dichromate | N/mm² | 1.5 to 2.0 |
| | (psi) | (220 to 290) |
| Thermoset plastic(Novalac resin based) | N/mm² | 0.8 to 1.5 |
| | (psi) | (120 to 220) |
| Nylon 66 (30% Glass filled) | N/mm² | 0.1 to 0.2 |
| | (psi) | (15 to 30) |
| Polyphenylene sulphide | N/mm² | 0.8 to 1.1 |
| | (psi) | (120 to 160) |

## TYPICAL ENVIRONMENTAL RESISTANCE

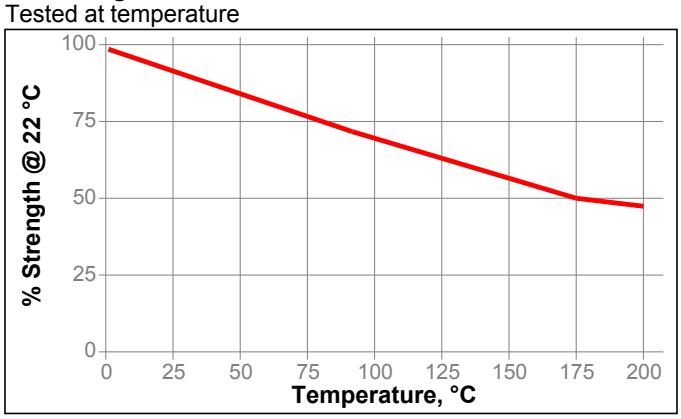
Cured for 21 days @ 23±2 °C / 50±5% RH and 0.5 mm gap

Lap Shear Strength, ISO 4587:

Alclad

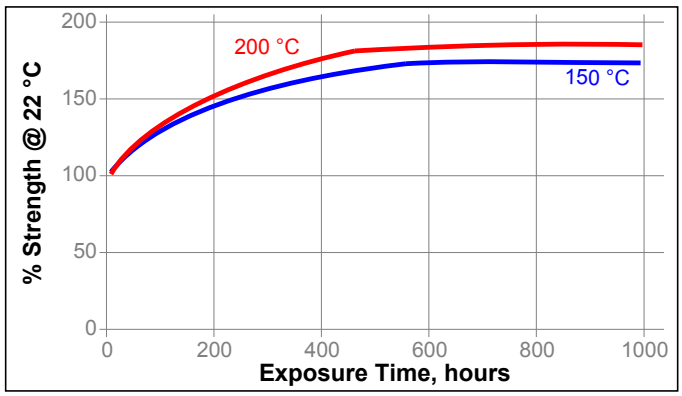
### Hot Strength

Tested at temperature




### Heat Aging

Aged at temperature indicated and tested @ 22 °C




### Environmental Aging - Effect on bulk properties

Cured for 21 days @ 23±2 °C / 50±5% RH, tested @ 22 °C, 2 mm thick film

Tensile strength, ISO 37, N/mm² (Elongation, at break, %):

| Environment | 100 h | 500 h | 1000 h |
|---|---|---|---|
| 22 °C | 2.0(225) | 2.0(230) | 2.0(225) |
| 5W30 oil, 150 °C | 1.5(140) | 1.9(170) | 1.9(180) |
| Water/glycol 50/50, 120°C | 1.4(180) | 1.9(55) | 1.3(55) |
| Water/OAT 50/50, 105 °C | 0.7(120) | 0.9(40) | 1.1(40) |

### Environmental Aging

Alclad

| | | % of initial strength | | |
|---|---|---|---|---|
| **Environment** | **°C** | **100 h** | **500 h** | **1000 h** |
| Air | 150 | 130 | 170 | 170 |
| Motor oil (5W30) | 150 | 70 | 70 | 70 |
| Water/glycol 50/50 | 120 | 60 | 70 | 70 |
| Water/OAT 50/50 | 105 | 55 | 60 | 75 |

Zinc dichromate

| | | % of initial strength | | |
|---|---|---|---|---|
| **Environment** | **°C** | **100 h** | **500 h** | **1000 h** |
| Motor oil (5W30) | 150 | 55 | 55 | 55 |
| Water/glycol 50/50 | 120 | 45 | 45 | 45 |
| Water/OAT 50/50 | 105 | 50 | 50 | 70 |

Novalac Thermoset

| | | % of initial strength | | |
|---|---|---|---|---|
| **Environment** | **°C** | **100 h** | **500 h** | **1000 h** |
| Motor oil (5W30) | 150 | 35 | 45 | 55 |
| Water/glycol 50/50 | 120 | 50 | 50 | 60 |

Polyphenylene sulphide

| | | % of initial strength | | |
|---|---|---|---|---|
| **Environment** | **°C** | **100 h** | **500 h** | **1000 h** |
| Motor oil (5W30) | 150 | --- | 100 | --- |
| Water/glycol 50/50 | 120 | --- | 100 | --- |

## 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. 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.
3. The bond should be allowed to cure (e.g. seven days), before subjecting to heavy service loads.
4. Excess material can be easily wiped away with non-polar solvents.
5. For full automatic applications a volumetric dispensing system is recommended.

### Loctite Material Specification[LMS]

LMS dated May 15, 2001. 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**. **Storage conditions are for long term product storage. Transit and interim storage situations (i.e. receiving) are not encompassed by Henkel's storage requirements. It should be noted however that all efforts should be made to store material as required, as soon as possible**. 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





Henkel Americas +860.571.5100
Henkel Europe +49.89.320800.1800
Henkel Asia Pacific +86.21.2891.8859

Henkel Americas
+860.571.5100

Henkel Europe
+49.89.320800.1800

Henkel Asia Pacific
+86.21.2891.8859

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