

LOCTITE[®] 5510[™] GREY

October 2013

PRODUCT DESCRIPTION

LOCTITE[®] 5510[™] GREY provides the following product characteristics:

| | |
|-----------------------------|---------------------------------------|
| Technology | Flextec [™] Polymer |
| Chemical Type | Modified silane polymer |
| Appearance (uncured) | Homogenous, Grey paste ^{LMS} |
| Components | One part - requires no mixing |
| Viscosity | Paste |
| Cure | Atmospheric moisture |
| Application | Sealing or Bonding |

LOCTITE[®] 5510[™] GREY is a high strength, high elongation adhesive used for elastic bonding and sealing on various substrates. It is a one component adhesive based on a Flextec[™] polymer, which cures by reaction with moisture to an elastomeric thermoset product. The skin formation and curing times are dependent on humidity, temperature, and joint depth. By increasing the exposure to moisture these times can be reduced. LOCTITE[®] 5510[™] GREY is sag resistant and has a high initial tack. It is non-corrosive, free of solvents, isocyanates, silicones, PVC, and is odorless. LOCTITE[®] 5510[™] GREY demonstrates good adhesion to a wide variety of substrates and is compatible with suitable paint systems. It also demonstrates good UV resistance and can therefore be used for interior and exterior applications.

TYPICAL PROPERTIES OF UNCURED MATERIAL

| | |
|---|---------------------------|
| Specific Gravity @ 25 °C | 1.4 to 1.5 ^{LMS} |
| Extrusion Rate, g/min | 150 to 600 ^{LMS} |
| Flow, ISO 7390, mm | ≤2.5 ^{LMS} |
| Viscosity, Cone & Plate, 25 °C, mPa·s (cP): | |
| Shear rate 10 s ⁻¹ | 150,000 to 250,000 |

Flash Point - See MSDS

TYPICAL CURING PERFORMANCE

Under normal conditions, the atmospheric moisture initiates the curing process. The product develops functional strength in 24 hours and fully cures in 7 days.

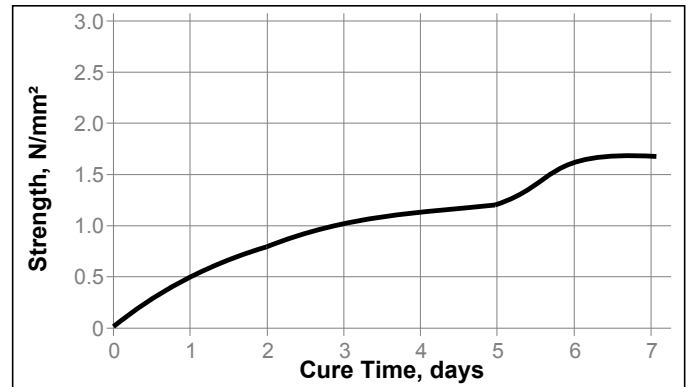
Skin Over Time

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 | 20 to 50 |
|-------------------------|----------|

Cure Speed vs. Time

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



Depth of Cure

The depth of cure depends on temperature and humidity. Depth of cure was determined by filling a 12 mm deep cup and removing the cured film of material. The cured section of product is measured to determine depth of cure.

Depth of Cure, 24 hours, mm ≥2^{LMS}

TYPICAL PROPERTIES OF CURED MATERIAL

Cured for 7 days @ 22 °C / 50±5 % RH

Physical Properties:

| | |
|--------------------------------------|---|
| Shore Hardness, ISO 868, Durometer A | 35 to 50 ^{LMS} |
| Tensile Strength, ISO 527-3 | N/mm² ≥1.5 ^{LMS} (psi) (≥215) |

Cured for 21 days @ 22 °C / 50±5 % RH

Physical Properties:

| | |
|---|-----|
| Elongation, at break, ISO 527-3, % | 368 |
| Glass Transition Temperature (T _g), ISO 11357-2, °C | -74 |
| Non-Volatile Content, ASTM D 2369, % | 98 |

Electrical Properties:

| | |
|-------------------------------------|-----------------------|
| Dielectric Constant, IEC 60250: | |
| 1 kHz | 5.17 |
| 100 kHz | 5.03 |
| 1 MHz | 4.97 |
| Surface Resistivity, IEC 60093, Ω | 3.27×10 ¹³ |
| Volume Resistivity, IEC 60093, Ω·cm | 6.1×10 ¹¹ |

TYPICAL PERFORMANCE OF CURED MATERIAL**Adhesive Properties**

Cured for 21 days @ 22 °C

Lap Shear Strength, ISO 4587:

| | | |
|----------------------|-------------------|-------|
| Steel (grit blasted) | N/mm ² | 1.6 |
| | (psi) | (240) |
| Stainless Steel | N/mm ² | 1.9 |
| | (psi) | (270) |
| Galvanized Steel | N/mm ² | 1.7 |
| | (psi) | (250) |
| Aluminum | N/mm ² | 1.3 |
| | (psi) | (190) |
| Zinc dichromate | N/mm ² | 1.7 |
| | (psi) | (250) |
| Wood (Pine) | N/mm ² | 1.2 |
| | (psi) | (170) |
| Glass | N/mm ² | 1.5 |
| | (psi) | (220) |
| Fiberglass | N/mm ² | 0.6 |
| | (psi) | (83) |
| EPDM | N/mm ² | 0.2 |
| | (psi) | (25) |
| Buna-N | N/mm ² | 0.4 |
| | (psi) | (55) |

Block Shear Strength, ISO 13445:

| | | |
|---------------|-------------------|-------|
| Polycarbonate | N/mm ² | 0.2 |
| | (psi) | (30) |
| PVC | N/mm ² | 0.7 |
| | (psi) | (110) |
| ABS | N/mm ² | 1.9 |
| | (psi) | (280) |
| Nylon | N/mm ² | 1.9 |
| | (psi) | (280) |
| Polypropylene | N/mm ² | 0.03 |
| | (psi) | (5) |

"T" Peel Strength, ISO 11339:

| | | |
|----------|---------|-------|
| Aluminum | N/mm | 0.3 |
| | (lb/in) | (1.9) |

Impact Strength, ISO 9653, J:

| | | |
|----------|--|-----|
| Aluminum | | 2.9 |
|----------|--|-----|

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. 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.

Loctite Material Specification^{LMS}

LMS dated August 15, 2013. 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

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

Disclaimer**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 0.4