**PRODUCT DESCRIPTION**

LOCTITE® 510™ provides the following product characteristics:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>Acrylic</td>
</tr>
<tr>
<td>Chemical Type</td>
<td>Dimethacrylate ester</td>
</tr>
<tr>
<td>Appearance (uncured)</td>
<td>Opaque pink paste</td>
</tr>
<tr>
<td>Components</td>
<td>One component -</td>
</tr>
<tr>
<td></td>
<td>requires no mixing</td>
</tr>
<tr>
<td>Viscosity</td>
<td>High</td>
</tr>
<tr>
<td>Cure</td>
<td>Anaerobic</td>
</tr>
<tr>
<td>Application</td>
<td>Gasketing and sealing</td>
</tr>
<tr>
<td>Strength</td>
<td>Medium</td>
</tr>
</tbody>
</table>

LOCTITE® 510™ cures when confined in the absence of air between close fitting metal surfaces. This product is a general gasketing product suitable for hand dispensing or screen printing.

**NSF International**

Registered to NSF Category P1 for use as a sealant where there is no possibility of food contact in and around food processing areas. Note: This is a regional approval. Please contact your local Technical Service Center for more information and clarification.

**Approved by the Australian Gas Association Certificate**

Number 2590 Class II rated working pressure 500 KPa, working temperature -10 to 200°C. Note: This is a regional approval. Please contact your local Technical Service Center for more information and clarification.

**TYPICAL PROPERTIES OF UNCURED MATERIAL**

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Gravity @ 25 °C</td>
<td>1.1</td>
</tr>
<tr>
<td>Flash Point - See SDS</td>
<td></td>
</tr>
<tr>
<td>Viscosity, Brookfield - HBT, 25 °C, mPa·s (cP):</td>
<td></td>
</tr>
<tr>
<td>Spindle TC, speed 2.5 rpm, Helipath</td>
<td>200,000 to 750,000</td>
</tr>
<tr>
<td>Spindle TC, speed 20 rpm, Helipath</td>
<td>40,000 to 140,000</td>
</tr>
</tbody>
</table>

**Instant Sealing Capability**

Anaerobic sealants have the ability to resist low on-line test pressures while uncured. This test was performed with uncured product immediately after assembly of an annular polycarbonate sealing surface with an internal diameter of 50 mm and an external diameter of 70 mm.

Pressure Resistance, MPa:

<table>
<thead>
<tr>
<th>Induced Gap</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 mm</td>
<td>0.02</td>
</tr>
<tr>
<td>0.125 mm</td>
<td>0.01</td>
</tr>
<tr>
<td>0.25 mm</td>
<td>0.01</td>
</tr>
</tbody>
</table>

**TYPICAL CURING PERFORMANCE**

**Cure Speed vs. Substrate**

The rate of cure will depend on the substrate used. The graph below shows the shear strength developed with time on grit blasted steel lap shears compared to different materials and tested according to ISO 4587.

**Cure Speed vs. Bond Gap**

The rate of cure will depend on the bondline gap. The graph below shows the shear strength developed with time on grit blasted steel lap shears compared to different controlled gaps and tested according to ISO 4587.
Cure Speed vs. Temperature
The rate of cure will depend on the temperature. The graph below shows the shear strength developed with time at different temperatures on grit blasted steel lap shears and tested according to ISO 4587.

Cure Speed vs. Activator
Where cure speed is unacceptably long, or large gaps are present, applying activator to the surface will improve cure speed. The graph below shows the shear strength developed with time on grit blasted steel lap shears using Activator 7471™ and 7649™ and tested according to ISO 4587.

TYPICAL PROPERTIES OF CURED MATERIAL
Physical Properties:
- Coefficient of Thermal Expansion, ISO 11359-2, K⁻¹: 80×10⁻⁴
- Coefficient of Thermal Conductivity, ISO 8302, W/(m·K): 0.1
- Specific Heat, kJ/(kg·K): 0.3

TYPICAL PERFORMANCE OF CURED MATERIAL
Adhesive Properties
- Cured for 1 hour @ 22 °C
  Compressive Shear Strength, ISO 10123:
    Steel pins and collars (grit blasted) N/mm² ≥7.5LMS (psi) (≥1,085)
- Cured for 24 hours @ 22 °C
  Compressive Shear Strength, ISO 10123:
    Steel pins and collars (grit blasted) N/mm² ≥7.5LMS (psi) (≥1,085)
  Lap Shear Strength, ISO 4587:
    Steel (grit blasted) N/mm² 5 (psi) (725)
  Tensile Strength, ISO 6922:
    Steel (grit blasted) N/mm² 7.5 (psi) (1,085)

Sealing Capability
An annular shaped gasket with an inner diameter of 50 mm and an external diameter of 70 mm was tested up to 1.3 MPa for leakage.

Sealed to Maximum Induced Gap, mm:
- Mild steel ≤0.125
- Aluminum 2011T3 ≤0.125

TYPICAL ENVIRONMENTAL RESISTANCE
The following tests refer to the effect of environment on strength. This is not a measure of sealing performance.

Cured for 1 week @ 22 °C
Lap Shear Strength, ISO 4587:
Steel (grit blasted)

Hot Strength
Tested at temperature
Heat Aging
Aged at temperature indicated and tested @ 22 °C

Chemical/Solvent Resistance
Aged under conditions indicated and tested @ 22°C.

<table>
<thead>
<tr>
<th>Environment</th>
<th>°C</th>
<th>100 h</th>
<th>500 h</th>
<th>1000 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor oil (MIL-L-46152)</td>
<td>125</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Unleaded Petrol</td>
<td>22</td>
<td>95</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Water/glycol 50/50</td>
<td>87</td>
<td>160</td>
<td>110</td>
<td>110</td>
</tr>
</tbody>
</table>

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).

Where aqueous washing systems are used to clean the surfaces before bonding, it is important to check for compatibility of the washing solution with the adhesive. In some cases these aqueous washes can affect the cure and performance of the adhesive.

This product is not normally recommended for use on plastics (particularly thermoplastic materials where stress cracking of the plastic could result). Users are recommended to confirm compatibility of the product with such substrates.

Directions for use:
1. For best performance bond surfaces should be clean and free from grease.
2. The product is designed for close fitting flanged parts with gaps up to 0.25 mm (in).
3. Apply manually as a continuous bead or by screening printing to one surface of the flanges.
4. Low pressures (<0.05 MPa, psi) may be used when testing to confirm a complete seal immediately after assembly and before curing.
5. Flanges should be tightened as soon as possible after assembly to avoid shimming.

Clean-up
1. Cured product can be removed by soaking in a Loctite® solvent, e.g. Loctite® 7200 and mechanical removal with a soft scraper. Avoid formation of dust and aerosols. Complete the cleaning process by wiping with a soft cloth dampened with Loctite® Cleaner, e.g. Loctite® 7063 or Loctite® ODC-free cleaner.

Loctite Material Specification
LMS
dated November 13, 1998. 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

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.

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Reference 0.6