PRODUCT DESCRIPTION

LOCTITE® 222 provides the following product characteristics:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</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>Purple liquid</td>
</tr>
<tr>
<td>Fluorescence</td>
<td>Positive under UV light</td>
</tr>
<tr>
<td>Components</td>
<td>One component - requires no mixing</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Low, thixotropic</td>
</tr>
<tr>
<td>Cure</td>
<td>Anaerobic</td>
</tr>
<tr>
<td>Secondary Cure</td>
<td>Activator</td>
</tr>
<tr>
<td>Application</td>
<td>Threadlocking</td>
</tr>
<tr>
<td>Strength</td>
<td>Low</td>
</tr>
</tbody>
</table>

LOCTITE® 222 is designed for the locking and sealing of threaded fasteners which require easy disassembly with standard hand tools. The product cures when confined in the absence of air between close fitting metal surfaces and prevents loosening and leakage from shock and vibration. Particularly suitable for applications such as adjustment of set screws, small diameter or long engagement length fasteners, where easy disassembly is required without shearing the screw. The thixotropic nature of LOCTITE® 222 reduces the migration of liquid product after application to the substrate.

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>1.05</td>
</tr>
<tr>
<td>Flash Point</td>
<td>See SDS</td>
</tr>
<tr>
<td>Viscosity, Brookfield - RVT,</td>
<td>25 °C, mPa·s (cP):</td>
</tr>
<tr>
<td>Spindle 3, speed 2.5 rpm</td>
<td>≥3,500</td>
</tr>
<tr>
<td>Spindle 3, speed 20 rpm</td>
<td>900 to 1,500</td>
</tr>
<tr>
<td>Viscosity, EN 12092 - MV,</td>
<td>25 °C, after 180 s, mPa·s (cP):</td>
</tr>
<tr>
<td>Shear rate 277 s⁻¹</td>
<td>135</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 breakaway strength developed with time on M10 steel nuts and bolts compared to different materials and tested according to ISO 10964.

Cure Speed vs. Bond Gap
The rate of cure will depend on the bondline gap. Gaps in threaded fasteners depends on thread type, quality and size. The following graph shows shear strength developed with time on steel pins and collars at different controlled gaps and tested according to ISO 10123.

Cure Speed vs. Temperature
The rate of cure will depend on the temperature. The graph below shows the breakaway strength developed with time at different temperatures on M10 steel nuts and bolts and tested according to ISO 10964.
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 breakaway strength developed with time on M10 zinc dichromate steel nuts and bolts using Activator 7471™ and 7649™ and tested according to ISO 10964.

TYPICAL PROPERTIES OF CURED MATERIAL
Physical Properties:
- Coefficient of Thermal Expansion, ISO 11359-2, K⁻¹: \(8 \times 10^5\)
- 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:
- After 24 hours @ 22 °C
  - Breakaway Torque, ISO 10964: M10 steel nuts and bolts, N·m: 6

TYPICAL ENVIRONMENTAL RESISTANCE
Cured for 1 week @ 22 °C
Breakaway Torque, ISO 10964, Pre-torqued to 5 N·m:
- M10 zinc phosphate steel nuts and bolts

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

<table>
<thead>
<tr>
<th>Environment</th>
<th>% of initial strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor oil (MIL-L-46152)</td>
<td>125 100 95 90 85</td>
</tr>
<tr>
<td>Leaded Petrol</td>
<td>22 95 95 95 95</td>
</tr>
</tbody>
</table>
Brake fluid  22  95  95  95  90  
Water/glycol 50/50  87  80  80  80  80  
Acetone  22  100  90  90  90  
Ethanol  22  95  95  90  90  

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:
For Assembly
1. For best results, clean all surfaces (external and internal) with a LOCTITE® cleaning solvent and allow to dry.
2. If the material is an inactive metal or the cure speed is too slow, spray all threads with and allow to dry.
3. Shake the product thoroughly before use.
4. To prevent the product from clogging in the nozzle, do not allow the tip to touch metal surfaces during application.
5. For Thru Holes, apply several drops of the product onto the bolt at the nut engagement area.
6. For Blind Holes, apply several drops of the product down the internal threads to the bottom of the hole.
7. Assemble and tighten as required.
8. For Sealing Applications, apply a 360° bead of product to the leading threads of the male fitting, leaving the first thread free. Force the material into the threads to thoroughly fill the voids. For bigger threads and voids, adjust product amount accordingly and apply a 360° bead of product on the female threads also.

For Disassembly
1. Remove with standard hand tools.
2. In rare instances where hand tools do not work because of excessive engagement length, apply localized heat to nut or bolt to approximately 250 °C. Disassemble while hot.

For Cleanup
1. Cured product can be removed with a combination of soaking in a Loctite solvent and mechanical abrasion such as a wire brush.

Loctite Material Specification®
LMS dated May 18, 1999. 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.

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Reference 0.5