PRODUCT DESCRIPTION
LOCTITE® 406™ provides the following product characteristics:

<table>
<thead>
<tr>
<th>Technology</th>
<th>Chemical Type</th>
<th>Appearance (uncured)</th>
<th>Components</th>
<th>Viscosity</th>
<th>Cure</th>
<th>Application</th>
<th>Key Substrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyanoacrylate</td>
<td>Ethyl cyanoacrylate</td>
<td>Transparent, colorless to straw colored liquid</td>
<td>One part - requires no mixing</td>
<td>Low</td>
<td></td>
<td>Bonding</td>
<td>Plastics and Rubbers</td>
</tr>
</tbody>
</table>

This Technical Data Sheet is valid for LOCTITE® 406™ manufactured from the dates outlined in the “Manufacturing Date Reference” section.

LOCTITE® 406™ is designed for bonding of plastics and elastomeric materials where very fast fixturing is required.

Commercial Item Description A-A-3097:
LOCTITE® 406™ has been qualified to Commercial Item Description A-A-3097. Note: This is a regional approval. Please contact your local Technical Service Center for more information and clarification.

TYPICAL PROPERTIES OF UNCURED MATERIAL
Specific Gravity @ 25 °C: 1.1
Viscosity, Cone & Plate, mPa·s (cP):
  Temperature: 25 °C, Shear Rate: 3,000 s⁻¹ 12 to 22
Viscosity, Brookfield - LVF, 25 °C, mPa·s (cP):
  Spindle 1, speed 30 rpm 15 to 25
Flash Point - See SDS

TYPICAL CURING PERFORMANCE
Under normal conditions, the atmospheric moisture initiates the curing process. Although full functional strength is developed in a relatively short time, curing continues for at least 24 hours before full chemical/solvent resistance is developed.

Cure Speed vs. Substrate
The rate of cure will depend on the substrate used. The table below shows the fixture time achieved on different materials at 22 °C / 50 % relative humidity. This is defined as the time to develop a shear strength of 0.1 N/mm².

<table>
<thead>
<tr>
<th>Material</th>
<th>Fixture Time, seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel (degased)</td>
<td>20 to 45</td>
</tr>
<tr>
<td>Aluminum (etched)</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Neoprene</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Rubber, nitrile</td>
<td>&lt;5</td>
</tr>
<tr>
<td>ABS</td>
<td>&lt;5</td>
</tr>
<tr>
<td>PVC</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Polycarbonate</td>
<td>10 to 20</td>
</tr>
<tr>
<td>Phenolic</td>
<td>&lt;5</td>
</tr>
</tbody>
</table>

Cure Speed vs. Bond Gap
The rate of cure will depend on the bondline gap. Thin bond lines result in high cure speeds, increasing the bond gap will decrease the rate of cure.

Cure Speed vs. Humidity
The rate of cure will depend on the ambient relative humidity. The best results are achieved when the relative humidity in the working environment is 40% to 60% at 22°C. Lower humidity leads to slower cure. Higher humidity accelerates it, but may impair the final strength of the bond.

Cure Speed vs. Activator
Where cure speed is unacceptably long due to large gaps, applying activator to the surface will improve cure speed. However, this can reduce ultimate strength of the bond and therefore testing is recommended to confirm effect.

TYPICAL PERFORMANCE OF CURED MATERIAL
Adhesive Properties
After 24 hours @ 22 °C
Lap Shear Strength, ISO 4587:

<table>
<thead>
<tr>
<th>Material</th>
<th>N/mm² (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel (grit blasted)</td>
<td>15.5 (2,250)</td>
</tr>
<tr>
<td>Aluminum (etched)</td>
<td>12 (1,740)</td>
</tr>
<tr>
<td>Zinc dichromate</td>
<td>14 (2,030)</td>
</tr>
<tr>
<td>ABS</td>
<td>8.8 (1,280)</td>
</tr>
<tr>
<td>PVC</td>
<td>8.7 (1,260)</td>
</tr>
<tr>
<td>Polycarbonate</td>
<td>9.1 (1,320)</td>
</tr>
<tr>
<td>Phenolic</td>
<td>11.3 (1,640)</td>
</tr>
<tr>
<td>Neoprene</td>
<td>1 (150)</td>
</tr>
<tr>
<td>Nitrile</td>
<td>1.2 ()</td>
</tr>
</tbody>
</table>
TDS LOCTITE® 406™, February 2012

Block Shear Strength, ISO 13445:
- Polycarbonate: N/mm² 13.1 (psi) (1,900)
- ABS: N/mm² 23.7 (psi) (3,440)
- PVC: N/mm² 1.8 (psi) (260)
- Phenolic: N/mm² 13.8 (psi) (2,000)

* substrate failure

Tensile Strength, ISO 6922:
- Buna-N: N/mm² 13 (psi) (1,890)

After 10 seconds @ 22 °C

Tensile Strength, ISO 6922:
- Buna-N: N/mm² ≥6.9 (psi) (≥1,000)

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

Environmental Resistance
Cured for 1 week @ 22 °C

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

% of initial strength

<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</td>
<td>40</td>
<td>100</td>
<td>85</td>
<td>70</td>
</tr>
<tr>
<td>Gasoline</td>
<td>22</td>
<td>90</td>
<td>100</td>
<td>95</td>
</tr>
<tr>
<td>Water</td>
<td>22</td>
<td>55</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Water/glycol</td>
<td>22</td>
<td>85</td>
<td>75</td>
<td>80</td>
</tr>
<tr>
<td>Ethanol</td>
<td>22</td>
<td>105</td>
<td>105</td>
<td>100</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>22</td>
<td>120</td>
<td>110</td>
<td>120</td>
</tr>
<tr>
<td>98% RH</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>45</td>
</tr>
</tbody>
</table>

TYPICAL ENVIRONMENTAL RESISTANCE

Hot Strength
Tested at temperature

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

% Initial Strength @ 22 °C

<table>
<thead>
<tr>
<th>Exposure Time, hours</th>
<th>250</th>
<th>500</th>
<th>750</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>25</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td>250</td>
<td>75</td>
<td>50</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>500</td>
<td>50</td>
<td>75</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>750</td>
<td>25</td>
<td>50</td>
<td>75</td>
<td>0</td>
</tr>
<tr>
<td>1000</td>
<td>0</td>
<td>25</td>
<td>50</td>
<td>75</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).

Directions for use:
1. Bond areas should be clean and free from grease. Clean all surfaces with a Loctite® cleaning solvent and allow to dry.
2. To improve bonding on low energy plastic surfaces, Loctite® Primer may be applied to the bond area. Avoid applying excess Primer. Allow the Primer to dry.
3. LOCTITE® Activator may be used if necessary. Apply it to one bond surface (do not apply activator to the primed surface where Primer is also used). Allow the Activator to dry.
4. Apply adhesive to one of the bond surfaces (do not apply the adhesive to the activated surface). Do not use items like tissue or a brush to spread the adhesive. Assemble the parts within a few seconds. The parts should be accurately located, as the short fixture time leaves little opportunity for adjustment.
5. LOCTITE® Activator can be used to cure fillets of product outside the bond area. Spray or drop the activator on the excess product.
6. Bonds should be held fixed or clamped until adhesive has fixtured.
7. Product should be allowed to develop full strength before subjecting to any service loads (typically 24 to 72 hours after assembly, depending on bond gap, materials and ambient conditions).
Loctite Material Specification™
LMS dated December 22, 2011. 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: 2 °C to 8 °C. Storage below 2 °C or greater than 8 °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·m x 0.142 = oz·in
mPA-s = cP

Manufacturing Date Reference

This Technical Data Sheet is valid for LOCTITE® 406™ manufactured from the dates below:

Made in: First manufacturing date:
EU November 2011
China Pending
India Pending
U.S.A. February 2012
Brazil February 2013

The manufacturing date can be determined from the batch code on the pack. For assistance please contact your local Technical Service Center or Customer Service Representative.

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 1.5