**PRODUCT DESCRIPTION**

**LOCTITE® HY 4080™** provides the following product characteristics:

<table>
<thead>
<tr>
<th>Technology</th>
<th>Cyanoacrylate / Acrylic Hybrid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Type (Part A)</td>
<td>Cyanoacrylate</td>
</tr>
<tr>
<td>Chemical Type (Part B)</td>
<td>Methacrylate</td>
</tr>
<tr>
<td>Appearance - Part A</td>
<td>Clear to slightly hazy(^{\text{LMS}})</td>
</tr>
<tr>
<td>Components</td>
<td>Two components - requires mixing</td>
</tr>
<tr>
<td>Appearance - Part B</td>
<td>White to off-white paste(^{\text{LMS}})</td>
</tr>
<tr>
<td>Appearance (Mixed)</td>
<td>Opaque to slightly yellow</td>
</tr>
<tr>
<td>Mix Ratio, by volume</td>
<td>Part A: Part B 1:1</td>
</tr>
<tr>
<td>Viscosity</td>
<td>High, thixotropic</td>
</tr>
<tr>
<td>Application</td>
<td>Bonding wide range of materials</td>
</tr>
<tr>
<td>Cure</td>
<td>Two component cure after mixing</td>
</tr>
<tr>
<td>Specific Benefit</td>
<td>• Substrate versatility</td>
</tr>
<tr>
<td></td>
<td>• Medium fixture time</td>
</tr>
<tr>
<td></td>
<td>• Excellent impact resistance</td>
</tr>
</tbody>
</table>

**TYPICAL CURING PERFORMANCE**

Curing is initiated on mixing the Part A and Part B components. Handling strength is achieved rapidly; full strength is achieved over time.

**Open Time**

On part life @ 25°C minutes 10

**Fixture Time**

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm².

<table>
<thead>
<tr>
<th>Fixture Time, minutes:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grit Blasted Mild Steel, 0.05 mm gap</td>
<td>10</td>
</tr>
<tr>
<td>Aluminum, 0.05 mm gap</td>
<td>10</td>
</tr>
<tr>
<td>Aluminum, 2 mm gap</td>
<td>12</td>
</tr>
</tbody>
</table>

**Peak Exotherm Temperature**

Peak Exotherm Temperature, 20 gram mass:

| Peak Temperature Time, seconds | 313   |
| Peak Temperature, °C           | 158   |

**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 steel lap shears compared to different materials and tested according to ISO 4587.

![Graph showing cure speed vs. substrate](image)

**Cure Speed vs. Bond Gap**

The rate of cure will depend on the bondline gap. The following graph shows the shear strength developed with time on grit blasted mild steel lap shears at different controlled gaps and tested according to ISO 4587.

![Graph showing cure speed vs. bond gap](image)

---

**TYPICAL PROPERTIES OF UNCURED MATERIAL**

**Part A:**

- Specific Gravity, g/cm³ 1.06 to 1.11
- Viscosity @ 25°C, mPa·s (cP) Cone & Plate Rheometer: Shear rate 100 s⁻¹ 4,000 to 11,000\(^{\text{LMS}}\)
- Flash Point - See SDS

**Part B:**

- Specific Gravity, g/cm³ 1.09 to 1.13
- Viscosity @ 25°C, mPa·s (cP) Cone & Plate Rheometer: Shear rate 20 s⁻¹ 45,000 to 75,000\(^{\text{LMS}}\)
- Flash Point - See SDS
Cure Speed vs. Temperature
The rate of cure will depend on the ambient temperature. The graph below shows the shear strength developed with time at different temperatures on grit blasted mild steel lap shears and tested according to ISO 4587.

TYPICAL PROPERTIES OF CURED MATERIAL
Cured for 1 week @ 22 °C
Physical Properties:
Glass Transition Temperature, ISO 11359-2, °C: 48 to 76
Coefficient of Thermal Expansion, ISO 11359-2 K⁻¹:
Below Tg (46 to 76°C) 143×10⁻⁶
Above Tg (46 to 76°C) 202×10⁻⁶
Linear Shrinkage, ASTM D 792 % 4.7
Shore Hardness, ISO 868, Durometer D 72
Tensile Strength, at break, ISO 527-3 N/mm² 11.3 (psi) (1,639)
Tensile Modulus, ISO 527-3 N/mm² 355 (psi) (51,475)
Elongation, at break, ISO 527-3, % 80

TYPICAL PERFORMANCE OF CURED MATERIAL
Adhesive Properties

Cured for 1 week @ 22 °C
Impact Strength, ISO 9653, kJ/m²: 4.1

*T* Peel Strength, ISO 11339:
Steel (grit blasted) N/mm (lb/in) 7.0 (40)
Aluminum (grit blasted) N/mm (lb/in) 5.0 (29)

Shear Strength:
Lap Shear Strength, ISO 4587:
Mild steel (grit blasted) N/mm² 25.6 (psi) (3,670)
Mild Steel (abraded) N/mm² 24.6 (psi) (3,570)
Aluminum (abraded) N/mm² 15.7 (psi) (2,290)
Aluminum (etched) N/mm² 20.4 (psi) (2,960)
Zinc dichromate N/mm² 17.2 (psi) (2,520)
ABS N/mm² 3.8 (psi) (550)
Phenolic N/mm² 5.7 (psi) (830)
Polycarbonate N/mm² 2.6 (psi) (350)
Nitrile N/mm² 0.4 (psi) (60)
Wood (Oak) N/mm² 7.3 (psi) (1,060)
Epoxy N/mm² 10.0 (psi) (1,450)
PVC N/mm² 11.5 (psi) (1,670)
PMMA N/mm² 6.7 (psi) (970)

* substrate failure

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

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

<table>
<thead>
<tr>
<th>% Initial Strength @ 22 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure Time, hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature °C</th>
<th>0</th>
<th>200</th>
<th>400</th>
<th>600</th>
<th>800</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>100</td>
<td>75</td>
<td>50</td>
<td>25</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>100</td>
<td>75</td>
<td>50</td>
<td>25</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>100</td>
<td>75</td>
<td>50</td>
<td>25</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>100</td>
<td>75</td>
<td>50</td>
<td>25</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

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>300 h</th>
<th>500 h</th>
<th>1000 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor oil</td>
<td>22</td>
<td>100</td>
<td>100</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Unleaded gasoline</td>
<td>22</td>
<td>85</td>
<td>75</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Ethanol</td>
<td>22</td>
<td>85</td>
<td>80</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Isopropanol</td>
<td>22</td>
<td>90</td>
<td>85</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>22</td>
<td>85</td>
<td>70</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Water/glycol</td>
<td>60</td>
<td>45</td>
<td>35</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>98% RH</td>
<td>40</td>
<td>70</td>
<td>50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>95% RH</td>
<td>65</td>
<td>50</td>
<td>30</td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>

Lap Shear Strength, ISO 4598:  
Aluminum

<table>
<thead>
<tr>
<th>% of initial strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment °C</td>
</tr>
<tr>
<td>95% RH</td>
</tr>
</tbody>
</table>

Lap Shear Strength, ISO 4598:  
Polycarbonate

<table>
<thead>
<tr>
<th>% of initial strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment °C</td>
</tr>
<tr>
<td>98% RH</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.

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 use, Part A and Part B must be blended. Product can be applied directly from dual cartridge by dispensing through the mixer head supplied.
3. **50g Dual Cartridge:** Stand dual cartridge upright for 1 minute. Keeping the cartridge in an upright position, insert it into the application gun, remove cap and expel a small amount of adhesive to be sure both sides are flowing evenly and freely. Attach the mixing nozzle.
4. **400g Dual Cartridge:** Stand dual cartridge upright for 1 minute. Remove the cartridge cap and locking ring, attach the mixing nozzle and secure with the locking ring. Load cartridge into the application gun so that the yellow label on cartridge is visible above the nozzle. Holding the application gun at a 45° angle, with the nozzle tip pointing upwards, begin dispensing the adhesive until the product reaches the nozzle tip.

**NOTE:** A pneumatic application gun is required to apply the product from the 400g dual cartridge at a maximum dispense pressure of 2 bar.
5. Dispense and discard a bead as long and as wide as the mixing nozzle, to ensure sufficient mixing.
6. Apply the mixed adhesive to one of the bond surfaces to be joined. Parts should be assembled immediately after the mixed adhesive has been applied.
7. Bonds should be held fixed or clamped until adhesive has fixtured.
8. Keep assembled parts from moving during cure. The bond should be allowed to develop full strength before subjecting to any service load (typically 24 hours).

Color

Color variation is possible between the batches and will not affect the performance of the product.

Loctite Material Specification 
LMS dated May 25, 2016 (Part A) and LMS dated May 17, 2016 (Part B). 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 Loctite 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 21°C. Storage below 2°C or greater than 21°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.

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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

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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