

# LOCTITE 3705

December 2016

## PRODUCT DESCRIPTION

LOCTITE 3705 provides the following product characteristics:

|                                      |                                                                                                                                                                                                          |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Technology</b>                    | Acrylate                                                                                                                                                                                                 |
| <b>Appearance</b>                    | Bone-white to beige translucent paste                                                                                                                                                                    |
| <b>Components</b>                    | One component - requires no mixing                                                                                                                                                                       |
| <b>Product Benefits</b>              | <ul style="list-style-type: none"> <li>• Thixotropic</li> <li>• Medium viscosity</li> <li>• Fast UV cure</li> <li>• No post cure required</li> <li>• Good adhesion to a variety of substrates</li> </ul> |
| <b>Cure</b>                          | Ultraviolet (UV) light, Visible light                                                                                                                                                                    |
| <b>Application</b>                   | Edgebond                                                                                                                                                                                                 |
| <b>Typical Assembly Applications</b> | Bonding electronic components on a PCB                                                                                                                                                                   |

LOCTITE 3705 UV cure adhesive is designed for high throughput assembly operations. Its thixotropic nature reduced migration of liquid product after application to substrate.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield - HBT, 25 °C, mPa·s (cP):

Spindle TB, Helipath, speed 10 rpm 44,000

Specific Gravity @ 25 °C 1.1

Flash Point - See SDS

## TYPICAL CURING PERFORMANCE

### Recommended UV Cure

Light Source and Condition:

Zeta 7411 UV Flood System

Light Intensity, mW/cm<sup>2</sup> 30

UV Wavelength, nm 365

Time, seconds 80

LOCTITE 3705 can be cured by exposure to UV and/or visible light of sufficient intensity. Cure rate and ultimate depth of cure depend on light intensity, spectral distribution of light source, exposure time and light transmittance of the substrate through which the light must pass.

### Fixture Time

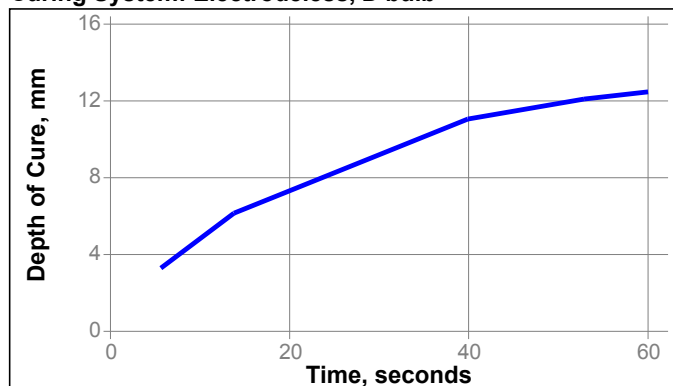
UV fixture time is defined as the light exposure time required to develop a shear strength of 0.1 N/mm<sup>2</sup>.

UV Fixture Time, Glass microscope slides, 0 gap, seconds:

6 mW/cm<sup>2</sup>, measured @ 365 nm ≤10

### Depth of Cure

## Curing System: Electrodeless, D bulb



## TYPICAL PROPERTIES OF CURED MATERIAL

### Physical Properties

Coefficient of Thermal Expansion, ASTM E831-86, μm/m/K:

|         |     |
|---------|-----|
| alpha 1 | 66  |
| alpha 2 | 151 |
| alpha 3 | 217 |

Glass Transition Temperature, ASTM D 1640, °C:

|      |     |
|------|-----|
| Tg 1 | -39 |
| Tg 2 | 77  |

Thermal Conductivity, ASTM E1530, W/(m·K) 0.17

Elongation, ASTM D882, % 186

Tensile Modulus, ASTM D882 N/mm<sup>2</sup> 175  
(psi) (25,381)

Tensile Strength, ASTM D882 N/mm<sup>2</sup> 15.6  
(psi) (2,262)

### Electrical Properties

Dielectric Constant, ASTM D150:

|          |       |
|----------|-------|
| @ 100Hz  | 4.584 |
| @ 1KHz   | 4.799 |
| @ 10KHz  | 4.633 |
| @ 100KHz | 4.221 |
| @ 1MHz   | 4.312 |

Dissipation Factor, ASTM D150:

|          |        |
|----------|--------|
| @ 100Hz  | 0.0319 |
| @ 1KHz   | 0.0222 |
| @ 10KHz  | 0.0189 |
| @ 100KHz | 0.02   |
| @ 1MHz   | 0.0343 |

Volume Resistivity @ 100 volts, ohms-cm 1.13×10<sup>17</sup>

Surface Resistivity 100 volts, ohms 1.53×10<sup>16</sup>

## TYPICAL PERFORMANCE OF CURED MATERIAL

**Shear Strength**

Block Shear Strength, ASTM 700:

|                                |                   |         |
|--------------------------------|-------------------|---------|
| Polycarbonate to Polycarbonate | N/mm <sup>2</sup> | 12.56   |
|                                | (psi)             | (1,822) |

**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. Product is shipped at 2 to 8°C with ice packs to prevent excessive temperature exposure during shipping.
2. This product is light sensitive; exposure to daylight, UV light and artificial lighting should be kept to a minimum during storage and handling.
3. The product should be dispensed from application with black feedlines.
4. For best performance bond surfaces should be clean and free from grease.
5. Apply adhesive to one of the bond surfaces and assemble immediately.
6. Cure rate is dependent on lamp intensity, distance from light source, depth of cure needed or bondline gap and light transmission of the substrate through which the radiation must pass.
7. Cooling should be provided for temperature sensitive substrates such as thermoplastics.
8. Crystalline and semi-crystalline thermoplastics should be checked for risk of stress cracking when exposed to liquid adhesive.
9. Excess uncured adhesive can be wiped away with organic solvent (e.g. Acetone).
10. Bonds should be allowed to cool before subjecting to any service loads.

**Not for product specifications**

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on specifications for this product.

**STORAGE:**

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

**Optimal Storage: 8 to 28°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.

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**Conversions**

(°C x 1.8) + 32 = °F  
 kV/mm x 25.4 = V/mil  
 mm / 25.4 = inches  
 N x 0.225 = lb  
 N/mm x 5.71 = lb/in  
 psi x 145 = N/mm<sup>2</sup>  
 MPa = N/mm<sup>2</sup>  
 N·m x 8.851 = lb·in  
 N·m x 0.738 = lb·ft  
 N·mm x 0.142 = oz·in  
 mPa·s = cP

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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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