

## PRODUCT DESCRIPTION

Loctite® 3D 3870™ is a light curing acrylic resin that may be used for functional prototyping via stereolithography. Loctite® 3D 3870™ cures with very short exposure to monochromatic light sources such as LED or Laser. Printed articles made from Loctite® 3D 3870™ exhibit good print resolution, high impact resistance and durability. Loctite 3D 3870 is a low viscosity liquid that is printable at room temperature across various laser SLA and DLP Platforms.

Loctite® 3D 3870™ provides the following product characteristics:

<b>Technology</b>	Stereolithography Resin
Appearance	Black opaque liquid <sup>LMS</sup>
Chemical Type	Acrylic
Odor	Mild
<b>Cure</b>	Ultraviolet (UV)/ Visible light
Viscosity	Low
<b>Application</b>	Functional Prototyping
Specific Benefits	<ul style="list-style-type: none"> <li>• Good print resolution</li> <li>• Short exposure times</li> <li>• High impact resistance</li> <li>• Good durability</li> </ul>

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity g/cm<sup>3</sup>@ 25°C 1.1<sup>LMS</sup>

Flash Point - See MSDS

Viscosity, Cone & Plate, mPa\*s (cP):  
 Temperature: 25C, Shear Rate: 200 s<sup>-1</sup> 500-700<sup>LMS</sup>

## TYPICAL CURING PERFORMANCE

Loctite® 3D 3870™ can be cured by exposure to UV and Visible light of sufficient intensity and wavelength. Cure rate and ultimate depth of cure depend on light intensity, spectral distribution of the light source, exposure time and light transmittance of the printer window through which the light must pass. Loctite® 3D 3870™ will cure with DLP and Lasers ranging from 300-450nm.

The following working curve values were determined using a Loctite PR10 DLP printer at 405nm wavelength;

Measurement	Unit	Value
Critical Exposure (E <sub>c</sub> )	mJ/cm <sup>2</sup>	6.95
Penetration Depth (D <sub>p</sub> )	mm	0.185

## TYPICAL PROPERTIES OF CURED MATERIAL

Samples prepared at 0.050 mm layer thickness on LOCTITE PR10 DLP printer using recommended exposure settings. Samples were exposed to additional light and heat after removal from the print head; 60 min @ 60°C and 45% intensity using Loctite CL38 cure chamber. All data is recorded on specimens printed in the XY plane. Some variation is expected when printing in Z plane. Contact your local Loctite Technical Service team for further information.

### Physical Properties:

Shore Hardness, ASTM D2240, Durometer D 60  
 Volume Shrinkage, % 5.0  
 Linear Shrinkage, ASTM D792, % 1.7

Physical Property	Unit	As Printed	Final
Elongation, at break, ASTM D638	%	65-80	68-75
Tensile Strength, ASTM D638	MPa	4-6	18-21
	ksi	0.6-0.9	2.6-3.0
Tensile Modulus, (Secant 0.002), ASTM D638	MPa	120-160	695-760
	ksi	17.4-23.2	100.8-110.2
Notched IZOD Impact ASTM D256	J/m	185-205	60-80
Tear Strength ASTM D624	kN/m	35-50	110-160

## 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:

- This product is light sensitive; exposure to daylight, UV light and artificial lighting should be kept to a minimum during storage and handling.
- **Shake or stir Loctite® 3D 3870™ well before use.**
  - Agitate resin before each print
  - Do not leave resin in printer tray when not in use
- Recommended Post Print Processing:
  - Rinse the printed part using an approved cleaner to remove uncured resin
  - At least 60 min @ 60°C and 45% intensity using Loctite CL38 cure chamber.

### Loctite Material Specification<sup>LMS</sup>

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 labelling.

**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 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 Centre or Customer Service Representative.

### Conversions

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$   
 $\text{kV/mm} \times 25.4 = \text{V/mil}$   
 $\text{mm} / 25.4 = \text{inches}$   
 $\mu\text{m} / 25.4 = \text{mil}$   
 $\text{N} \times 0.225 = \text{lb}$   
 $\text{N/mm} \times 5.71 = \text{lb/in}$   
 $\text{N/mm}^2 \times 145 = \text{psi}$   
 $\text{MPa} \times 145 = \text{psi}$   
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$   
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$   
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$   
 $\text{mPa}\cdot\text{s} = \text{cP}$

### Note

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### Preliminary Technical Data

The performance data contained in this Preliminary Technical Data sheet is subject to final validation and may be adjusted/modified prior to final release.