

# E-3840

## PRODUCT DESCRIPTION

E-3840 is a light curing acrylic resin that may be used for functional prototyping via stereolithography. E-3840 cures with very short exposure to monochromatic light sources such as LED or Laser. Printed articles made from E-3840 exhibit very fine print resolution. E-3840 is a low viscosity liquid that is printable at room temperature on a DLP Platform.

E-3840 provides the following product characteristics:

<b>Technology</b>	Stereolithography Resin
Appearance	White, Black
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>• Semi-Flexible general purpose</li> <li>• Low shrinkage</li> <li>• Fine print resolution</li> <li>• Short exposure times</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> 120-300<sup>LMS</sup>

## TYPICAL CURING PERFORMANCE

E-3840 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. E-3840 will cure with DLP and Lasers ranging from 300-450nm.

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

Measurement	Unit	Value
Critical Exposure (E <sub>c</sub> )	mJ/cm <sup>2</sup>	10.6
Penetration Depth (D <sub>p</sub> )	mm	0.165

## TYPICAL PROPERTIES OF CURED MATERIAL

All data is recorded on specimens printed in the XY plane at 0.050mm layer thickness on a DLP printer at 405nm. Some variation is expected when printing in the Z plane. The physical properties in the table below are reflective of what one may observe under the noted conditions. Contact your local Loctite Technical Service team for further information.

Physical Property	Unit	As Printed	Post Processed*
Elongation, at break, ASTM D638	%	15-25	15-20
Tensile Strength, ASTM D638	MPa	20-35	20-30
	ksi	2.9-5.1	2.9-4.4
Tensile Modulus, (Secant 0.002), ASTM D638	Gpa	0.8-1.2	0.9-1.3
	ksi	116-174	131-189
Flexural Strength, ASTM D790	MPa	20-30	25-35
	ksi	2.9-4.4	3.6-5.1
Flexural Modulus, (Secant 0.002), ASTM D790	MPa	700-900	800-1000
	ksi	102-131	116-145
Heat Deflection Temperature (0.45Mpa) ASTM D648	°C	45-50	45-55
Notched IZOD Impact ASTM D256	J/m	30-40	25-35
Notched IZOD Impact ISO 180 Type 1A	kJ/m <sup>2</sup>	2.4-2.6	2.0-2.5
Volume Shrinkage	%	-	7.5
Linear Shrinkage, ASTM D792	%	-	2.7
Shore Hardness, ASTM D2240, Durometer D	-	-	70

\* Samples were exposed for 10 seconds per side at 20mW/cm<sup>2</sup> intensity using a Loctite® CL36™ cure chamber.

## 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 E-3840 well before use.**
  - Agitate resin before each print
  - Do not leave resin in printer tray when not in use
- Post Print Processing:

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- Rinse the printed part using an approved cleaner to remove uncured resin

## 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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