



# LOCTITE® 3038™

February 2010

## PRODUCT DESCRIPTION

LOCTITE® 3038™ provides the following product characteristics:

<b>Technology</b>	Acrylic
<b>Chemical Type</b>	Acrylic
<b>Appearance (Part A)</b>	Clear yellow gel <sup>LMS</sup>
<b>Appearance (Part B)</b>	Viscous straw colored liquid <sup>LMS</sup>
<b>Components</b>	Two component - requires mixing
<b>Viscosity</b>	Medium, thixotropic
<b>Cure</b>	Two part acrylic
<b>Mix Ratio, by volume - Part A: Part B</b>	1 : 10
<b>Application</b>	Bonding
<b>Specific Benefit</b>	Bonds low energy plastic without pre-treatment

LOCTITE® 3038™ is designed primarily to bond e-coated metals (ECS) to glass fibre filled polypropylenes (PPGF) but can also be used on other low energy substrates such as LDPE and HDPE. The product is designed to work without surface pre-treatment. The product contains 0.25 mm fillers for bondline thickness control. The thixotropic nature of LOCTITE® 3038™ reduces the migration of liquid product after application to the substrate.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

### Part A:

Specific Gravity @ 20 °C	1.2
Viscosity, Cone & Plate, mPa·s (cP):	
Temperature: 25 °C, Shear Rate: 20 s <sup>-1</sup>	1,500 to 15,000 <sup>LMS</sup>
Color, APHA	1 to 3 <sup>LMS</sup>
Flash Point - See MSDS	

### Part B:

Specific Gravity @ 25 °C	1.0
Viscosity, Cone & Plate, mPa·s (cP):	
Temperature: 25 °C, Shear Rate: 20 s <sup>-1</sup>	6,000 to 18,000 <sup>LMS</sup>
Flash Point - See MSDS	

## TYPICAL CURING PERFORMANCE

This product cures when the components are dispensed through a static mixer at room temperature.

### Fixture Time

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm<sup>2</sup>.

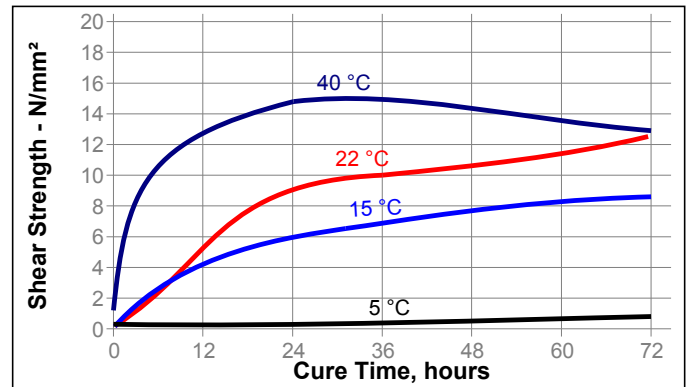
Fixture Time, mixed, minutes:	
PPGF to ECS	≤70

### Open Time

Open Time, mixed, minutes	4
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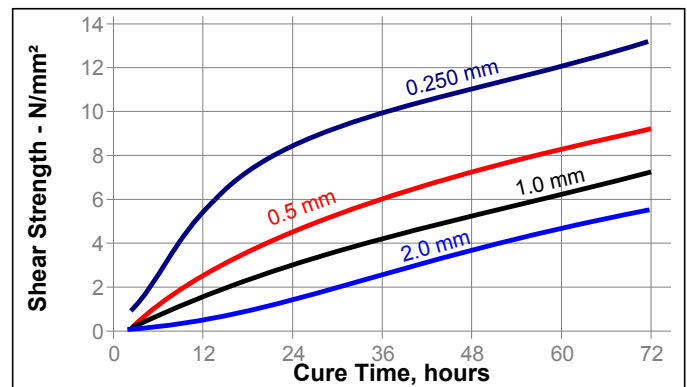
## Cure Speed vs. Temperature

The graph below shows the shear strength developed with time on ECS to PPGF at different temperatures and tested according to ISO 4587.



## Cure Speed vs. Bond Gap

The rate of cure will depend on the bondline gap. Thin bond lines result in higher cure speeds, increasing the bond gap will decrease the rate of cure.



**TYPICAL PROPERTIES OF CURED MATERIAL**

Cured for 24 hours @ 22 °C

**Physical Properties:**

Coefficient of Thermal Expansion, K <sup>-1</sup> :	
Below T <sub>g</sub>	178×10 <sup>-6</sup>
Above T <sub>g</sub>	145×10 <sup>-6</sup>
Glass Transition Temperature, °C	57
Coefficient of Thermal Conductivity, W/(m·K)	0.436
Shore Hardness, ISO 868, Durometer D	65

Cured for 168 hours @ 22 °C

**Physical Properties:**

Elongation, at break, ISO 527-2, %		37
Tensile Strength, at break, ISO 527-2	N/mm <sup>2</sup>	12.98
	(psi)	(1,880)
Tensile Modulus, ISO 527-2	N/mm <sup>2</sup>	704
	(psi)	(102,080)

**TYPICAL PERFORMANCE OF CURED MATERIAL****Adhesive Properties**

Cured for 72 hours @ 22 °C

Lap Shear Strength, ISO 4587:

PPGF to ECS	N/mm <sup>2</sup>	≥8 <sup>LMS</sup>
	(psi)	(≥1,160)
PPGF to Polycarbonate	N/mm <sup>2</sup>	5.5
	(psi)	(800)
Aluminum	N/mm <sup>2</sup>	7.9
	(psi)	(1,150)
PPGF	N/mm <sup>2</sup>	9.8
	(psi)	(1,420)
Polyamide (Nylon)	N/mm <sup>2</sup>	2.9
	(psi)	(420)
Polybutylene Terephthalate (PBT)	N/mm <sup>2</sup>	13.6
	(psi)	(1,970)

Cured for 24 hours @ 22 °C

Lap Shear Strength, ISO 4587:

PPGF to ECS	N/mm <sup>2</sup>	8.4
	(psi)	(1,220)

Cured for 168 hours @ 22 °C

Lap Shear Strength, ISO 4587:

PPGF to ECS	N/mm <sup>2</sup>	10.5
	(psi)	(1,520)

**TYPICAL ENVIRONMENTAL RESISTANCE**

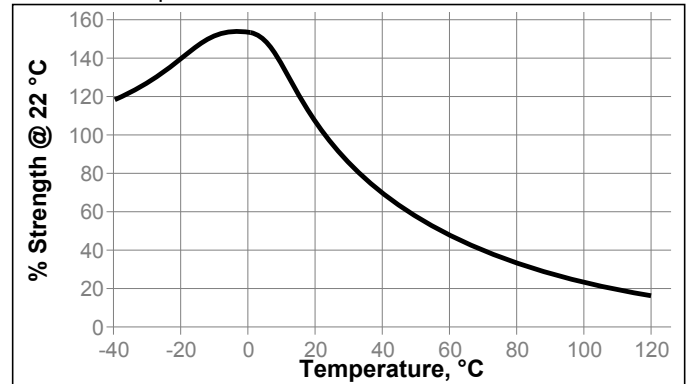
Cured for 24 hours @ 22 °C

Lap Shear Strength, ISO 4587:

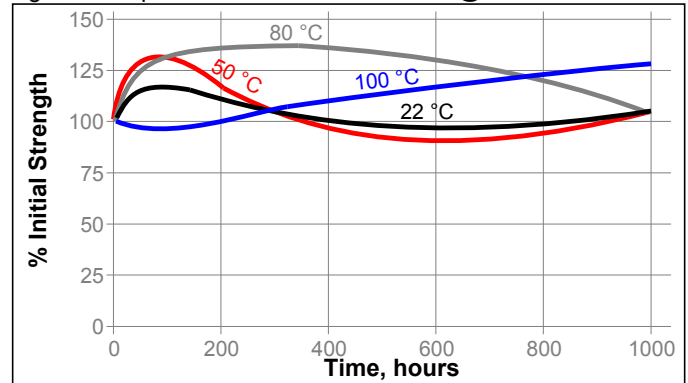
PPGF to ECS

**Hot Strength**

Tested at temperature

**Heat Aging**

Aged at temperature indicated and tested @ 22 °C

**Chemical/Solvent Resistance**

Aged under conditions indicated and tested @ 22°C.

Environment	°C	% of initial strength		
		100 h	500 h	1000 h
98% RH	40	112	103	94
Motor oil	22	106	110	107
Motor oil	50	132	96	111
Water/glycol	22	114	102	99
Water/glycol	50	109	102	91

**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 Material Safety Data Sheet (MSDS).**

**Directions for use:**

- For best performance bond surfaces should be clean and free from grease.
- For more detailed information, please contact your local Technical Service Center or Customer Service Representative.

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

LMS dated September 18, 2006 (Part A) and LMS dated September 26, 2007 (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. Material removed from containers may be contaminated during use. Do not return liquid to original container. Storage information may be indicated on the product container labeling.

**Optimal Storage: 8 °C to 21 °C. Storage below 8 °C or greater than 28 °C can adversely affect product properties.**

Henkel cannot assume responsibility for product which has been contaminated or stored under conditions other than those recommended. If additional information is required, please contact your local Technical Service Center 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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Reference 0.4