

LOCTITE® UK U-09FL

September 2015

PRODUCT DESCRIPTION

LOCTITE® UK U-09FL provides the following product characteristics:

Technology	Polyurethane
Chemical Type	Polyurethane
Appearance (Component A)	Clear liquid
Appearance (Component B)	Clear liquid
Appearance - Mixed	Ultra clear
Components	Two components - Requires mixing
Viscosity	Low, thixotropic
Mix Ratio by volume Comp A: Comp. B	1 : 1
Mixing Ratio by weight Comp. A : Comp. B	100 : 91
Cure	Room temperature cure
Application	Bonding

LOCTITE® UK U-09FL is a low-viscosity, industrial grade urethane adhesive. Once mixed, the two-component urethane cures at room temperature to form an ultra-clear, highly flexible bond line, which provides excellent peel strength. LOCTITE® UK U-09FL is ideal for bonding polycarbonate, and a variety of other plastics, as well as glass, and metal. Suited for applications requiring a clear, non-yellowing bond line.

TECHNICAL DATA

Component A

Viscosity at 25 °C, mPas	5,000 to 15,000
Specific Gravity @ 25°C	1.0 to 1.2

Component B

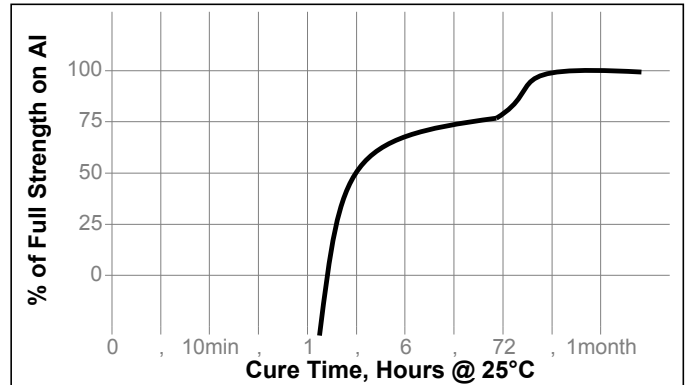
Viscosity at 25 °C, mPas	600 to 2,000
Specific Gravity @ 25°C	0.95 to 1.15

Mixture (Component A + B)

Specific Gravity @ 25°C	1.0 to 1.2
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Cure Speed vs. Time/Temperature

The graph below shows the shear strength developed over time on acid etched aluminum lap shears with an average bondline gap of 3 to 9 mils and tested according to STM 700.



TYPICAL CURING PERFORMANCE

Working Life @ 25 °C, minutes	10
Tack Free Time @ 25 °C, hours	3 to 24

TYPICAL PROPERTIES OF CURED MATERIAL

Cured @ 25°C

Physical Properties

Dielectric Strength, STM 733, volts/mil	841
Tensile Strength, STM 708, psi	2,761
Tensile Elongation, STM 708, %	178
Hardness, Shore D, STM 707	45
Glass Transition Temperature (Tg), STM 767, °C	25.8
CTE pre Tg, STM 767, ppm	137
CTE post Tg, STM 767, ppm	231

TYPICAL PERFORMANCE OF CURED MATERIAL Shear Strength vs Substrate

Shear Strength

Substrate (Substrates cured for 5 days @ 22 °C)

Lap Shear Strength

, STM 700:

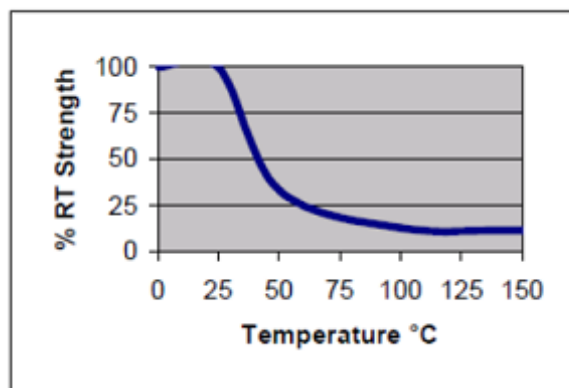
Grit-Blasted Steel	N/mm ²	10
	(psi)	(1,459)
Aluminum (Abraded/Acid Etched, 3 to 9 mil gap)	N/mm ²	5.4
	(psi)	(777)
Aluminum (Anodized)	N/mm ²	5.7
	(psi)	(821)
Stainless Steel	N/mm ²	4.0
	(psi)	(587)
Polycarbonate	N/mm ²	3.3
	(psi)	(476)
Nylon	N/mm ²	1.6
	(psi)	(239)
Wood (Pine)	N/mm ²	5.0
	(psi)	(734)

Lap Shear Strength , STM 700, (Acid Etched, 3 to 9 mil gap):

Substrate cured for 3 hrs at 65 °C	N/mm ²	2.8
	(psi)	(403)
Substrate cured for 24 hrs at 65 °C	N/mm ²	3.9
	(psi)	(569)
Substrate cured for 72 hrs at 65 °C	N/mm ²	5.4
	(psi)	(774)
Substrate cured for 1 week at 65 °C	N/mm ²	6.7
	(psi)	(965)

Block Shear Strength, , STM 726, 5 days at RT:

PVC	N/mm ²	10.4
	(psi)	(1,511)
ABS	N/mm ²	1.7
	(psi)	(252)
Epoxy	N/mm ²	16.6
	(psi)	(2,414)
Acrylic	N/mm ²	4.0
	(psi)	(578)

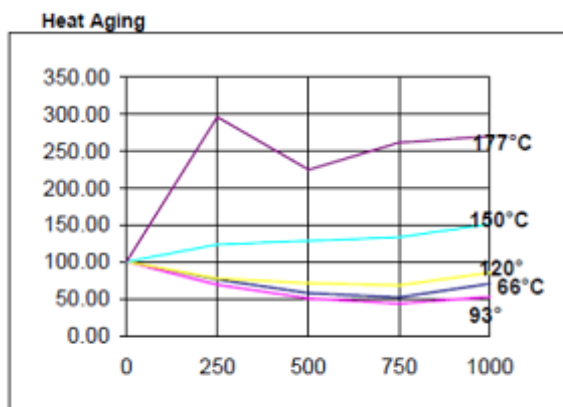


Tested at temperature.

TYPICAL ENVIRONMENTAL RESISTANCE

Hot Strength

Test procedure	STM 700
Substrate	Acid etched aluminum
Bondline gap, mils	3 to 9
Cure procedure	12 hours at 65°C & 4 hours at 22°C



Cured for 5 days at 22°C on steel with no induced gap, aged at temperature indicated and tested at 22°C.

Chemical / Solvent Resistance

Cured for 5 days at 22°C on steel with no induced gap, aged under conditions indicated and tested at 22°C.

Solvent	Temp, °C	% Initial Strength retained at 500 hr	% Initial Strength retained at 1000 hr
Air	87	90	140
Motor Oil (10W-30)	87	150	155
Unleaded Gasoline	87	0	0
Water/Glycol (50%/50%)	87	0	0
Salt/Fog ASTM B-117	22	0	0
95% Relative Humidity	38	25	20
Condensing Humidity	49	20	15
Water	22	10	25
Acetone	22	0	0
Isopropyl Alcohol	22	140	0



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:

1. For high strength structural bonds, remove surface contaminants such as paint, oxide films, oils, dust, mold release agents and all other surface contaminants.
2. Use gloves to minimize skin contact. DO NOT use solvents for cleaning hands.
3. **Dual Cartridges:** To use simply insert the cartridge into the application gun and start the plunger into the cylinders using light pressure on the trigger. Next, remove the cartridge cap and expel a small amount of adhesive to be sure both sides are flowing evenly and freely. If automatic mixing of resin and hardener is desired, attach the mixing nozzle to the end of the cartridge and begin dispensing the adhesive. .
4. For hand mixing, expel the desired amount of the adhesive and mix thoroughly. Mix approximately 15 seconds after uniform color is obtained.
5. **Bulk Containers:** Normally material is dispensed through volumetric metered mixing equipment, attached to static mix nozzles. It may also be mixed by weight or volume as described above.
6. For maximum bond strength apply adhesive evenly to both surfaces to be joined.
7. Application to the substrates should be made within 10 minutes. Larger quantities and/or higher temperatures will reduce this working time.
8. Join the adhesive coated surfaces and allow to cure at 25 °C (77 °F) for 24hours for high strength. Heat up to 93 °C (200°F), will speed curing.
9. Keep parts from moving during cure. Contact pressure is necessary. Maximum shear strength is obtained with a 3 to 9 mil bond line.
10. Excessive uncured adhesive can be cleaned up with ketone type solvents.

Storage

Store product in the unopened container in a cool dry well ventilated area. 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 impact shelf life and 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 Henkel Representative.

Product Specification

The technical data contained herein are intended as reference only and are not considered specifications for the product. Product specifications are located on the Certificate of Analysis or please contact Henkel representative.

Approval and Certificate

Please contact a Henkel representative for related approval or certificate of this product.

Data Ranges

The data contained herein may be reported as a typical value. Values are based on actual test data and are verified on a periodic basis.

Temperature/Humidity Ranges: 23 °C / 50% RH = 23±2 °C / 50±5% RH

Conversions

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

ADDITIONAL INFORMATION

Disclaimer

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. Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

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Reference 1