Product Description Sheet

LOCTITE® UK U-05FL

Known as

Hysol® Product U-05FL

September 2015

PRODUCT DESCRIPTION

LOCTITE® UK U-05FL is a medium-viscosity, industrial grade urethane adhesive. Once mixed, the two-component urethane cures at room temperature to form an off-white, highly flexible bond line, which provides excellent peel and shear strength.

TYPICAL APPLICATIONS

Ideal for bonding a variety of metals, as well as plastics, glass, wood, and more. Can also be used for potting and encapsulating strain and heat sensitive electronic components.

PROPERTIES OF UNCURED MATERIAL

Resin	**Typical Value**	**Range**
Chemical Type	Polyisocyanate	
Appearance	Yellow viscous liquid	
Specific Gravity @ 25°C	1.10	1.0 to 1.2
Viscosity @ 25°C, mPa.s (cP)	640	300 to 1,100
Flash Point (TCC), °C (°F)	188 (370)	

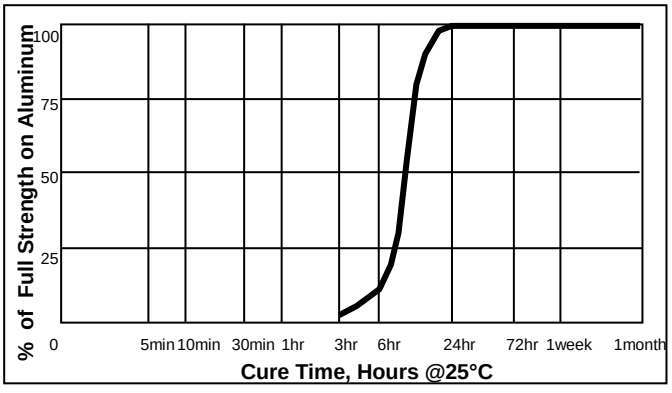
Hardener	**Typical Value**	**Range**
Chemical Type	Polyol	
Appearance	Cloudy white liquid	
Specific Gravity @ 25°C	1.10	0.9 to 1.1
Viscosity @ 25°C, mPa.s (cP)	152,000	90,000 to 215,000
Flash Point (TCC), °C (°F)	>93 (>200)	

Mixture	**Typical Value**
Appearance	Off-White
Specific Gravity @ 25°C	1.10
Mix Ratio (R:H) by Weight	100 to 200
by Volume	1 to 2

TYPICAL CURING PERFORMANCE

Cure speed

The graph below shows the shear strength developed over time on abraded, acid etched aluminum lap shears with an average bondline gap of 3 to 9 mils and tested according to ASTM D-1002.



Curing Properties

(@ 25°C unless noted)	**Typical Value**
Working Life, minutes	5
Tack Free time, minutes	160

TYPICAL PROPERTIES OF CURED MATERIAL

(@ 25°C unless noted)

Physical Properties	**Typical Value**
Dielectric Strength, Volts/Mil	400
Tensile Strength ASTM D638, psi	1,300
Tensile Elongation ASTM D-638, %	74
Hardness ASTM D-1706, Shore D	45
Glass Transition Temperature, Tg, °C	48

PERFORMANCE OF CURED MATERIAL

Shear Strength vs Substrate

(Substrates cured for 5 days @22°C.)

Substrate	**Typical Value**	
Lapshear	**N/mm²**	**(psi)**
Grit-Blasted Steel	6.4	930
Aluminum (Abraded/Acid Etched, 3 to 9 mil gap)	14.6	2120
Aluminum (Anodized)	5.2	750
Stainless Steel	6.3	910
Polycarbonate	13.6	1970
Nylon	3.7	530
Wood (Fir)	9.6	1390

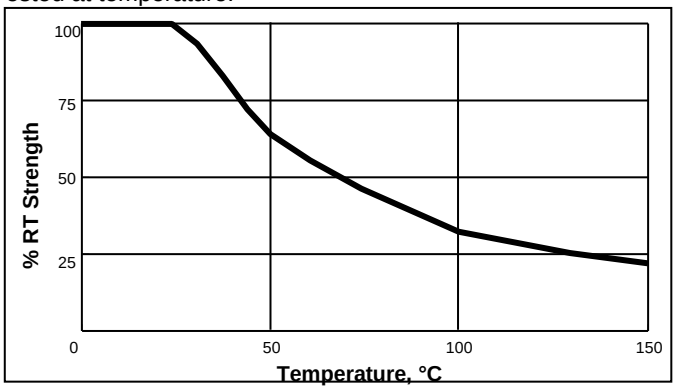
Block Shear	**N/mm²**	**(psi)**
PVC	8.5	1230
ABS	6.4	930
Epoxy	21.4	3110
Glass	9.2	1340

TYPICAL ENVIRONMENTAL RESISTANCE

Hot Strength

Test procedure :	ASTM D-1002
Substrate:	Abraded, acid etched aluminum
Bondline gap, mils:	3 to 9
Cure procedure:	12 hours at 65°C & 4 hours at 22°C

Tested at temperature.



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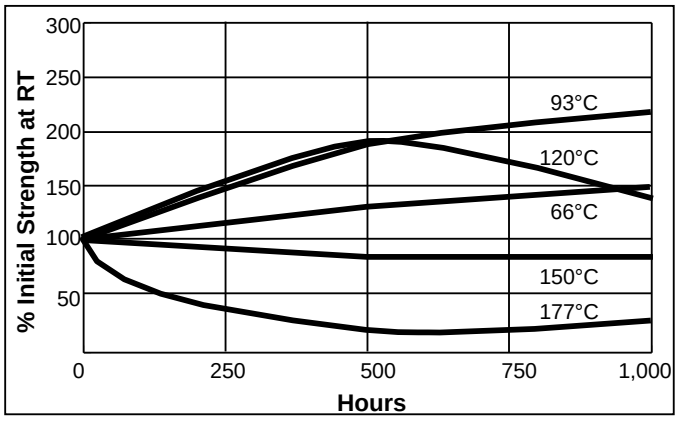
Heat Aging
Cured for 5 days at 22°C on steel with no induced gap, aged at temperature indicated and tested at 22°C.



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.	% Initial Strength retained at 500 hr	1000 hr
Air	87°C	144	105
Motor Oil (10W-30)	87°C	95	180
Unleaded Gasoline	87°C	57	69
Water/Glycol (50%/50%)	87°C	130	108
Salt/Fog ASTM B-117	22°C	97	82
95% Relative Humidity	38°C	102	112
Condensing Humidity	49°C	111	86
Water	22°C	107	108
Acetone	22°C	47	68
Isopropyl Alcohol	22°C	54	57

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).

Regulatory Notice

This product is regulated by the United States Department of Commerce and may not be exported without license from that organization. See the Material Safety Data Sheet for details.

Directions for use

1. For high strength structural bonds, removal of surface contaminates such as paint, oxide films, oils, dust, mold release agents and all other surface contaminates.
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. For hand mixing, expel the desired amount of the adhesive and mix thoroughly. Mix approximately 15 seconds after uniform color is obtained. **Bulk Containers:** Mix thoroughly by weight or volume in the proportions specified in Properties of Uncured Material section. Mix vigorously approximately 15 seconds after uniform color is obtained.
4. For maximum bond strength apply adhesive evenly to both surfaces to be joined.
5. Application to the substrates should be made within 3 to 5 minutes. Larger quantities and/or higher temperatures will reduce this working time.
6. Join the adhesive coated surfaces and allow to cure at 25°C (77°F) for 24 hours for high strength. Heat up to 93°C (200°F), will speed curing.
7. Keep parts from moving during cure. Contact pressure is necessary. Maximum shear strength is obtained with a 3-9 mil bond line.
8. Excess uncured adhesive can be cleaned up with ketone type solvents.

Storage
Product shall be ideally stored in a cool, dry location in unopened containers at a temperature between 8°C to 28°C (46°F to 82°F) unless otherwise labeled. Optimal storage is at the lower half of this temperature range. To prevent contamination of unused product, do not return any material to its original container. For further specific shelf life information, contact your local Technical Service Center.

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

Note
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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