

EL600F

A low viscosity, fast curing polyurethane resin system

Application

- Encapsulating
- Potting
- Moulding
- Casting

Key Properties

- Fast curing
- High electrical insulating characteristics
- Non-toxic
- Low viscosity
- Convenient mix ratio
- Does not contain halogens or heavy metals

Description

- Basic Two-component polyurethane system
- Resin RL600F
- Hardener HL600F

Physical Data (approx. – values)	Resin	Hardener	Mixed
Colour	Black Red White	Brown Brown Brown	Black Red Off-White
Specific Gravity	1.56	1.24	1.48
Viscosity (mPa.s) @ RT	8000	200	3000

Cure Schedule (150ml sample)				
Temperature	Working Life (minutes)	Gel Time (minutes)	Light Handling (hours)	Full Cure (hours)
RT*	3	5-7	16	168
40°C	-	-	4	16
60°C	-	-	2	6

*RT is defined as 20-25°C

The above are typical values and will vary depending on the cured mass and application. Hotter temperatures may be used for faster cure but will result in higher post cure shrinkage and higher cure exotherm. Experimentation and testing is suggested to avoid side effects. For maximum properties a post cure may be required – Contact our technical service department for advice.

Processing

Mix ratio by weight 3.8:1
Mix ratio by volume 3.0:1

Typical Properties		
Test	Result	Unit
Peak Exotherm	104	°C
Shrinkage	0.5	%
Water absorption (24hrs @ 23°C)	0.12	%
Water absorption (168hrs @ 23°C)	0.37	%
Flame retardant	Approvable to	UL94 V-0
Hardness	80	Shore D
Tensile Strength	40	MPa
Compressive strength	110	MPa
Thermal conductivity	0.8	W/m. K
Co-efficient of thermal expansion	60 - 80	ppm/°C
Operating temperature range	-40 to +140	°C (application & geometry dependent)
Short term exposure limit	180	°C (application & geometry dependent)
Volume Resistivity	1.6×10^{12}	ohm.cm
Surface Resistivity	1.6×10^{10}	ohm
Electric strength	19	kV/mm
Dielectric constant	4.2	100 Hz
Dielectric constant	3.9	1 kHz
Dielectric constant	3.8	10 kHz
Tg	-20	°C

Chemical Resistance

	Duration	Weight increase (%)	Hardness	Colour Change	Swelling
Engine Oil @ 80°C	1 week	0.065	D80	None	None
	2 weeks	-0.049	D77	None	None
	4 weeks	-0.023	D77	None	None
	10 weeks	0.113	D77	None	None
Brakes Fluid @ 80°C	1 week	1.28	D75	Mottled surface	None
	2 weeks	1.99	D74	Mottled surface	None
	4 weeks	2.68	D74	Mottled surface	None
	10 weeks	4.45	D70	Mottled surface	None
Battery Acid @ 25°C	1 week	0.16	D78	None	None
	2 weeks	0.29	D78	None	None
	4 weeks	0.40	D78	None	None
	10 weeks	0.74	D78	None	None
Diesel @ 25°C	1 week	0.023	D81	None	None
	2 weeks	0.044	D80	None	None
	4 weeks	0.118	D80	None	None
	10 weeks	0.206	D80	None	None
Petrol @ 25°C	1 week	0.009	D77	None	None
	2 weeks	0.033	D77	None	None
	4 weeks	0.118	D77	None	None
	10 weeks	0.242	D77	None	None

Approvals

WEEE & RoHS compliant	Yes
UL94 V-0	No
REACH (SVHC concentration)	0%

Packaging

EL600F is available in Bulk, Twinpacks & kits

Availability

Available through distribution and sales@robnor.co.uk

Cartridge Mixing - Part Numbers

Not available	
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It is essential for best results that the cartridge is 'balanced' before use to ensure correct mixing.

Loading the cartridge into the gun before attaching the mixer element and pumping the gun to push a small amount of the contents forward will achieve this. Wipe the excess from the cartridge tip and add the static mixer. The cartridge is now ready for use.

Twinpacks - Part Numbers

EL600F/BK/050	EL600F/WT/150
EL600F/BK/250	

Twinpacks are pre-weighed resin and hardener components contained in a tough flexible film, separated by a removable clip and rail. Once the clip and rail is removed the resin and hardener is thoroughly mixed within the bag and is immediately ready for use. Mixing will normally take ~ 2 minutes due to the viscosity; but pay special attention to the corners. Twinpacks are ideal for small to medium production runs, prototyping and on-site or field use. The twinpack weight/volume may also be tailored to a specific size on request.

For further details please visit www.robnor-resinlab.com

Bulk Materials - Part Numbers

RL600F/BK/5KG	HL600F/NC/5KG
RL600F/WT/15KG	HL600F/NC/25KG
RL600F/WT/20KG	HL600F/NC/225KG
RL600F/WT/25KG	
RL600F/WT/225KG	

Both resin and hardener are supplied in 5kg, 25kg and 200ltr drums and fully evacuated and ready for use.

Care should be taken to ensure when mixing the resins air is not entrained in the mixture. If this is unavoidable the mixed resin and hardener should be re-evacuated before dispensing. The bulk resin and hardener materials can be dispensed from suitable dispensing machinery, details provided by Fluid Research on request.

Kits and Sets - Part Numbers

EL600F/BK/5KGKIT

EL600F/BK/25KGSET

Kits and Sets are provided in separate containers to the correct ratio.
In Kit form, pour the hardener into the larger resin container and use it as a mixing vessel.
Stir well using an appropriate mixer until homogeneous.

Note: Incomplete mixing will be characterised by erratic or partially incomplete cure even after extended time periods.

Cleaning

All equipment contaminated with mixed material should be cleaned before the material has hardened.
TS130 is a suitable non-flammable cleaning agent, although other solvents may be found suitable.
TS130 will also remove cured material provided it is allowed to soak for a number of hours.

Storage and Shelf Life

Material stored in the original unopened containers under cool dry condition between 15° and 25°C will have a shelf life of at least two years.
Once used the containers must be kept sealed to prevent effects from water, air or contaminants.

Health and Safety

Polyurethane resin systems may cause sensitisation by skin contact or inhalation may be corrosive, harmful or toxic. It is therefore strongly recommended that skin and eye contact is avoided by the using of appropriate personal protective equipment such as gloves, safety glasses or goggles and overalls. Wash any contamination from the skin immediately and thoroughly and do not eat, smoke or drink in the working vicinity.
Under normal working conditions a good source of ventilation is adequate, however if the material is heated, or where vapour levels are likely to exceed the occupational exposure limits appropriate respiratory protection must be worn. Local exhaust ventilation (LEV) may be required especially for curing ovens or where large volumes of material are curing. The above is given as a guide only; please refer to RL/HL600F Health and Safety data or our Technical Service Department for individual/specific advice.

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