

EL241F

A low viscosity, semi-rigid polyurethane resin system exhibiting high electrical strength, toughness, and adhesion.

Application

- Surface and subsea electrical and electronic units
- Encapsulation
- Moulding
- Bend restrictors
- Connectors

Key Properties

- High electrical insulating characteristics
- Non-toxic
- Low viscosity
- Low water absorption and high resistance to seawater
- Low temperature flexibility

Description

- Basic Two-component polyurethane system
- Resin RL241F
- Hardener HL241F

Physical Data (approx. – values)	Resin	Hardener	Mixed
Colour	Black Cream	Brown Brown	Black Beige
Specific Gravity	1.17	1.22	1.18
Viscosity (mPas) @ 25°C	9000	100	2500

Cure Schedule

Temperature	Working Life (minutes)	Gel Time (minutes)	Light Handling (hours)	Full Cure (hours)	Post Cure (hours)
25°C	10	18	24	48	76
60°C	-	-	2	4	8
80°C	-	-	1	2	4

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 - call Robnor Technical Service Department for advice.

Processing

Mix ratio by weight 3.64:1
Mix ratio by volume 3.78:1

Typical Properties

Test	Result	Unit
Water absorption (24 hours @ 23°C)	0.09	%
Water absorption (168 hours @ 23°C)	0.3	%
Flame retardant	No	
Hardness	85	Shore A
Tensile strength	10	MPa
Elongation at break	200	%
Compressive strength	Flexible	MPa
Thermal conductivity	0.22	W/m.k
Coefficient of thermal expansion	75 – 100	ppm/°C
Operating temperature range	-60 to +120	°C (application & geometry dependent)
Maximum service temperature	130	°C (application & geometry dependent)
Volume Resistivity	3×10^{15}	ohm.cm
Surface Resistivity	2×10^{14}	ohm
Electric strength	25	kV/mm
Dielectric constant	3.1	@ 100 Hz
Dielectric constant	3.0	@ 1 kHz
Dielectric constant	3.7	@ 10 kHz
Dissipation factor	0.023	1 MHz

Approvals

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

Combustion

Polyurethanes generally ignite at approx. 415°C. Decomposition is by depolymerisation, liberating the polyol and isocyanate. Pyrolysis decomposition products will consist of carbon, carbon dioxide, carbon monoxide, hydrogen cyanide, nitriles, and water.

Disposal

Provided the resin and hardener have been properly mixed, as per instructions, the resultant material will be chemically inert and therefore able to be land filled subject to local government regulations.

Packaging

EL241F is available in Bulk, Twinpacks & Kits

Availability

Available through 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

EL241F/BK/100	EL241F/BK/500
EL241F/BK/250	EL241F/BK/1000

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

RL241F/BK/25KG	HL241F/NC/20KG
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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

EL241F/BK/10KGKIT	

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 12 months.

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/HL241F Health and Safety data or our Technical Service Department for individual/specific advice.

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The results and information above does not constitute a specification and is given in good faith and without warranty. The information is derived from test/or extrapolations believed to be reliable and is quoted for guidance only. The product is offered for evaluation on the understanding the customer satisfies himself that the product is suitable for the intended application by proper evaluation and testing.

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