

EL241F-1

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

Application

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

Key Properties

- High electrical insulating characteristics
- Low viscosity
- Low water absorption and high resistance to seawater
- Low temperature flexibility
- Fast strength development

Description

- Basic Two-component polyurethane system
- Resin RL241F-1
- Hardener HL241F

Physical Data (approx. – values)	Resin	Hardener	Composite
Colour	Black	Yellow	Black
Specific Gravity	1.17	1.22	1.18
Viscosity (mPas) @ 25°C	7500-9500	100	4500-5500

Cure Schedule (200g)	Working Life	Gel Time	Light Handling	Full Cure	Post Cure
Temperature	(minutes)	(minutes)	(hours)	(hours)	(hours)
25°C	10-12	20-24	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 3.8:1

Typical Properties	Result	Unit
Water absorption (24 hours @ 23°C)	0.09	%
Water absorption (168 hours @ 23°C)	0.3	%
Flame retardant	No	
Hardness	80-90	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)	Refer to SDS

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-1 is available in Bulk, Twinpacks & Kits

Availability

Available through sales@robnor.co.uk

Twinpacks Part Numbers

EL241F-1/BK/150	EL241F-1/BK/150

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

Available on request	
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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

Kits available on request	
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Kits and Sets are provided in separate containers to the correct ratio.

In Kit form, pour the contents of the smaller container into the larger 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 can soak for several hours.

Storage and Shelf Life

12 months at 25 °C Specialty packaging may be less.

Isocyanates are sensitive to moisture and should be kept in their original container or in a volume tank under dry nitrogen blanketing. Many isocyanates are prone to dimerization, the formation of a white precipitate. Products with minor amounts of this precipitate normally cure to full properties.

Storage at 20 +/- 5 °C (60 °F to 86 °F) is recommended to ensure full shelf life.

Health and Safety

Please refer to RL/HL241F-1 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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