Technical Data Sheet
January 2013

EL116H

A low viscosity, semi-rigid polyurethane resin system exhibiting high electrical strength, dimensional stability, and low shrinkage.

Application

- Coils
- Transformers
- Cable Joints
- PCB potting and encapsulation
- Delicate electronic components

Key Properties

- High electrical insulating characteristics
- Non-toxic
- Flame retardant to UL94-VO
- Low viscosity
- High thermal conductivity

Description

- Basic — Two-component polyurethane system
- Resin — RL116H
- Hardener — HL116H

Physical Data (approx. – values)			
	Resin	**Hardener**	**Mixed**
Colour	White Black	Brown Brown	White Black
Specific Gravity	1.70	1.24	1.64
Viscosity (mPas) @ 25°C	25000	200	8000

Cure Schedule (150ml sample)				
Temperature	Working Life (minutes)	Gel Time (minutes)	Light Handling (hours)	Full Cure (hours)
RT	20	120	24	48
60°C	-	-	4	4
80°C	-	-	2	2

*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 8.1:1
Mix ratio by volume 5.9:1

Typical Properties		
Test	**Result**	**Unit**
Peak Exotherm (250g @ RT)	50	°C
Shrinkage (Volume)	0.4	%
Thermal conductivity	0.75	W/m. K
Operating temperature range	-50 to +140	°C (application & geometry dependent)
Dielectric strength	16	kV/mm
Volume Resistivity	1.5×10^{12}	ohm.cm
Hardness	55	Shore D
Heat deflection	Flexible	
Flame retardant	Approvable to	UL94 VO
Loss Tangent	0.03	50 Hz
Permittivity	3.8	50 Hz
Comparative Tracking Index	>600	V
Water absorption (30 days @ 25°C)	0.45	%
Elongation at Break	~25	%
Tensile strength	10	MPa
Compressive strength	30	MPa
Co-efficient of thermal expansion	60 – 80	ppm/°C
Weight loss (168hrs @ 130°C)	0.6	%
Surface Resistivity	1.6×10^{11}	ohm

Approvals	
RoHS compliant	Yes
UL94-V0	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 resultants material will be chemically inert and therefore able to be land filled, subject to local government regulations.

Packaging

EL116H is available in Bulk, Twinpacks & Kits

Availability

Available through sales@robnor.co.uk

Cartridge Mixing & Part Numbers	
Not Available	

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	
EL116H/BK/100	EL116H/BK/500
EL116H/BK/250	EL116H/BK/1000
EL116H/BK/500	

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.co.uk

Bulk Materials - Part Numbers	
RL116H/BK/1KG	HL116H/NC/1KG
RL116H/BK/5KG	HL116H/NC/5KG
RL116H/BK/15KG	HL116H/NC/25KG
RL116H/BK/25KG	

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 and Robnor Resins produce a range of these machines, details that can be provided on request.

Kits & Sets - Part Numbers	
EL116H/BK/5KGKIT	EL116H/BK/10KGSET

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/HL116H Health and Safety data or our Technical Service Department for individual/specific advice.

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Contact Details

Robnor Resins Limited
Hunts Rise
South Marston Park
Swindon SN3 4TE
United Kingdom

Tel: +44 (0) 1793 823741
Fax: +44 (0) 1793 827033

Email: support@robnor.co.uk
Web: www.robnor.co.uk
Buy Online: www.resins-online.com (UK only)