POLYMER GROUP LTD
SOLUTIONS FOR EXTREME ENVIRONMENTS

Product Data Sheet

ENDURAPACK ES 780

Polyurethane Electrical Encapsulation

Endurathane ES 780 is a two component, thermosetting, polyurethane electrical potting system with high heat resistance, suitable for encapsulating transformers and a wide range of electrical and electronic components. This product has been specifically formulated with a low viscosity to aid penetration of transformer windings. It is odourless and recommended where personnel cannot use epoxies due to sensitisation or to remove the possibility of sensitisation.

TYPICAL PROPERTIES:

Properties of Component	Resin	Hardener
Type of compound	Polyol resin	Modified aromatic isocyanate
Appearance	Black opaque liquid	Brown liquid
Density at 20ºC	1.08 g/ml	1.23 g/ml
Viscosity at 20ºC	400-700 mPas	200 - 250 mPas
Flash Point	> 200ºC	> 200ºC
Storage	12 months Store in closed containers at below 25ºC away from direct sunlight	12 months Store in closed containers at below 25ºC away from direct sunlight.

GENERAL MIXING INSTRUCTIONS: The resin and hardener should be mixed at room temperature (20ºC) using either a wide stirrer to avoid air entrapment or metering – mixing equipment

MIXING INSTRUCTIONS for pre-weighed kits

1. Put on disposable plastic gloves. Wear suitable protective clothing and eye protection.
2. Remove lid from **Resin Component** and stir well with a flat stirring spatula making sure any settled out material is stirred back into solution.
3. Pour entire contents of the **Hardener Component** into the pre-stirred resin and mix well for two to four minutes, scraping the sides and bottom of the container to ensure thorough mixing.
4. Pour the mixed system into item to be encapsulated.

MIX PROPERTIES:

Mix Ratio	100 Resin : 50 Hardener by volume Tolerance allowed on ratio is ± 5% (Resin : Hardener)
Pot Life @ 23ºC	20 – 30 minutes
Cure time @ 23ºC	3 – 4 hours to handle
Full Cure @ 23ºC	24 hours or 2-4 hours at room temperature plus a further 2-4 hours at 80ºC
Mixed SG @ 20ºC	1.13 - 1.14 g/mL
Viscosity @ 20ºC	400-600 cPs

CURED MATERIAL:

Shore Hardness @ 20 ºC	80 D
Glass Transition Temperature	100 ºC
Tensile Strength	50 MPa
Compressive Strength	80 MPa
Elongation	5%

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ELECTRICAL PROPERTIES:

Dielectric Constant	3.6 @ 50Hz, 23 ºC
Dielectric Strength	22 kV / mm
Volume Resistivity	8.6 x 10^{15} ohm-cm

PACKAGING
Resin: 2 x 20 Litres;
Hardener: 1 x 20 Litre.

STORAGE AND HANDLING PRECAUTIONS

ALL CHEMICALS MUST BE USED BY TRAINED PERSONNEL.

Kits have a nominal storage life of upto 12 months at a recommended temperature of 18-25°C.
Keep out of direct sunlight.

DISPOSAL: Replace the lids tightly and then dispose according to local and national regulations.

HEALTH AND SAFETY ADVICE

Refer to Polymer Group Safety Data Sheets for individual products. Also refer to the *Approved Code of Practice for the Safe Use of Isocyanates*.

This kit is classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001.

RESIN COMPONENT:
HSNO Classification: 6.5B,
HSNO Approval Number: HSR002670

Hazard and Precautionary Statements:

Hazard:
May cause an allergic skin reaction

Prevention:
Read safety data sheet before use
Avoid breathing dust, fume, gas, vapours, spray.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves.

HARDENER COMPONENT:
HSNO Classification: 6.1D, 6.3B, 6.4A, 6.5A, 6.9B
HSNO Approval Number: HSR002670

Hazard and Precautionary Statements:

Hazard:
Harmful if swallowed
Harmful in contact with skin
Harmful if inhaled
Causes skin irritation
Causes serious eye irritation
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause damage to organs (via inhalation)

Prevention:
Read Safety Data Sheet before use.
Keep out of reach of children
Wash hands and face thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/clothing
Wear eye/face protection
Avoid breathing dust, vapours, spray, fumes, gas
In case of inadequate ventilation wear respiratory protection
Use in a well-ventilated work area