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Technical Data Sheet

PRODUCT DESCRIPTION:	ER2188 Epoxy Resin	DATE:	08/98
PRODUCT CODE:	ER2188	PAGES:	2

PRODUCT DESCRIPTION

ER2188 is a general purpose, cold or hot cure encapsulation system which utilises a hardener free of DDM or other aromatic amines.

Diamino Diphenyl Methane (DDM) has been used extensively in the resin industry but under recent changes to the EEC guidelines now requires a TOXIC label with the risk phrase "May Cause Cancer". **ER2188** does NOT contain DDM but has achieved improved performance using new technology.

The cured product is flame retardant and is approved to UL94-VO. The hardener is not subject to moisture inhibition so the cured resin exhibits excellent surface appearance. **ER 2188** may also be used as a casting resin. The exotherm experienced during the curing process is very low, even when large volumes are cured at ambient temperatures. System **ER2188** has been designed to be a non toxic, direct replacement for **ER2002**.

A range of colours is available on request but the standard colour is black. The system can be supplied in kit, bulk or Resinpack form.

PRODUCT USE

If in Resinpack form, resin and hardener are mixed by removing the clip (grip each end of the pack and pull gently) and moving the contents around inside the pack until thoroughly mixed. Take special care to push unmixed material from the corners. Mixing normally takes from two to four minutes depending on the skill of the operator. Resin and hardener are evacuated prior to packing so the system is ready for use immediately after mixing. The corner may be cut from the pack so that it may be used as a simple dispenser.

If in bulk form the resin (Part A) should be mixed with the hardener (Part B) in the ratio:

10.97 : 1 by weight
5.54 : 1 by volume

Sedimentation of the resin has been minimised by careful attention to formulation. However, any sediment which may have formed over long time periods in bulk resin must be dispersed before removal of ANY material from the container. This dispersion can be carried out if necessary by stirring with a broad bladed spatula or gently rolling the can. Take care not to introduce excessive amounts of air during this operation, or it may be necessary to re-evacuate the resin. Sedimentation will be accelerated by storage at high temperatures so avoid this.

When mixing resin and hardener, once again avoid introducing excessive amounts of air. Automatic mixing equipment is available from **Electrolube Design Resins** which will accurately mix resin and hardener in the correct proportions without introducing air.

Bulk material or Resinpacks must be thoroughly mixed before use - incomplete mixing will result in erratic or even partially incomplete cure.

Cure the **ER2188** system for at least:

24 hours @ 25°C
or 90 minutes @ 60°C
or 20 minutes @ 100°C

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Do not hot cure large volumes immediately - allow these to gel at room temperature and post-cure at high temperature if desired. Small volumes may be hot cured immediately.

TYPICAL PROPERTIES OF SYSTEM @ 25°C

Usable Life (for 250g sample)	60 minutes
Gel Time (for 250g sample)	150 minutes
Viscosity of Resin	1500 poise
Viscosity of Hardener	2 poise
Viscosity of Mixed System	90 poise
Density of Resin	1.83 g/ml
Density of Hardener	0.92 g/ml
Density of Mixed System	1.69 g/ml

TYPICAL PROPERTIES OF CURED RESIN

Shore D Hardness	~85
Specific Gravity	1.80
Tensile Strength	60 MPa
Compressive Strength	80 MPa
Deflection Temperature	50°C
Coefficient of Expansion	40 ppm/°C
Thermal Conductivity	0.45 W/mK
Maximum Operating Temperature	115°C Continuous 125°C Short Term Peak
Minimum Operating Temperature	-40°C (Geometry and Application Dependent)
Electric Strength	10 kV/mm
Loss Tangent @ 50 Hz	0.04 @ 25°C
Permittivity @ 50 Hz	4.0 @ 25°C
Volume Resistivity	10 ¹⁴ ohm-cm
Comparative Tracking Index	>850 volts
Water Absorption:	
Weight Gain after 10 Days @ 20°C	0.5%
Weight Gain after 1 Hour @ 100°C	1.0%
Limiting Oxygen Index	35%

HEALTH & SAFETY NOTES

Machines, containers etc are more easily cleaned before the resin has been allowed to harden. Electrolube Design Resins **OP9004** is a relatively safe non-flammable Cleaner for this purpose. Cured resin may be slowly softened and removed by soaking in **OP9003 Resin Stripper**.

Resinpacks stored in a warm dry place 15 - 30°C will have a shelf life of at least 18 months. Bulk material stored in suitable closed containers will have a shelf life of at least two years. The hardener used in the **ER2188** system reacts with atmospheric carbon dioxide and water, so it is especially important to keep containers tightly closed. On storage under very cold conditions the hardener can crystallise - if this occurs simply warm the container gently until all crystals have remelted.

The **ER2188** hardener is corrosive, and both the resin and hardener if handled carelessly can cause dermatitis. Gloves, overalls and safety glasses or goggles must be worn. Wash any contamination from the skin or eyes immediately and thoroughly. Take care not to contaminate food stuffs.

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