



BS5750
Part 1 Approved
Certificate No. FM 860

725 997

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ROBNOR EPOXY ENCAPSULATION RESIN PX314ZG

This material is a general purpose cold cure flame retardant encapsulating resin. The system is similar to the very popular PX314R but uses a different hardener not subject to moisture inhibition. This means that a high level of cure can be achieved under cold damp conditions, even where small shot sizes are used.

PX314ZG is a relatively low viscosity flame retardant casting resin which has been specifically formulated for use in the electronics industry where components are required to meet BS415. The cured product is approved to UL94V-0. It has greater flexibility than many other resins in the PX314 series and a lower heat distortion temperature.

Although the resin contains inorganic fillers, sedimentation in cans or packs is minimal at normal ambient temperatures. The resin, as supplied, is evacuated ready for use.

Method of Use

Twinpacks

Twinpacks contain evacuated resin and are ready for use immediately after mixing.

Mixing Instructions for Twinpacks

1. Remove outer wrapper - cut with scissors being careful not to pierce the inner pack.
2. Remove Clip - Unfold sachet, grip each half firmly along top edge. Pull apart to release central plastic clip and remove separator completely. do not slide apart as this may puncture the sachet.
3. Mix - Mix the contents inside the pack by using fingers and thumbs of both hands, being sure to include material in corners and around edges. The pack should be mixed for 15 seconds to 3 minutes depending on viscosity of material and operator experience. Care should be taken not to put undue pressure on pack seals.
4. Cut off the cone shaped corner - this will provide a dispensing cone, the size of the cut determining the rate of flow.
5. Dispense - as required.

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Robnor **RESINS**

Registered in England No. 664718 Established 1960

Mixing Instructions for Twinpacks/ctd...

Care should be taken to ensure thorough mixing of both bulk material and twinpacks. Incomplete mixing will be characterised by erratic or even partially incomplete curing of material even after extended time periods.

Bulk Material

The resin has been formulated to minimise sedimentation. Any sediment which may have been produced over long time periods in bulk resin should be readily dispersed either by rolling the can or stirring whilst taking care to introduce as little air as possible. This operation should be carried out, if necessary, BEFORE removal of any material from the can. Long term sedimentation will be aggravated by storage at high temperatures and this should be avoided.

If in bulk form, the resin (PX314ZG) and hardener (HX314ZG) are mixed in the ratio :-

8.6 to 1 by weight
5.3 to 1 by volume

The resin is supplied evacuated and so care should be taken when mixing with hardener not to stir in large amounts of air. If this is unavoidable, the mixed resin and hardener should be re-evacuated before use.

Mixing and Dispensing machinery is available from Robnorganic Systems which will mix resin and hardener in the correct proportions without risk of introducing entrapped air.

Low ambient temperatures cause the resin to be viscous and difficult to mix. This can be overcome by heating the resin (or the twinpack) in an oven at 30°C to 50°C for a few minutes prior to mixing.

Moulds

PX314ZG/HX314ZG can be moulded in conventional steel moulds for long runs or silicone moulds for short runs. Robnor can supply an extremely effective release agent for use with steel moulds.

alternatively, plastic (Noryl, polyester, etc.) shells can be used - these become an integral part of the finished component.

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Characteristics of Resin and Hardener

	<u>Value</u>	<u>Standard</u>
Colour of Resin	: Black	
Colour of Hardener	: Natural	
Colour of Mixed System	: Black	
Density of Resin	: 1.85 g/ml	Robnor
Density of Hardener	: 1.15 g/ml	"
Density of Mixed System	: 1.73 g/ml	"
Density of Cured System	: 1.74 g/ml	"
Viscosity of Resin	: ca 500 Poise @ 21°C	Iso 2555
Viscosity of Hardener	: ca 40 Poise @ 21°C	"
Viscosity of Mixed System	: < 200 Poise @ 21°C	"
Pot life	: 90 mins @ 20°C	Robnor
	<u>OR</u> 60 mins @ 25°C	"

This figure may be shortened somewhat for mixes greater than 1,000 gm.

Cure Time : 24 Hours @ 20°C
OR 1½ Hours @ 60°C
OR 20 mins @ 100°C

Small castings may be hot cured immediately. When casting large individual volumes of material, it is advisable to allow material to gel at room temperature, before hot curing, as a precaution against excessive exotherm. Exothermic rise does tend, however, to be much less in this system than many other epoxies.

N.B. Wide fluctuations will occur in the pot life and curing time at ambient temperature as these depend not only on the actual prevailing temperature but also on the sample size. Increasing sample size will shorten pot life and cure time appreciably due to the exothermic nature of the curing reaction.

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OPERATING TEMPERATURE

-40°C - +115°C (Continuous)
 -40°C - +130°C (short term)

CHEMICAL CHARACTERISTICS

	<u>Value</u>	<u>Unit</u>	<u>Standard</u>
Water Absorption (60 x 10 x 4mm) (Total Immersion)	: 0.5%	(7 days @ 20°C)	ISO 62 : 1982
	: 1.1%	(1 hour @ 100°C)	
Oxygen Index	: 32	%	BS 2782 : 1978
Flame Retardancy	: UL 94 VO Approved		
	(For Black version of PX314ZG)		

PHYSICAL CHARACTERISTICS

Shore Hardness	: D/1:88 - D/15:85		ISO 868:1978
Coefficient of expansion	: 40 x 10 ⁻⁶ /°C		ASTM D696-44
Heat Deflection Temperature	: 50°C		ISO 75 : 1987
Thermal Conductivity	: 0.38W/m ² K		BS 874 : 1986
Tensile Strength	: 55-59 MN/M ²		BS 2782 : 1976
Volume Resistivity	: 10 ¹⁵ ohm cm		BS 6233 : 1982
Permittivity	: 4 (50Hz @ 23°C, 3.0mm)		BS 2782 : 1970
Loss Tangent	: ca 0.045 (50Hz @ 23°C, 3.0mm)		BS 2782 : 1970
Electric Strength	: ca 10.0KV/MM (@20°C, 3.0mm)		BS 2782 : 1970
Continuous Tracking Index	: >850 volts		BS 3781
Tracking Time/Voltage	: 200min/3.25 KV		ASTM D2303

N.B. These results do not constitute a specification and are quoted for guidance use only.

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NOTES

Cleaning equipment

All equipment must be cleaned before the compound has hardened. Acetone or cellulose thinners are suitable cleaning agents.

If it does become necessary to remove cured resin from equipment, the ROBNORGANIC SYSTEMS' TS 130 may be used for this purpose.

Storage

The parts A and B, stored separately in a cool, dry place, and in tightly closed containers, have a shelf life of at least twelve months.

CAUTION

Epoxy systems are generally quite harmless to handle, provided that certain precautions normally taken when handling chemicals are observed. The uncured materials must not, for instance, be allowed to come into contact with foodstuffs or food utensils, and measures should also be taken to prevent the uncured materials from coming into contact with the skin.

The use of barrier creams or impervious gloves is advised. The skin should be thoroughly cleansed at the end of each working period either by washing with soap and warm water or by using a resin removing cream - use of solvents is to be avoided. Disposable paper towels - not cloth towels - should be used to dry the skin. Adequate ventilation of the working area is recommended.

The information given is derived from tests and/or extrapolations believed to be reliable. However, the product is offered for evaluation on the understanding that the customer will satisfy himself that the product is suitable for his intended use.

Advice on specific applications will be given on request.

None of the data and/or recommendations contained herein are to be assumed as an inducement to infringe any patent.

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In order that potential users may satisfy themselves by experiment that the material meets their requirements, free of charge samples are readily available.

The Company's liability is limited to the replacement of materials shown to be defective as delivered, or to a cash refund. We accept no liability for loss or damage brought about by the use of unsuitable or defective material, or by subjecting viable material to inappropriate conditions.

This information may be modified in the light of further test results and experience.

Please consult our Safety Booklet S.16 in respect of the use of this material under the Health & Safety at Work (etc) Act 1974.

NOTE :-

Before handling any material supplied by robnor, users should familiarize themselves with the Health & Safety Information provided by the company both in written correspondence and in the information sources listed hereunder.

- i) The Product Applications/Performance Data Sheets.
- ii) The labels on the product packages and containers.
- iii) The Product Health & Safety Data Sheets.
- iv) Safety Data Booklet S.16.

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