Technical Datasheet

ER1
Epoxy Rapid Repair Resin

Description

Our ER1 Epoxy Rapid Repair Resin is a fast curing, high performance epoxy laminating ideal for repairs to carbon or glass fibre boats, vehicle panels and more. The resin was developed for maximum bond strength and flexural strength, combined with a fast cure making it suitable for both emergency trackside/waterside repairs and for non emergency workshop repairs.

Key Features

- Rapid Curing
- Excellent Mechanical Properties
- Excellent Wetting Abilities
- Medium Viscosity Resin

Typical Uses

This ER1 Epoxy Rapid Repair Resin was developed in conjunction with a major Formula 1 team in order to meet their demand for an epoxy repair resin that could be used 'track-side' on testing days. The requirement was for a resin that cures relatively quickly and results in a composite with high flexural strength.

Use this rapid repair epoxy to patch up damage vehicle body panels, repair damage to large and small boat hulls, reinforce fractured or cracked carbon fibre or fibreglass poles or just about any other composite part.

Starter Kit Compatibility

This is the resin that is used in our Carbon Fibre Rapid Repair kit. If you're wanting to make your own larger version of one of our kits then this is the resin you need.

Specification

The table below shows the typical uncured properties:

Property	Unit	Resin	Hardener	Combined
Material	-	Epoxy Resin	Formulated Amine	Epoxy
Colour	-	Straw	Straw	Clear
Viscosity	mPas	900 - 1300	100 - 140	800 - 1200
Density	g/cm³	1.16 - 1.21	0.98 - 1.03	1.09 - 1.14

How to Use

Our Epoxy Rapid Repair Resin is a chemical product for professional use. It is essential to read and understand the safety and technical information before use.

Follow the guidelines for safe use outlined in the SDS which include the use ofappropriate hand and eye protection during mixing and use.

Mix Ratio

Mix Ratio 100:33 by Weight

Epoxy Rapid Repair Resin should be mixed with its Hardener at a ratio of 100 parts of resin to 33 parts of hardener, by weight.

You must maintain the correct overall ratio of resin to hardener to ensure a proper cure. Failure to do so will result in a poor or only partial cure of the resin, greatly reduced mechanical properties and possibly other adverse effects. Under no circumstances add 'extra hardener' in an attempt to speed up the cure time; epoxies do not work in this way.

Mixing Instructions

Only weigh out and mix as much resin as you can use within the pot life.

Weigh or measure the exact correct ratio of resin and hardener into a straight sided container. Using a suitable mixing stick begin to mix the resin and hardener together to combine them completely.

Spend at least one minute mixing the resin and hardener together, paying particular attention to the sides and base of the container. Remember: Any resin that has not been thoroughly combined with hardener will not cure.

Once you have finished mixing in one container, it is good practice to transfer the mixed resin into a second container and undertake further mixing of the resin using a new mixing stick. Doing so will eliminate the risk of accidentally using unmixed resin from the bottom or sides of the container.

Pot-Life / Working Time / Cure Time

Transfer the resin from the mixing pot onto the part as soon as possible to extend the working time and avoid the risk of uncontrollable rapid cure in the mixing pot.

As with all epoxies, the pot-life/working time will vary significantly depending on the ambient temperature, the starting temperature of the resin and hardener and the amount of resin mixed.

Our Epoxy Rapid Repair Resin can be used in ambient temperatures between 15°C (59°F) and 30°C (86°F). For best results, an ambient temperature of at least 20°C (68°F) is recommended. Ensure that both resin and hardener containers are within this temperature range before use.

The table below gives an indication of pot-life and cure times:

Pot Life @ 25°C	Demould @ 25°C	Demould @ 50°C	Demould @ 65°C
7 - 9 minutes	6 Hours	2 Hours	1 Hour

Full Cure / Post-Cure

As with most epoxy systems, where parts cure in normal ambient temperatures, full cure is not reached for several days. Although parts will be handleable after the listed demould time (at 25°C), full mechanical properties will take at least 14 days to develop in (at 25°C). Where possible, avoid exposing the cured resin to full service rigours for at least this time. To achieve improved Heat Distortion Temperatures up to 84°C, you will need to conduct a post-cure of the finished part.

Where possible, parts should be post-cured still inside the mould to reduce distortion and improve surface finish (i.e. reduce 'print-through'). When post-curing parts in the mould, it is important to post-cure them without demoulding at all (i.e. don't demould and then put them back into the mould) otherwise you can get some strange patterns on the surface where some areas are post cured in direct contact with the mould surface and others are not.

To achieve full high temperature properties, post cure treatment is recommended. After curing / demoulding the part should be heated to 80°C for 3 hours and then allowed to slowly return to room temperature. The product can be used without post cure or with partial post cure, but will not achieve full physical properties.

Mechanical Properties

Cured Resin Properties

These properties describe the resin only. The mechanical properties of a reinforced composite would be considerably different.

Property	Unit	Value
Hardness @ 25 °C	Shore D	85 - 90
Linear Shrinkage	%	< 0.2
Tensile Strength	MPa	40 - 46
Tensile Modulus	GPa	1.6 - 2.0
Elongation At Break	%	2 - 4
Flexural Strength	MPa	95 - 105
Flexural Modulus	GPA	2.3 - 2.7
Heat Distortion Temperature	°C	80 - 84

Transport and Storage

Resin and hardener should be kept in tightly seal containers during transport and storage. Both the resin and hardener should be stored in ambient conditions of between 10°C (50°F) and 25°C (77°F).

When stored correctly, the resin and hardener will have a shelf-life of 12 months. Although it may be possible to use the resin after a longer period, a deterioration in the performance of the resin will occur, especially in relation to clarity and cure profile.

Pay particular attention to ensuring that containers are kept tightly sealed. Epoxy hardeners especially will deteriorate quickly when exposed to air.

RoHS Compliance Statement

Easy Composites Ltd is committed to minimising the environmental impact of our operations and to complying with all applicable environmental regulations and standards.

We hereby confirm that ER1 complies with the requirements of:

Directive 2011/65/EU of the European Parliament and of the Council (RoHS 2),

Directive (EU) 2015/863, amending Annex II to Directive 2011/65/EU (RoHS 3).

These directives restrict the use of certain hazardous substances in electrical and electronic equipment.

Disclaimer

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