Technical Datasheet

EF80

Flexible Epoxy Resin

Description

EF80 is a high performance, fully flexible epoxy resin system for use in frequent impact applications (mudguards, hand guards, rub strips, bumpers etc.) and flexible or articulated parts. Suitable for coating, laminating and potting.

The system is suitable for a range of applications where surfaces require a flexible coating or where fibre reinforced composite parts are required which always remain flexible such as frequent impact areas on rally cars, connecting tubes for ducting or articulated components.

Key Features

- Low Viscosity
- Easy to Apply
- Excellent Tensile and Flexural Properties
- Very Flexible
- Tough

Typical Uses

This is a high performance epoxy resin formulated specifically for use where a flexible resin is needed. The resin cures to a very light amber but translucent finish.

Uses for this resin can include, custom mudflaps, flexible underbody guards, flexible bumpers/impact panels, ducting and sheeting.

Specification

The table below shows the typical uncured properties:

Property	Units	Resin	Hardener	Combined
Material	-	Epoxy Resin	Formulated Amine	Epoxy
Appearance	-	Clear Liquid	Straw Liquid	Straw Liquid
Viscosity @25 °C	mPa.s.	300 - 500	500 - 2000	500 - 1200
Density @25 °C	g/cm³	1.10 - 1.15	0.98 - 1.02	1.02 - 1.08

How to Use

Our EF80 Flexible Epoxy 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 100:145 by Weight

EF80 Epoxy Resin should be mixed with its Hardener at a ratio of 100 parts of resin to 145 parts of hardener, by weight.

In this case, unusually for epoxies, the hardener is the bigger component in the mixing ratio. Be careful not to use the wrong component when measuring out.

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 EF80 Flexible Epoxy 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 (200g) @25 °C	Demould @25 °C	Full Cure @25 °C
Time	45 - 60 mins	48 hrs	14 days

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 80°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. The product can be used without post cure or with partial post cure, but will not achieve full physical properties. The Suggested post cure is as follows:

- 48 hours at 20°C
- 40°C for 1 hour
- 60°C for 1 hour
- 80°C for 3 hours

Mechanical Properties

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

Property	Unit	Test Method	Value
Hardness	Shore A	ISO 868	80 - 90
Tensile Strength	MPa	ISO 37	3.1 - 3.7
Elongation at Break	%	ISO 37	75 - 95
Tear Strength	kN/m	ISO 34	21 - 27
C.T.E.	K^{-1}	TMA	18 - 22 x 10^{-5}

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 EF80 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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