EMP60
Epoxy Moulding Paste

Key Features

- Easy to mix and apply
- Wetter than standard pastes
- Works on vertical surfaces
- Smooth Consistency
- Good mechanical performance

Description

Also known as Laminating Paste this easy to use epoxy based mould making putty is designed to be used in combination with our Epoxy Tooling Gelcoat to provide a very quick, clean method of making problem free moulds for carbon fibre and fibreglass lamination.

After mixing both components together a smooth consistency is achieved which is easy to spread, particularly into tight corners or intricate shapes.

Epoxy mould making putty as used in our Mould Making Starter Kit, available to buy in 5kg or 21.6kg bulk packs.

Typical Uses

Being an epoxy based mould making system, the putty is ideally suited for use when making epoxy based end products (like carbon fibre parts or epoxy matrix GRP/FRP). The putty itself already includes both the resin matrix (epoxy) and the reinforcement (finely chopped glass strands) so no additional reinforcement or resin are required.

Epoxy Mould Making Putty can also be used as a reinforcement for flexible silicone casting moulds.

Specification

The table below shows the typical uncured properties:

Property	Units	Resin	Hardener	Combined
Material	-	Glass Filled Epoxy Paste	Formulated Amine	Glass Filled Epoxy Paste
Appearance	-	Grey Paste	Blue Liquid	Grey Paste
Viscosity @ 25 °C	mPa.s.	Paste	150 - 250	Paste
Density @ 25 °C	g/cm³	0.80 - 0.84	0.98 - 1.02	0.81 - 0.85

How to Use

The putty 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 of appropriate hand and eye protection during mixing and use.

Mix Ratio

Mix Ratio 100:8 by Weight

Epoxy Mould Making Putty should be mixed with its Hardener at a ratio of 100 parts of Paste to 8 parts of hardener, by weight. You must still maintain the correct overall ratio of putty to hardener to ensure a proper cure.

When working with any epoxy based putty, it is essential to mix the resin and hardener exactly at the correct mix ratio. 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

Protect your hands with Nitrile (vinyl) gloves. Weigh or measure the exact correct ratio of Putty and hardener into a flat sheet or container. Mix thoroughly until the blue dye of the hardener is dispersed completely and evenly through the mixed putty and a smooth consistency is achieved.

Mixing can be done by hand or by mechanical process (dough mixer). Mixing by hand is a similar process to folding and kneading a dough type mixture.

Application Instructions

When Using as a Reinforcement for an Epoxy Tooling Gel Coat (The most common application for the putty); It is absolutely essential that the putty is applied to the epoxy tooling gel whilst the gel coat is at its 'B stage' of cure which is to say that it is still very tacky and a fingernail can be depressed into it, but not so uncured that it will be disturbed by the application of the putty.

If the tooling gel coat has been allowed to cure too far and is now effectively fully cured or does not posses any tack then either another thin application of tooling gel coat (mixed with its appropriate hardener) or a 'coupling coat' of epoxy laminating resin (again mixed with its appropriate hardener) should be applied to the hardened gel coat surface before proceeding immediately with the putty onto the wet get coat or coupling coat.

Press the putty down firmly onto the partially cured gel coat to create an even layer of reinforcement of between 12 and 25mm thick. Care should be taken to avoid forming any air gaps. Using a roller will ensure an even layer thickness of 12 – 25 mm, avoiding unnecessary exotherm and resulting in a stable structure.

If stiffening batons or additional reinforcement are required, these should be laminated onto the back of the putty using epoxy resin once the putty has fully cured.

Pot-Life / Working Time / Cure Time

Once the putty has been mixed with the hardener, the reaction will start to progress and begin to give off heat (exotherm) which will further accelerate the cure of the putty, especially when the putty is in a large volume or in a tub.

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

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

Epoxy Mould Making Putty 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 putty and hardener containers are within this temperature range before use.

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

Pot-life @ 25 °C	Gelation @ 25°C	Demould @ 25°C
60 - 120 mins	8 hours	24 hours

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).

As with many post-cure cycles, the post-cure cycle for our Epoxy Mould Making Putty is not too sensitive and a range of different post-cure cycles will produce good results, specifically improved mechanical performance and elevated HDT/operating temperature.

Post-curing moulds that will be used at or exposed to elevated operating temperatures is strongly recommended to prevent distortion of the mould when they are put into service and experience these higher temperatures. Failure to properly post cure a mould can lead to mould distortion and blistering causing the part to be deformed. A good all round post cure cycle for the Epoxy Mould Making Putty is as follows:

- 24 hours at 25°C
- 2 hours at 40°C
- 2 hours at 50°C
- 2 hours at 60°C

Always allow the mould to fully cool to room temperature following a post-cure cycle. Once the post-cure is complete, the mould is ready for any final preparation before its first use.

Mechanical Properties

Cured Putty Properties:

Property	Unit	Test Method	Value
Hardness	Shore D	BS EN ISO 868	75 - 80
Linear Shrinkage	%	500 x 50 x 10mm	< 0.05
Tensile Strength	mPa	BS EN ISO 527	8 - 12
Elongation at Break	%	BS EN ISO 527	< 2.0
Flexural Strength	mPa	BS EN ISO 178	20 - 30
Flexural Modulus	mPa	BS EN ISO 178	3200 - 3500
H.D.T.	°C	STM	80

Transport and Storage

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

Our Epoxy Mould Making Putty is sensitive to the cold and will crystallise at around 6'C. To those unfamiliar with this process it is quite strange and it can certainly seem like the material is defective because once crystallised, the material needs to be warmed to a considerably higher temperature than 6'C (more like 25'C+) in order to un-crystallise back into its correct state. However, once re-warmed and the putty has un-crystallised, then the putty will be fine to use as normal.

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

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 EMP60 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

This data is not to be used for specifications. Values listed are for typical properties and should not be considered minimum or maximum. Our technical advice, whether verbal or in writing, is given in good faith but Easy Composites Ltd gives no warranty; express or implied, and all products are sold upon condition that purchasers will make their own tests to determine the quality and suitability of the product for their particular application and circumstances.

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Easy Composites Ltd
Unit 39, Park Hall Business Village
Stoke-on-Trent, ST3 5XA
United Kingdom

Easy Composites Ltd
Beneluxbaan 16
Rijen, 5121 DC
Netherlands

W: **www.easycomposites.com**
E: **sales@easycomposites.com**
T: **+44 (0) 1782 454499**