

GlassCast® 50



Product Description

GlassCast® 50 is a two-part water-clear epoxy casting resin developed to offer unrivalled clarity, air release and UV resistance.

GlassCast® 50 has been formulated for maximum compatibility with a wide range of substrates and mould materials and is particularly suited for casting into wood where it can be used to create stunning thick, clear resin infills in furniture - such as river tables.

GlassCast® 50 can be cast directly into wood at thicknesses of up to 25mm in a single pour.

When casting into other materials (such as silicone or plastic moulds) it is possible to cast up to 50mm in a single pour - however care should be taken to avoid the risk of exotherm.

Coating Resin Vs Casting Resin

GlassCast®50 is a casting resin, not a coating resin. As such flattening and polishing of the cured open surface would usually be required in order to achieve a perfectly smooth gloss finish.

For perfectly flat, glossy coatings our GlassCast®3 Surface Coating Resin should be used instead. A flat glossy finish can also be achieved on thicker castings by pouring a thin layer of GlassCast®3 over cured GlassCast®50.

Recommended Uses

GlassCast®50 can be used for just about any application that requires a water-clear, bubble-free and highly tough resin casting. It is particularly suitable as a clear casting resin into wood.

GlassCast®50 can be used as a thick coating over existing surfaces but would or into moulds made from silicone rubber and of course it can be poured into knot-holes, cavities and gaps between wood for furniture pieces like epoxy river tables.

Typical uses include:

- River tables / knot holes
- Wood and resin combination furniture
- Clear castings / sculptures / figurines
- Encapsulations
- Paperweights

Key Features

- Up to 25mm (per layer) into wood
- Exceptional clarity
- Highly UV resistant
- Self-air releasing
- Hard wearing and highly polishable

Essential Information

Before use, it is important for users to read the following information and ensure that instructions are followed correctly, particularly those points relating to working temperatures, weighing and mixing.

Unsatisfactory results are almost always caused by unsuitable ambient temperatures, casting thicknesses or improper weighing or mixing.

Ambient Temperature

Like most epoxy resins, the way that GlassCast®50 will cure is very dependent upon the ambient temperature. GlassCast®50 should always be mixed, poured and cured at a constant room temperature of around 20°C.

Ambient temperatures much above 20°C

The resin will mix, pour and cure very well in ambient temperatures higher than 20°C however working in higher ambient temperatures will cause the resin to cure faster which offers an increased risk of exotherm (over-heating during cure) particularly when casting into insulating materials, such as wood.

Ambient temperatures much below 20°C

At lower temperatures the resin will be thicker making it harder to mix and less able to release air bubbles during the cure. The resin will also take longer to cure.

In temperatures 15-20°C a heat-gun will be necessary to remove air bubbles. Use below 15°C is not recommended.

Casting Thickness

When casting into wood the insulating effect of the wood (particularly if you also have a wooden base/board) can make it very difficult for the resin to lose heat as it cures. This limits the maximum recommended castable thickness when casting into wood at 25mm. This is particularly important when working in higher ambient temperatures (anything above 20°C).

For a typical 'river table' fill (example 40mm) we would suggest splitting the main pour into 2 layers of 20mm each, this will avoid the possible risk of exotherm during cure and achieve the best possible results.

For information on how to build-up castings thicker than 25mm, see the later section titled 'Multiple Pours'.

When casting GlassCast®50 into less insulating materials such as plastic or silicone moulds it is often possible to cast up to 50mm in thickness in a single pour however you should always be aware of the potential for exotherm, especially when working in warmer ambient temperatures.

Mix Ratio

GlassCast®50 is a two-part epoxy resin system. As soon as the two parts are mixed together they will begin to cure.

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. Under no circumstances add 'extra hardener' in an attempt to speed up the cure time; epoxies do not work in this way.

Mixing by Volume

100:50 (2:1)

The easiest way to measure the correct ratio of resin to hardener is to use 2 parts resin to one part hardener by volume. Put simply, this means exactly 2 cups of resin to 1 cup of hardener.

Calibrated mixing cups can be used to accurately measure the correct amount of resin and hardener.

Mixing by Weight

100:45

If you prefer to measure out the resin by weight (instead of volume) then the mix ratio that must be used is 100 parts resin to 45 parts hardener. The tables below can be used to lookup some common mix sizes:

Total Mix	Resin	Hardener	Total Mix	Resin	Hardener
50g	34g	16g			
100g	69g	31g	1kg	0.69kg	0.31kg
200g	138g	62g	2kg	1.38kg	0.62kg
300g	207g	93g	3kg	2.07kg	0.93kg
400g	276g	124g	4kg	2.76kg	1.24kg
500g	345g	155g	5kg	3.45kg	1.55kg
600g	414g	186g	6kg	4.14kg	1.86kg
700g	483g	217g	7kg	4.83kg	2.17kg
800g	552g	248g	8kg	5.52kg	2.48kg
900g	621g	279g	9kg	6.21kg	2.79kg
1000g	690g	310g	10kg	6.90kg	3.10kg

Correct Mixing Procedure

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 several minutes 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, clean mixing 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 original container.

Getting the Best Results

There are so many ways that GlassCast®50 can be used, getting the most from this resin means understanding the way the resin will respond to various conditions, as well as learning the best techniques for specific applications.

Resin River Table Guide



If you are using GlassCast®50 as the resin infill on a river table then it is highly recommended to read our:

GlassCast Complete Guide to Making Your Own Resin River Table

This complete guide includes step-by-step information on how to make your own table or other furniture piece using GlassCast®50 and live-edge wood including essential advice on how to:

- Calculate the amount of resin needed
- Tint/colour the resin
- Set up barriers to contain the resin
- Prepare and seal the wood to prevent air bubbles
- Mix and pour the resin in stages to prevent exotherm or air bubbles

This extensive guide can be downloaded, free of charge, from the GlassCast®50 product page on the Easy Composites website.

Multiple Pours

The maximum castable thickness for GlassCast®50 is 25mm. It's absolutely fine to use GlassCast®50 to create castings thicker than 25mm but to do this they should be made up in multiple layers with the resin allowed to at least partially cure between each layer.

Pouring onto Partially Cured (B-stage) Resin

The easiest way to build up the resin in multiple-pours is to allow the preceding layer to cure to what is known as the 'B-stage'. The B-stage is the point at which the resin has firmed up, so that it is no longer a liquid, but it has not fully cured.

When the resin is correctly at the B-stage, using a gloved finger you should be able to press a fingernail into it but no resin should come off on your glove. The advantage to pouring new resin onto partially cured (B-stage) resin is that no surface preparation is required and the new resin will bond chemically with the previous layer (known as crosslinking).

Pouring onto Fully Cured Resin

If the first layer cures past the 'B-stage' (see above) then you can still pour a new layer on top of it however it then becomes essential to allow the previous layer to cure fully and then key the surface using an abrasive paper in order to allow the new resin to mechanically bond to the previous layer.

To pour a new layer onto fully cured resin use a coarse abrasive paper (80 to 120 grit) to fully abrade the whole surface of the cured resin. Don't worry about the scratched appearance; as soon as the new liquid resin is added it will blend transparently with the layer underneath.

Moisture in Wood

GlassCast®50 has excellent tolerance to modest levels of moisture but can still be adversely affected by higher moisture content in wood and other substrates.

Wood with a high moisture content is also liable to move (shrink) as it dries out which can cause 'bowing' or distortion of the piece if the wood starts to dry after the resin layer has been cast.

Ensure wood is properly seasoned and dried before use.

Sealing Porous Surfaces

When working with porous substrates such as wood, chipboard, concrete or ceramics it is highly recommended to first seal the substrate with a thin application of GlassCast®50. Doing so will seal and stabilise the surface, greatly improving the flatness of the final pour and reducing the chances of air bubbles being emitted from the material into the resin during the cure.

The sealing coat should be allowed to cure to the B-stage and can then be poured over without any surface preparation. If the sealing coat is allowed to fully cure then it must be keyed with an abrasive paper. See section titled 'Multiple Pours' for further information.

Embedments

Just as with the surface preparation, it is important to ensure that any materials that are going to be embedded within the resin, such as pennies, crushed glass, bottle tops, corks, leaves etc. are thoroughly dry. If the items or materials to be embedded are porous (i.e. they will absorb resin) then they should be sealed first with a thin application of GlassCast®50, allowed to cure fully before proceeding.

Pigments

To achieve a range of creative effects GlassCast®50 can be tinted or coloured using a variety of tints, pigments and powders.

It is essential to use pigments that are designed for or compatible with epoxy resin. Easy Composites sell a range of solid colour pigments for epoxy, as well as sets of translucent tinting pigments which can be used with epoxy (as well as other resin systems).

To achieve a subtle 'tint' remember that you will need proportionally more tinting pigment for thin sections that you will for thicker sections.

A transition from one colour to another can be achieved using two pours of differently tinted resin, sloping the surface slightly for the first pour to create a thickness gradient for each pour.

Always conduct a small test first to ensure compatibility with your chosen tint, pigment or powder.

Barriers to Contain the Resin

If you need to use barriers to contain the resin whilst it cures it is suggested to use sheets of polypropylene plastic which can be hot-melt glued into position. GlassCast®50 will not stick to polypropylene and so the barriers can be removed easily once cured. Other materials may also be suitable subject to undertaking your own tests.

Using a Heat-Gun

GlassCast®50 includes advanced technology to help it to expel air that has been entrapped by the mixing and pouring process. However, it is generally helpful to use some light attention with a heat-gun to start the process and also help with any stubborn air-entrapment, particularly in cooler ambient temperatures.

After pouring wait several minutes before using a heat-gun. Heat-guns should be set to a modest temperature. Keep moving over the surface and make sure to not over-heat the resin. Wait 10 minutes before checking again.

Curing Time

Depending on the ambient temperature, GlassCast®50 will take around 48hrs to become touch-dry. During this initial 48hrs it is essential to keep all dust and dirt away from the uncured pour.

Once the surface is 'touch-dry' it is much less susceptible to contamination from dust but it will still be quite soft and easy to mark and so you should avoid touching or using the surface for as long as possible.

The time it takes for the resin to cure fully will depend very much on the ambient temperature; at 20°C you should allow at least 72hrs before demoulding (if casting into a mould) or attempting to do any work on the resin (such as sanding or polishing).

GlassCast®50 will take around 7 days to reach full hardness.

Shaping and Polishing

Once fully cured, GlassCast®50 can be shaped, flattened and polished back up to a full gloss finish. This can be particularly effective in creating soft, radiused edges on cast surfaces or when flattening the cast surface to be perfectly flush with surrounding material, such as a flat table surface when filling surfaces of reclaimed wood.

To flat and finish GlassCast®50, follow standard flattening and polishing techniques of working up through the grits of abrasive paper until you reach around P1000 grit before changing to a polishing compound and power polisher for the final gloss finish.

Pai Cristal NW1 Super Cutting Compound, available from Easy Composites, is ideal for polishing cured GlassCast resin.

Safety Precautions

Before using the product you should download the safety datasheet from the GlassCast®50 product page on www.easycomposites.co.uk and ensure that you understand and follow the detailed safety information it contains.

- Work in a well ventilated area.
- Whenever weighing, mixing, pouring or checking the state of cure of the resin, you should be wearing suitable protective gloves and eye protection as a minimum precaution.
- Always wear gloves when you are 'testing' to see if the surface has cured. Do not touch or handle the surface without gloves until you are sure that it is fully cured.

Technical Specification

Uncured System Properties

	Units	Resin	Hardener	Combined
Material	-	Epoxy Resin	Formulated Amine	Epoxy
Appearance	-	Clear Liquid	Clear Liquid	Clear Liquid
Viscosity @25 °C	mPa.s.	650-900	180 - 280	250 – 300
Density @25 °C	g/cm ³	1.10 – 1.14	0.99 – 1.01	1.07 – 1.10

Mix Ratio

By Weight	By Volume
100:45	2:1

Pot Life and Cure Time

	Sample Specification	Units	Value
Pot-life (@25°C)	50mm; 200ml	mins	75 - 95
Gelation time (@25°C)	100ml	mins	140 - 180
Demould time (@25°C)	6mm; 15ml	hours	48

Cured Mechanical Properties

	Units	Value
Hardness 25°C	Shore D/15	80 - 85
Maximum Tg	°C	61 - 67
Maximum Use Temperature	°C	55
Flexural strength	MN/m ²	90 - 102
Maximum strain	%	4.0 - 5.5
Strain at break	%	> 15
Flexural modulus	MN/m ²	2.90 - 3.20
Tensile strength	MN/m ²	51 - 58
Elongation at break	%	6 - 9

Disclaimer

This data is not to be used for specifications. Values listed are for typical properties and should not be considered minimum or maximum.

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Before using any of our products, users should familiarise themselves with the relevant technical and safety datasheets provided by Easy Composites Ltd.

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