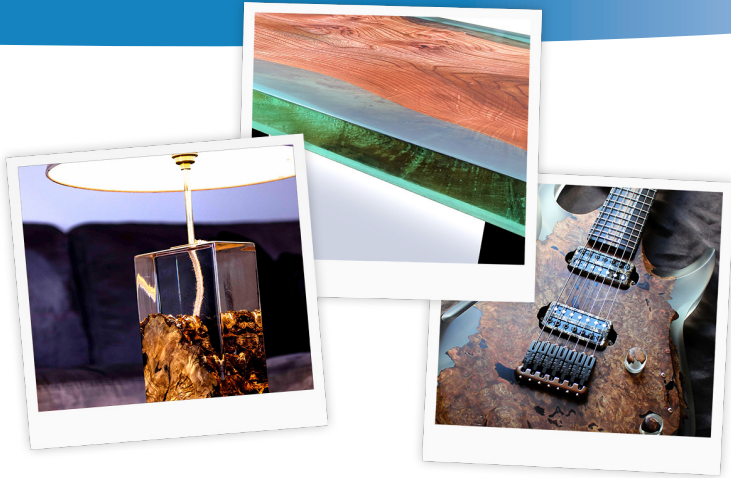


GlassCast[®] 50

Clear Epoxy Casting Resin

GlassCast[®]
THE CLEAR CHOICE IN RESIN



Key Features

- Up to 25mm (per layer) into wood
- Exceptional clarity
- Highly UV Resistant
- Self Degassing
- Hard wearing and highly polishable!

Product Description

GlassCast[®] 50 is a 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 - making it the ultimate 'river table' epoxy.

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.

GlassCast 50 can be used for just about any application that requires a water-clear bubble-free and tough resin casting. The GlassCast range is easy to use, low odour, self-degassing and doesn't require any specialist equipment.

It can be poured as a thick coating over existing surfaces 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.

Casting Vs Coating

GlassCast 50 is a casting resin, not a coating resin. As such flattening and polishing of the cured open surface will 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

■ Furniture

River Tables, Knot Holes, Crack Filling

■ Wood and Resin Projects

Lamps, .

■ Clear Castings

Such as Sculptures, Figurines, Paperweights

■ Encapsulations

Dry Flowers, Stones

■ Wood Turning

Bowls, Spheres & Vases.

How to Use

GlassCast 50 has been designed to be as easy-to-use and reliable as possible. It does not require degassing or any other special equipment and in fact will thoroughly degas itself during cure, resulting in a perfectly clear, bubble-free casting

Before You Begin...

It is important for users to familiarise themselves with 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 or improper weighing or mixing. It is very important to read the Safety and Technical Datasheets before starting a project with GlassCast.

Ambient Temperature

Like most epoxy resins, the way that GlassCast 50 will cure is very dependent upon the ambient temperature. The system has been designed to work in ambient temperatures between 15°C and 30°C. For best results, an ambient temperature of between 20°C and 25°C is recommended.

The GlassCast 50 resin and hardener also needs to be used and cured at an ambient temperature between 20°C and 25°C to achieve optimum results. If the GlassCast is over 25°C or falls below 20°C it can affect the performance of the resin.

Humidity

Whilst GlassCast 50 is curing it can absorb moisture from the air. In higher humidity environments this moisture absorption can affect the surface finish and therefore, for best results, avoid pouring GlassCast 50 in humid environments (relative humidity of 70% or more). This becomes particularly important in lower ambient temperatures where a slower cure leaves the uncured resin exposed to humid area for longer.

Surface Preparation

In much the same way that GlassCast 50 can be adversely affected whilst curing by moisture in the air, it will also be affected by any moisture in the surface onto which it is poured. Whatever surface you are pouring onto, it is important to ensure that the surface is as dry and stable as possible. This is particularly relevant when working with natural materials like wood and cork or concrete where moisture levels within the substrate can be high.

When working with wood that is either freshly sawn or reclaimed/salvaged from a damp environment it will be necessary to dry the wood thoroughly - which could take days or weeks indoors - before use. Failure to ensure that wood is properly dried and stabilised can result in a surface reaction with the resin as well as 'bowing' or distortion if the wood starts to dry after the resin layer has been cast.

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 Coat - Required for All 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. The sealing coat must be allowed to fully cure and then 'keyed' before proceeding. The sealing coat can be applied with a disposable brush.

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. Any embedments may also require being glued/fastened down to stop them floating in the resin once it is poured.

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.

Trapped Air - Heat Gun or Blow Torch Required?

GlassCast 50 includes advanced technology to help it to expel air that has been entrapped by the mixing and pouring process and so in many cases the resin will fully release any trapped air to leave a beautiful bubble-free finish. After pouring, it usually takes the resin around 5-10 minutes to expel trapped air.

Factors such as ambient temperature, mixing action, pouring thickness and the substrate you're pouring onto can all influence the appearance of trapped air (bubbles) within the resin. After around 10 mins, if you find that you can still see trapped air bubbles with this resin then lightly passing over the surface of the resin with a heat gun or blow torch on a low setting will help to dispel any bubbles. In both cases only ever use a light pass and wait for any heat in the surface to dissipate before repeating.

Safety Precautions

Work in a well ventilated area.

Whenever weighing, mixing, pouring or checking the state of the 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.

Please download the safety datasheet from the GlassCast 50 product page on www.glasscastresin.com and ensure you understand and follow the detailed safety information it contains.

How Much Resin?

The very nature of a "live-edge" on a piece of wood makes it difficult to calculate exactly how much resin you will need for the project.

There are some practical methods that can be used to actually measure the exact volume an irregular shaped cavity - such as pouring rice or sand into the gap and then measuring the volume - but in most cases it is probably more a case of estimating the volume of the gap and then allowing a little extra.

Areas that are to be filled with resin (for example the gap between the two live-edge planks on a river table) should be measured approximately in length, width and depth to find the cuboid volume, as follows:

Length (in m) x Width (in m) x Depth (in mm)

The resulting number will be the volume of this shape in litres.

For example:

$$1.5m \text{ (Length)} \times 0.15m \text{ (width)} \times 30mm \text{ (depth)} = 6.75l$$

In simple terms, 6.75 litres of resin can be approximated as 6.75 kilograms of resin.

We would always suggest slightly overestimating the amount of resin you think you will need as it is

likely that the wood will absorb some of the resin and it's always better to have mixed too much rather than too little - especially when colouring the resin, to ensure a consistent colour.

How to Measure and Mix

What You'll Need

- Set of digital scales OR calibrated mixing cups
- Two clean mixing cups
- Two clean mixing sticks
- Nitrile gloves/safety glasses
- Material or tape to create barriers like Resin Release Tape / Polypropylene
- Optional: Heat gun or blow torch

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.

Use calibrated mixing cups to accurately measure the correct amount of resin into one cup and correct amount of hardener into another. Once measured, the two cups can be poured into a larger container to be mixed.

Mix Ratio Examples		
Total	Resin	Hardener
50ml	33ml	17ml
100ml	67ml	33ml
150ml	100ml	50ml
200ml	133ml	67ml
300ml	200ml	100g
400ml	267ml	133ml
500ml	333ml	167ml
600ml	400ml	200ml
700ml	467ml	233ml
800ml	533ml	267ml
900ml	600ml	300ml

Mix Ratio Examples		
Total	Resin	Hardener
1l	667ml	333ml
1.5l	1l	0.5l
2l	1.33l	0.67kml
3l	2l	1l
4l	2.67l	1.33ml
5l	3.33l	1.67
6l	4l	2l
7l	4.67l	2.33
8l	5.33l	2.67l
9l	6l	3l
10l	6.67l	3.33l

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.

Use digital scales to accurately weigh the correct amount of resin into a cup, re-zero the scales and then weigh in the correct amount of hardener. Try to be as accurate to within 1 -2 grams, particularly on smaller mixes. The tables below can be used to look up some common mix sizes.

Mix Ratio Examples		
Total	Resin	Hardener
50g	34g	16g
100g	69g	31g
200g	138g	62g
300g	207g	93g
400g	276g	124g
500g	345g	155g
600g	414g	186g
700g	483g	217g
800g	552g	248g
900g	621g	279g

Mix Ratio Examples		
Total	Resin	Hardener
1kg	0.69kg	0.31kg
2kg	1.38kg	0.62kg
3kg	2.07kg	0.93kg
4kg	2.76kg	1.24kg
5kg	3.45kg	1.55kg
6kg	4.14kg	1.86kg
7kg	4.83kg	2.17kg
8kg	5.52kg	2.48kg
9kg	6.21kg	2.79kg
10kg	6.90kg	3.10kg

Mixing Instructions

Weigh or measure the exact 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 3 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 for another 3 minutes 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

Step by Step Guide

Depending on your requirements (and artistic ideas) there are many different ways in which you can work with GlassCast 50 to achieve some really stunning effects. The following step-by-step guide describes the most standard way to work with GlassCast 50 which is a sealing coat (for porous surfaces) followed by a single main pour. For other ways to work with GlassCast 50, including undertaking multiple pours or working with pigments or embedments, please see the 'Advanced Techniques' section towards the end of this guide.

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.

Step 1 - Sealing Coat

If the material you are pouring GlassCast 50 onto is not porous, for example plastic, metal, marble or granite then you do not need to seal the surface and you can skip

to Step 3.

If the material you will be pouring GlassCast 50 over is porous such as wood, chipboard, MDF or ceramic then it is highly recommended to apply a sealing coat before the main pour. Doing so will improve the flatness of the final surface and help to eliminate warping of the substrate after cure. This will also minimise air entrapment.

Mix around 500g of GlassCast 50 per square metre of surface you need to seal. Don't worry if most of the resin seems to be absorbed by the substrate; this is normal for the sealing coat. Allow the 'sealing coat' to cure before proceeding to Step 2. Depending on the ambient temperature, this is likely to take around 24 - 48hrs.

Step 2 - Prepare the Sealing Coat for the Next Pour

In order to ensure that the next layer of GlassCast 50 bonds well to the sealing coat it is necessary to 'key' the surface of the sealing coat using some coarse abrasive paper. This will also help to flatten off any slight raised texture where the substrate has absorbed some of the sealing coat.

Having checked that the sealing coat is well cured (it should feel hard and not at all tacky), use a sheet of coarse abrasive paper (such as P120) to 'key' or scratch the entire surface. Don't worry that the surface then looks scratched and light in colour - this will disappear as soon as the next layer of resin is poured.

Step 3 - Adding Barriers

Because most river table designs feature unsupported areas of resin (which it's possible to look straight through) these areas of resin need supporting and containing somehow whilst the resin cures. The material we use to contain the resin is referred to as baseboard barriers and side barriers. It's very important that the barriers are totally sealed, otherwise the resin could leak out and spoil the project (not to mention waste resin).

We strongly recommend choosing a barrier material that the Glasscast 50 will not stick to and which will leave a smooth finish on the cured resin - we use polypropylene plastic sheet in the project. We suggest starting with a flat sheet of chipboard or MDF as a base to work on. The sheet should be just slightly larger than your table to allow clamps to reach around it when clamping down the planks.

Step 4 - The Main Pour

- Ensure your work area is as free of airborne dust as possible.
- Ensure the ambient temperature is between 20°C- 25°C.

IMPORTANT:

Maximum casting thickness into wood is 25mm per pour!

Calculate how much resin you will need for the main pour using the information in the 'How much resin?' section earlier in this guide.

Follow the instructions for measuring and mixing the resin making sure that your mix ratio is very accurate and that your mixing is very thorough.

Once the sealing/base coat of the resin has cured to the B-stage it is important to continue straightaway with the first stage of the main pour, otherwise the two layers will not bond properly to each other (see preceding notes on the B-stage). Remember that in total, for this project we are only casting a maximum depth of 25mm per layer - so in the first stage we will only be mixing and pouring half of the remaining resin. When you do the main pours, it's likely that you will need to be mixing quite large quantities of resin (anywhere between 5 and 15+kg for a typical table). This means that mixing in multiple smaller batches is highly recommended.

After around 10 minutes, take a careful look over your resin casting. If any trapped air bubbles still persists, you can use a heat-gun or gas blow torch lightly over the surface of the resin to lift any remaining air bubbles out of the resin.

Once you are happy with the casting, cover it as soon as possible to prevent any airborne dust or contamination from landing on the surface.

Leave the surface to cure fully before handling; this is likely to be around 48hrs, depending on the ambient temperature. Please see the Curing Time section earlier in this guide for full information.

Now the pouring is complete, we must allow the resin to fully cure to give us the hard finish desired. The resin will achieve an initial cure in approximately 48 hours - temperature dependent. You must not touch or attempt to use the casting during

this period and avoid opening doors and windows to reduce the chance of dust and debris contaminating the resin.

The resin will continue to harden to full strength over a period of 7 days.

Step 4 - Polishing and Finishing Shaping and Polishing

Once fully cured, GlassCast 50 can be shaped, flatted and polished 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.

This process can also be followed to restore surface scratches and dulling from continual use.

You will now have a stunning casting that with care will last many years, amazing family and guests alike. If over time the surface picks up minor scuffs and scratches these can be polished out to restore the original high gloss finish.



Advanced Techniques

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.

Inclusions / Encapsulation

One of the stunning applications of GlassCast 50 is the inclusion of other materials within the resin. Such materials could be coins, bottle-tops, beer mats, playing cards, photographs, pebbles, crushed glass; in fact, just about anything.

With so many different types of material that could potentially be encapsulated within your GlassCast pour it's essential to experiment first to ensure that you understand how your chosen material will behave when encapsulated in the GlassCast. All materials will need to be thoroughly dry before you encapsulate them but others may require 'sealing', gluing down (to prevent floating) or some other preparation to get the best results.

As a general rule, the inclusion of any materials within your GlassCast 50 surface will result in some slight effect on the surface caused by absorption of the resin into the material being included or simply by variations in the thickness of the resin where these inclusions occur.

For this reason, when working with inclusions, it is generally best to do two pours; the first is your main pour and will encapsulate the inclusions completely, the second pour is a thinner pour intended simply to leave a perfectly flat surface. See the 'Multiple Pours' advanced technique for further information. Shaping and Polishing

Pigments and Tints

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.

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

Other GlassCast Versions

GlassCast 50 is designed specifically for thick castings up to 50mm per pour. For thinner sections we would suggest using GlassCast 10 if you are looking for a coating resin, then we would recommend GlassCast 3.

The number in the name represents the suggested thickness that each product should be poured (in a single pour); GlassCast 3 is recommended for coatings up to 3mm deep, the GlassCast 10 and GlassCast 50 are recommended for castings.



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 GlassCast® Resin part of 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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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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