GlassCast®
THE CLEAR CHOICE IN RESIN

TECHNICAL DATASHEET

GLASSCAST®3

CLEAR EPOXY COATING RESIN

Product Description

GlassCast 3 is a clear, two-part epoxy resin designed to add glossy, hard-wearing, self-levelling coatings to floors, counters, furniture and more. The recommended pour thickness for GlassCast 3 is 3mm.

GlassCast 3 can be left clear or pigmented with a wide range of pigments and metallic effects and is our recommended resin for penny floors, kitchen countertops, glossy bartops and resin coasters.

Technical Specification

Uncured System Properties

	Units	Resin	Hardener	Combined
Material	-	Epoxy Resin	Formulated Amine	Epoxy
Appearance	-	Clear	Pale Yellow	Clear
Viscosity @25°C	mPa.s	5700	120	1000 - 1200
Density @25°C	g/cm^3	1.16	1.01	1.11

Key Features

- Designed for glossy surfaces up to 3mm
- Self-levelling - no need to flat and polish
- Natural air bubble release
- Clear and UV resistant
- Tough and hard-wearing

Recommended Uses

- Tabletops, Worktops, Counters
  Embedments like bottle tops, corks, pebbles, mosaics and coins
- Furniture
  Resin plank tables, reclaimed wood and driftwood
- Floors
  Penny floors, solud colour floors, decorative floors using pigments and metallic powders
- Art
  Coating photographs, artwork, decoupage and resin art

Cured Mechanical Properties

Following recommended cure of 7days at room temp.

	Units	Resin
Hardness	Shore D1	D81
Flexural Modulus	MPa	2100
Tg Room Temperature cure	°C	41
Tg after 16h at 50°C	°C	47
Tensile Strength	MPa	55
Tensile Modulus	GPa	2.9
Tensile Elongation	%	4.2
Flexural Strength	MPa	93.7
Flexural Modulus	GPa	3.0
Flexural Strain	%	9.7

Before You Begin...

Important: Risk of Resin Overheating/Exotherm

In common with all epoxies, GlassCast generates heat during its cure and can easily overheat if not used correctly. Before use, it is essential for users to read and follow information on 'Avoiding Overheating/Exotherm' in this datasheet.

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.

Avoiding Overheating/Exotherm

The GlassCast range of resins, in common with all epoxies, generate heat as part of the curing process. In order to ensure that the resin does not overheat during curing, it is essential that to stay within the strict limits of ambient temperature, time-in-pot and pour depth. As well as avoiding external heat sources from direct sunlight, nearby radiators or excessive use of heat guns/ hair dryers. Failure to work within the stated parameters can result in damage to the resin, other materials and the surrounding area.

The recommended working temperature for GlassCast is 20°C. When working in higher ambient temperatures, pay attention to the reduced pot-life and maximum pour depth. For warmer conditions and thicker pours, a fan positioned to blow air over the surface will help to shed any excess heat and reduce the chance of the resin overheating.

Ambient Temperature	15°C (minimum)	20°C (recommended)	25°C (maximum)
Maximum Time in Pot (Pot Life)	45mins	30mins	22mins
Maximum Pour Depth	9mm	6mm	3mm
Initial Cure	36hrs	24hrs	18hrs

Ambient Temperature

Epoxy resins are highly sensitive to ambient temperature (room temperature) throughout their cure. For best results, we recommend working in a consistent room temperature of 18-20°C. GlassCast 3 can be used in temperatures from 15 to 25°C but higher temperatures will reduce the pot-life and the maximum pour-depth of the resin significantly. Never work in ambient temperatures exceeding 25°C, or exceed the maximum pour depth for a given ambient temperature (as shown in the table above) otherwise the resin could dangerously overheat, especially on larger pours.

Pot Life

As soon as the resin and hardener are mixed together, the curing reaction begins. Due to the volume of resin all in one place, mixed resin in the pot will begin to gradually warm up. The amount of time that mixed resin can stay in the mixing pot before it overheats is known as its pot-life. Once the resin is mixed, ensure to use it within the pot-life stated for the ambient temperature (see table above).

Localised Heat Sources

Whilst close attention should be paid to the ambient (room) temperature, it is also important to avoid any localised heat sources which can also cause an exotherm. Examples of localised heat sources include:

- A hot radiator at one end of a cooler room – If the resin project is positioned above or near the radiator it could start to exotherm, even though the room temperature is within the recommended limits.
- Direct sunlight from a window – Sun shining through a window onto your resin project or surrounding area can cause significant hot-spots which can cause the resin to exotherm, even in a relatively cool room.
- Heat-guns or hair dryers – If using a heat-gun or hair-dryer as part of your resin project, do so sparingly to avoid warming up the resin significantly. Excessive use of a heat-gun or hair dryer can easily accelerate the cure and cause the resin to exotherm.

Humidity

Whilst GlassCast is curing it can absorb moisture from the air. In higher humidity environments this moisture absorption can affect the surface finish for best results, avoid pouring GlassCast 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

When casting the resin into another object, to ensure the resin can make a good bond with the surface, it should be thoroughly cleaned of all contaminants and keyed to provide a texture which the resin can 'grip' too.

If casting into a mould or onto a mould face, appropriate release agent may be required to ensure that the cured resin will come away cleanly and not stick.

Substrate Moisture

In much the same way that GlassCast resin can be adversely affected by moisture in the air, it will also be affected by any moisture in the surface of 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, 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 before us. This could take weeks, months or even years depending on drying conditions. Failure to ensure that the wood is properly seasoned 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.

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. 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, flowers, leaves etc. are thoroughly dry. Any embedments may also need to be glued/ fastened down to stop them floating in the resin once it is poured.

Curing Time

Depending on the ambient temperature, GlassCast 3 will take around 12-24hrs to become touch-dry. During this period 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 24-48hrs before attempting to do any work on the resin (such as sanding or polishing).

Trapped Air - Heat Gun or Blow Torch Required?

GlassCast 3 includes advanced technology to help it expel air that has been entrapped by the mixing and pouring process, 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 depending on the volume of resin.

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 3 product page on www.glasscastresin.com and ensure you understand and follow the detailed safety information it contains.

How Much Resin ?

For solid surfaces, it's easy to calculate the amount of resin you'll need to cover a given area. For uneven surfaces or those including embedments like pennies, crushed glass or bottle tops; some compensation will be required. Typically for the resin to self level to a smooth finish, such as on a grouted penny floor or a table top, a 2mm layer is needed which equates to 2kg of resin per square meter.

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

For example:

2m (Length) x 0.6m (width) x 2mm (depth) = 2.4l

In simple terms, 2.4 litres of resin can be approximated as 2.4 kilograms.

Another helpful and simple way to calculate how much resin is required is that 1kg of resin will produce 1mm of thickness required over a 1 sqm area.

1kg = 1mm over 1sqm

Therefore, to calculate how much resin to mix, simply multiply the thickness you require (in millimetres) by the area of your surface (in square metres). Don't forget that porous (absorbent) materials like wood should be sealed before the main pour.

	Surface area to cover				
	25cm x 25cm (0.0625m²)	50cm x50cm (0.25m²)	50cm x 100cm (0.5m²)	100cm x 100cm (1m²)	200cm x 100cm (2m²)
1mm	62.5g	250g	500g	1kg	2kg
2mm	125g	500g	1kg	2kg	4kg
3mm	375g	750g	1.5kg	3kg	6kg
4mm	500g	1kg	2kg	4kg	8kg
5mm	625g	1.25kg	2.5kg	5kg	10kg

We would always suggest slightly overestimating the amount of resin you think you will need. It's always better to have mixed too much rather than too little - especially when colouring the resin to ensure a consistent colour. Any excess resin can be poured into another surface or spread out between multiple mixing cups to reduce the volume.

How to Measure and Mix

What you'll need

- Set of digital scales OR calibrated mixing cups
- x2 clean mixing pots or buckets
- x2 clean mixing sticks
- Nitrile gloves/safety glasses and other PPE as required
- Prepared form to pour resin or pre made mould
- Optional: Heat gun or blow torchMix ratio

GlassCast 3 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 Weight

100:50 (2:1)

By far the easiest way to measure the correct ratio of resin to hardener is to use 2 parts resin to one part hardener by weight. Put simply, this means exactly 2 grams of resin to 1 gram of 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 table below can be used to look up some common mix sizes.

Mix Ratio Examples by Weight		
Total	Resin	Hardener
50g	33g	17g
100g	67g	33g
200g	100g	50g
300g	133g	67g
400g	200g	100g
500g	267g	133g

Mix Ratio Examples by Weight		
Total	Resin	Hardener
750g	500	250g
1kg	667g	333g
1.5kg	1kg	0.5kg
2kg	1.33kg	0.67kg
3kg	2kg	1kg
4kg	2.67kg	1.33kg
5kg	3.33kg	1.67kg

Mixing by Volume

100:57

If you prefer to measure out the resin by volume (instead of weight) then the mix ratio that must be used is 100 parts resin to 57 parts 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 by Volume		
Total	Resin	Hardener
50ml	31.8ml	18.2ml
100ml	63.7ml	36.3ml
200ml	127.4ml	72.6ml
300ml	191.1ml	108.9ml
400ml	254.7ml	145.3ml
500ml	318.5ml	181.5ml

Mix Ratio Examples by Volume		
Total	Resin	Hardener
750ml	477.7ml	272.3ml
1l	636.9ml	363.1ml
1.5l	0.955l	0.545l
2l	1.27l	0.73l
3l	1.91l	1.09l
4l	2.55l	1.45l
5l	3.18l	1.82l

Advanced Techniques

Multiple Pours

The recommended thickness for GlassCast 3 is around 3mm, generally for thicker coats of resin then GlassCast 10 or GlassCast 50 would be a better option. There are however some scenarios where multiple layer of resin need to be built up, this included but is not exclusive to :

- Primer / sealing coats
- Levelling off a surface with small amounts of unevenness before a top coat
- Suspending objects so that they 'float' above a clear layer of resin
- Applying a glossy level coat over the top of another GlassCast product
- When using pigments to create various coloured effects

Whatever the reason for undertaking a multiple pour, there are two options for ensuring a good bond between separately poured layers.

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. Ensure the surface is thoroughly cleaned before the next pour.

Pigments and Tints

GlassCast 3 can be pigmented with our range of GlassCast and epoxy compatible pigments including the, CULR Universal pigments and SHIMR™ Metallic Powder Pigments.

These ranges have all been tested and are fully compatible with the GlassCast Resin range.

To achieve a subtle 'tint' a very small amount of pigment can be used, remember that you will need proportionally more pigment for thin sections that you will for thicker sections.

If using other products always conduct a small test first to ensure compatibility with your chosen, pigment or powder.

Post Cure

Cured at room temperature for around 7 days the resin will achieve a Tg of around 45°C. This can be increased by means of an extended heat cycle known as a post cure, this will allow the resin to fully cure and achieve its full mechanical and temperature resistant properties.

The post cure cycle is as follows:

- Room temperature cure 24hrs followed by 16 hrs at 60°C.

Project Examples

You can find example projects, tutorials and handbooks on our website, some examples include.

- Penny Floors
- Resin Counter Tops
- Resin Art, Ocean Waves, Furniture Upcycling
- Resin Floors

Transport and Storage

GlassCast 3 should be stored in its original container and out of direct sunlight. It is recommended that the storage temperature should be less than 15ºC where possible and not exceed 25ºC.

KEEP THE PACKING TIGHTLY SEALED WHEN NOT IN USE. When stored correctly, GlassCast 3 will have a shelf-life of 12 months.

The Full GlassCast Range

- GlassCast 3 - Coating and thin casting up to 3mm per payer
- GlassCast 10 - Thin to medium casting up to 10mm per layer
- GlassCast 50 - Medium to deep casting, typically 25mm per layer
- GlassCast 50 PLUS - Deep casting, typically up to 50 mm per layer

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. Easy Composites Ltd shall be in no way responsible for the proper use and service of the product, nor for the safeguarding of personnel or property, all of which is the duty of the user. Any information or suggestions are without warranty of any kind and purchasers are solely responsible for any loss arising from the use of such information or suggestions. No information or suggestions given by us shall be deemed to be a recommendation to use any product in conflict with any existing patent rights. 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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