

Countertop Epoxy Resin

1. Overview

Manufacturer's Brand Name: Surfacecast Epoxy.

Clear, UV Stabilised (slow to yellow compared to non-stabilised resins).

Primarily used for countertops and art applications.

A little thicker (lower flow) than most casting resins but thinner (higher flow) than our General Art Resin.

Cured castings are glossy, hard and strong.

Not approved for food contact.

Temperature resistance is usually 70-80°C (this depends on curing temperature and can be increased later by controlled heating and curing).

Mixing ratio is 100 Resin : 50 Hardener by weight (2:1 ratio).

2. Safety and Health

Many suppliers state that their Epoxy Resins are zero VOV and not harmful. The fact is that all Epoxy resins can be harmful so take note of the following:

- Epoxy Resins are an irritant to skin, eyes and mucous membranes.
- Avoid breathing fumes. The most significant risk of harmful fumes is if the resin overheats during curing. As a minimum, use epoxy resins in a well-ventilated work area. The use of a respirator is strongly recommended for larger projects and regular users.
- Avoid eye contact. Wear protective eyeglasses.
- Avoid skin contact. Wear rubber gloves and long sleeve shirt. Over time, skin contact can cause sensitisation (this basically means one can become allergic to the chemicals).
- Do not clean resin off your skin with solvents. This can accelerate penetration of harmful substances through your skin. Use soap and water to clean skin.
- Do not swallow. Keep out of reach of children.
- The harder (Part B) is corrosive and may cause severe eye damage and skin burns. It is a sensitizer that may cause dermatitis from skin contact and exposure to fumes.
- If sanding or machining cured resin, then wear a dust mask to prevent dust inhalation.
- First Aid:
 - In the event of eye contact, wash eyes under running water for 15 minutes and get medical attention.
 - In the event of skin contact, wipe clean with white vinegar then wash with soap and water. Get medical attention if irritation develops.
 - If fumes are inhaled or if breathing becomes difficult, move to fresh air. Get medical attention if symptoms develop or persists.
 - If swallowed do not induce vomiting. Drink 1-2 glasses of water and seek medical attention.

3. Key Parameters

- Used in layers of 1.0 to 1.5mm thickness for countertops and art applications.
- Pot Life*: 30-40 minutes for 500g batch at 25°C.
- A 1.5 mm layer @ 25°C will be "touch dry" after 8-12 hours.
- Cure Time: A 1.5 mm layer @ 25°C will be hard after 24 hours. Thinner layers will cure slower and cure time will be longer at lower temperatures.
- When using this resin in 1.0 to 1.5mm layers, a subsequent layer can be applied after only 6 hours. No sanding is required between layers if the second layer is poured after 6 hours (wait longer in colder weather).
- Use a propane torch to pop any air bubbles after pouring the resin.
- Below 23°C this resin can be cast into moulds up to 10mm deep with maximum volume of 10 litres. It is a little thicker than other casting resins which may result in some air entrainment.

*Pot Life

Larger volumes and containers with lower surface area reduce the pot life. The pot life will be reduced in hot weather. You can extend the pot life by pouring the mixed resin into flat trays. If you leave the resin too long it will start to thicken and air entrainment and heat generation will become a problem. Never leave

mixed resin unattended as it can start to generate excess heat, give off toxic fumes and even become a fire danger. If this starts to occur, then move the resin to a safe place outdoors and don't try to use it. Don't mix more than you can use in a relatively short space of time.

4. Maximum casting thickness and dangers of heat

The curing chemical reaction between epoxy resin and hardener generates a significant amount of heat (exothermic chemical reaction). When this heat cannot escape it increases the temperature causing the epoxy to cure faster and generate even more heat. The higher temperature increases differential shrinkage in the casting which may lead to induced stress and cracking. A potentially massive build-up of heat can cause the epoxy to crack and discolour.

Uncontrolled exotherm may cause the epoxy to foam, smoke, give off dangerous vapours, crack and generate enough heat to melt its container or cause nearby items to catch fire.

- Never exceed the recommended maximum thickness or volume of a resin system as this may lead to overheating. Use mixed resin before it starts to thicken or increase in temperature.
- The maximum thickness applies to resin used at ambient room temperature of 23°C with relative humidity below 85%. Warmer temperatures will reduce pot life and will also influence the safe casting thickness. If temperatures are warmer than 25°C, reduce maximum casting thickness by 50% or as appropriately required to avoid excessive exothermic reactions.
- If you pour resin into a closed mould then the heat build-up will be greater than when using a flat open mould with a large surface area for the resin to lose heat. Reduce film thickness when using relatively closed moulds.

There is no limit to the number of layers that you can cast on top of each other.

5. Typical Applications

- Used to give a durable glossy finish to bar counters, tables and similar tops. It can be used clear or with pigments added to create metallic appearance or other effects.
- Thin layer resin art on tiles, glass, wood etc.
- Poured over acrylic art to create a glossy finish. Do not use over oil-based paints or varnishes.
- Poured over photos, paper and fabric as in decoupage art.
- This resin can be poured into moulds up to 10mm deep making it very versatile. It is, however, a little thicker than casting resins which may result in air bubbles being retained and visible in clear castings.
- We do not recommend this resin for flooring (as the flow is a bit low) or for kitchen counter tops.

6. Equipment Required

- Plastic or metal mixing container with smooth continuous sides for scraping. (Do not use foam or glass containers.)
- Scale. This resin must be measured by weight, not by volume.
- Stirring stick with square edge and straight sides that reach to the bottom of all containers.
- Isopropyl alcohol (rubbing alcohol) for cleaning up. Remember that the alcohol is flammable.
- Ensure that all containers and tools are free from dust, grease and other contaminants.

7. Surface Preparation

- Ensure all surfaces are completely dry and free of dust, oils and contaminants.
- Non-porous surfaces such as tiles and glass do not need priming or sealing.
- Porous surfaces (such as wood and cement) should be sealed to prevent air bubbles being released from the surface when resin is applied. Apply a thin initial layer of this resin with a foam roller to seal porous surfaces.
- Never apply the resin over an oil-based paint or varnish.
- Apply wax to all surfaces that you require the cured resin to release from.

8. Mixing

Proper mixing is a key requirement for a successful resin project. Poor mixing will lead to defects which may often be cloudy streaks or patches in the cured resin. These defects cannot be removed. Measure the components of this resin systems by weight, not by volume.

- The ratio **by weight** of Resin and Hardener is **100 Resin : 50 Hardener (2:1 ratio)**
 - e.g. 50g Resin (Part A) with 25g Hardener (Part B).
- Accurately measure out Resin into the mixing container then measure out the Hardener.

- Stir together well for 4-5 minutes using a square edge stir stick. Include scraping of the sides and bottom of the mixing container several times. Do not mix in a manner that introduces air.
- The resin is now ready for pouring and it must be poured before it starts to get thick or hot.

Mixing can be done by hand or with a drill fitted with a mixing unit. Drill mixing can help mix larger quantities but should be set to low speed on a variable speed drill to avoid making a vortex that will pull in air. A drill mixer will not scrape the sides so manual scraping of side and bottom of the container is still required. If drill mixing introduces air it may not rise to the surface before curing starts.

If the mix quantity is large it may start to thicken and/or generate heat prior to pouring. This indicates that curing is underway. The heat generated can reach dangerous levels. You can extend the pot life by pouring the mixed resin it into large flat trays where heat can more readily escape.

9. Adding liquid colourants or powder pigments

Bastion Paint Allure Liquid Colourants, Pearlescent Pigments and Glitter Powders stir in very easily. These can be added at any time. Some other pigment types do not mix in as easily and these should be mixed as follows: Put pigment into the mixing container first then add Resin (Part A) to the pigment and mix. After that add Hardener (Part B) and stir. This way, the pot life is not reduced while mixing the pigment. Limit pigment / colourant to 6% of the total resin mass. Only use more if you have tested it.

10. Including rocks, stones and crystals

Wash these and dry them thoroughly. Porous items should be oven dried at 100°C for an hour and cooled before use. For larger items it is a good idea to dip them into mixed liquid resin to pre-coat them prior to pouring the liquid resin over them (this is because poured resin may not get underneath them).

11. Removing air with a propane torch

Torching to remove air shortly after pouring is important if air bubbles are present. Do not hold the torch closer than 8cm from the resin surface as too much torching will burn and discolour the resin. As this resin is slightly thick it may require torching shortly after casting to remove air.

12. Prevent dust contact during curing

Dust and air-born debris are an enemy of all curing resins. Pour and allow to cure in a clean area. We recommend covering your pour with something like a sheet draped over a frame. Do not cover with something that traps fumes or heat.

13. Adding subsequent layers

There is no limit to the number of layers that can be added. The bond between layers will be permanent and invisible.

When applying thin layers with this resin you do not need to wait for the first layer to be hard before adding a second layer. Allow about 6 hours for a thin layer to cure before adding a subsequent layer (wait longer in cold weather as curing will be slower).

If too much time passes before adding a subsequent layer (more than 24 hours) then the layers may delaminate. If more than 24 hours has passed then wash with soapy water, sand and wash again before applying the next layer. Waing only 6 hours is best.

If you have used this resin in a deeper casting then the resin must be hard and have cooled to room temperature before adding subsequent layers.

- If amine blush develops you must wash with soap and water, sand and wash again. Then allow for proper drying before applying a subsequent layer. Failure to do this will ruin your project. Amine blush can be identified as the surface being cured (hard and resisting fingernail indentation) but feeling tacky. A milky or "oil on water" appearance also indicates that amine blush is present.
- After any washing, always make sure that the resin has fully dried before pouring a subsequent layer.

14. Storage

Store in cool area. 23°C is the best storage temperature. Both resin components have a best before date.

15. Coating a bar counter:

Do not coat over oil-based stains or varnishes. Make sure the surface is level in all directions. For porous surfaces, such as concrete and wood, apply a first thin resin layer with a foam roller. This is to seal the surface so that it does not release air into subsequent layers and to keep subsequent layers on the surface.

Use tape to create a side that will retain the thickness of resin that you will pour.

Calculate the resin required for a first layer of 1.0 to 1.5mm and pour this. Pour along entire length of bar and then allow self-levelling.

Use a propane torch to pop any air bubbles.

Taped sides are usually removed as the resin starts to thicken (this may be after 1-2 hours of curing).

When done like this the tape is removed without leaving marks and the resin has a controlled flow over the edges to coat them. Getting this perfect may take some practice.

After approximately 6 hours, apply a second resin layer in the same way.

16. Pouring over paper, cardboard etc.

You can pour directly onto paper or laminate the paper beforehand. The resin, however, does not adhere to plastic so the laminated area should be a small portion of the total area. You can also secure the paper with glue from a glue stick but wait a few hours for the glue to dry before pouring resin over it.

17. Cleaning spills

The best chemical to clean small spills effectively is isopropyl alcohol. Rubbing alcohol and some hand sanitisers are fine. Clean spills as soon as possible before curing. Don't clean resin off your hands with these types of solvents; use soap or hand cleaner and water to clean skin.

18. Useful Parameters

Mix Ratio By Weight	100A : 50B (2:1)
Specific Gravity – Mixed	1.1 g/cm ³
Pot Life of 500g mass at 25°C	30 to 40 minutes
Thin Film (1.5mm thickness) Tacky Recoat Time	6 hours
Thin Film (1.5mm thickness) Tack Free Time	12 hours
Cure Time until hard feel (1.5mm thickness)	24 hours
Cure time until 95% of total cure	4-7 days
Cure time until 100% of total cure (full hardness)	30 days
Shore D Hardness after 7 days cured @ 23°C	75
Maximum casting thickness at 23°C	10mm (maximum 10kg)

19. How to calculate the amount required

You must use a scale and resin mass. You cannot measure this resin by volume.

For a roughly square or rectangular shape multiply as follows:

Resin required in kg = Surface length in m x Surface width in m x required resin film thickness in mm x 1.1

For a roughly circular shape multiply as follows:

Resin required in kg = 3.14 x Circle radius in m x Circle radius in m x required resin film thickness in mm x 1.1

Example

If your rectangular surface is 1.2m x 60cm and you require a film thickness of 1.5mm

Resin required in kg = 1.2m x 0.60m x 1.5mm x 1.1
= 1.188kg of resin

Now work out how much of Part A and how much of Part B you need to give you the total requirement of 1.18kg

Ratio for this resin is 100A to 50B (add these together to get 150 used in formula below)

To get 1.18kg total resin:

kg Part A required = 100/150 x 1.188 = 0.792kg (or 792g)

kg Part B required = 50/150 x 1.188 = 0.396kg (or 396g)