

FlowCast®

DESCRIPTION

FlowCast is a two-component epoxy system developed for large casting applications. It is perfect for live edge wood projects such as river tables or ocean tables.

FlowCast cures water clear and is compatible with many substrates. It has been formulated to have increased UV stability, low viscosity for excellent air release, and low exothermic heat buildup to allow for easy casting and encapsulation of items while preventing stress cracking.

The appearance of FlowCast can be customized using EcoPoxy's high-intensity Metallic Color Pigments and Liquid Color Pigments. Compatibility of the cured system with a variety of finishing methods and products ensures that desired custom finishes can be achieved.

EcoPoxy is committed to creating 100% solids epoxy systems made with high bio-based carbon content materials that deliver exceptional results.

KEY FEATURES

- Significant bio-based carbon content
- Cures water clear
- Excellent air release
- Easy to mix and pour
- Resists warping and cracking
- Customizable with pigments and colorants
- Compatible with most finishing methods and substrates
- Low odor
- Resists crystallization

PRODUCT TECHNICAL DATA

PHYSICAL PROPERTIES

The table below summarizes physical properties of liquid FlowCast such as appearance, bio-based carbon content, and specific gravity.

PHYSICAL PROPERTIES (LIQUID)		
Appearance: Part A	Visual observation	Clear viscous liquid
Appearance: Part B	Visual observation	Clear liquid
System Bio-based Carbon Content	ASTM D6866	21%
Specific Gravity: Part A at 22°C (72°F)	ASTM D1475	1.122
Specific Gravity: Part B at 22°C (72°F)	ASTM D1475	0.978

WORKING TEMPERATURE

For best results, follow working temperature recommendations. FlowCast will take longer to cure at lower temperatures and will react faster with greater exotherm under warmer conditions.

WORKING TEMPERATURE	
Ideal Working Temperature	22°C (72°F)
Recommended Working Temperature	20-25°C (68-77°F)

RECOMMENDED CASTING THICKNESS AND VOLUME

For best results, follow recommendations for casting thickness and volume. FlowCast will take longer to cure at lower thicknesses and volumes. It will react faster and with greater exotherm when poured at higher thicknesses and in larger volumes.

CASTING THICKNESS & VOLUME	
Recommended Casting Thickness	13-38mm (0.5-1.5")
Maximum Recommended Volume	30L

MIX RATIO

FlowCast is formulated to have a 2:1 mix ratio by volume. Deviation from the mix ratio can result in lower mechanical properties or incomplete cure.

MIX RATIO	
Mix Ratio by Volume (A:B)	2:1
Mix Ratio by Mass (A:B)	2.3:1

VISCOSITY

Viscosity indicates the material's resistance to flow. Viscosity measurements of resin systems vary during the curing process, first decreasing as the mixture heats up, then increasing as the mixture approaches gelation. Reported **Initial Mixed Viscosity** can be dependent on the temperature of the resin components, the temperature of the environment, and the ability of the mold to release heat.

VISCOSITY		
Viscosity: Part A at 22°C (72°F)	ASTM D2196	480 cP
Viscosity: Part B at 22°C (72°F)	ASTM D2196	110 cP
Initial Mixed Viscosity at 22°C (72°F)	ASTM D2196	280 cP

REACTIVITY

FlowCast is a thermosetting resin and will generate heat as it cures. **Reactivity Level** is a qualitative indicator of the rate of reaction and temperature of the resin system's cure. **Peak Exotherm** is the maximum temperature observed during cure. This can be affected by factors such as casting volume and geometry, the temperature of resin and hardener, ambient conditions, and the ability of the mold to release heat.

REACTIVITY	
Reactivity Level	Low
Peak Exotherm Temperature (1.5 kg casting)	82°C (180°F)

PROCESSING CHARACTERISTICS

Working Time begins when Part A and Part B are first mixed together and continues until the epoxy begins to thicken. Specified working times are based on casting immediately after mixing is complete. Working times can be significantly shorter if the resin is left in the mixing container for too long. Up until the working time limit is reached, the epoxy can be manipulated to achieve custom effects. It will self-level and allow bubbles to rise to the surface.

Tacky to Touch is the period where an additional pour can be done without the need to abrade the surface of the previous layer. During this period, the project will need to be protected from contaminants that can adhere to the surface. To determine tacky to touch, wear gloves and lightly touch the surface of the casting. No resin will stick to the glove's surface, but tackiness between the glove and the surface will be apparent. The onset of tacky to touch has not been reached if the surface significantly deforms in this process.

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Set to Touch is the point in time immediately after the tacky to touch period, where the surface of the casting is tack-free. An additional layer is not recommended without first abrading the surface of the previous layer. Determine if set to touch has been reached using the same method as tacky to touch. There is no observable tackiness between the glove and the surface.

Demolding Time is the point in time at which the casting has cured sufficiently such that it can be carefully removed from the mold without causing damage to the epoxy. Castings can be demolded when a wedge can be inserted under one corner of the casting with no observable deformation or bending. Although the casting is solid, it is not fully cured and may sag under its own weight. The casting should be supported until it reaches a fully cured state.

Time to Finishing is the point in time at which the casting has cured sufficiently such that it can be machined or finished using hand tools.

Full Cure is the point in time when the casting achieves full mechanical properties.

The table below shows processing characteristics for a 203mm x 1828mm (8" x 72") casting poured to the maximum recommended depth of 38mm (1.5"). The ambient temperature was 21°C (70°F), with 50% RH. This casting size (~14L) is meant to represent the typical dimensions of the epoxy portion of a river table project. Processing characteristics will vary depending on factors such as resin volume, casting geometry, ambient conditions, and mold materials.

PROCESSING CHARACTERISTICS	
Working Time Limit	8-12 hours
Tacky to Touch Period	20-44 hours
Set to Touch	44 hours
Demolding Time	3 days
Time to Finishing	7 days
Full Cure	7-14 days

CURED RESIN PROPERTIES

Density is a measure of the degree of compactness of a substance. It is expressed as a mass per unit of volume.

Shore D Hardness is a measure of the cured resin's resistance to deformation via indentation. Resins with higher hardness will be more resistant to scratches.

Glass Transition Temperature is the temperature at which the cured resin changes from a rigid, glassy material to a soft, non-melted material. Above the glass transition temperature, the resin may permanently deform when force is applied.

Cured resin properties were obtained for a 3.2mm (1/8") thick cast panel, cured for 16h at 75°C (167°F). Tests were performed according to applicable ASTM standards. These are typical values and are provided for reference only.

CURED RESIN PROPERTIES		
Density	Theoretical	1.07 g/cm ³ (0.039 lb/in ³)
Shore D Hardness	ASTM D2240	80
Glass Transition Temperature (Tg) by DSC	ASTM E1356	42°C (108°F)

STORAGE

Store in a cool, dry, well-ventilated location out of direct sunlight. Protect from freezing and physical damage. Do not store in a location subject to frequent temperature changes as the product may crystallize. Use the product as soon as possible after opening. If storing the remainder of the product for another project, keep the container tightly closed.

STORAGE	
Recommended Storage Temperature	15-25°C (59-77°F)
Shelf Life	2 years; unopened

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SAFETY AND PRECAUTIONS

Consult Safety Data Sheet (SDS) before use. Wear protective gloves, clothing and eye/face protection. Use only in well-ventilated areas. Avoid contact with the skin and eyes. Take off contaminated clothing and wash before reuse. Keep containers tightly sealed when not in use. Avoid breathing vapors and fumes. Wash hands thoroughly after handling. During finishing operations wear proper PPE and avoid dust. When fully cured, FlowCast is an inert plastic.

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