

## FlowCast® **SPR**

### DESCRIPTION

FlowCast SPR is a two-component epoxy system developed for small casting applications. As a complementary system to FlowCast, FlowCast SPR has all the same benefits but is formulated to have a reactivity level better suited to smaller-scale castings. FlowCast SPR can be used in the same way as FlowCast to create beautiful live edge wood projects with thinner profiles.

FlowCast SPR 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 SPR 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
- Faster cure for smaller projects
- Cures water clear
- Excellent air release
- Easy to mix and pour
- Resists warping and cracking
- Customizable with pigments
- 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 SPR 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	16%
Specific Gravity: Part A at 22°C (72°F)	ASTM D1475	1.182
Specific Gravity: Part B at 22°C (72°F)	ASTM D1475	0.966

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### WORKING TEMPERATURE

For best results, follow working temperature recommendations. FlowCast SPR 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 SPR 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	6-25mm (0.25-1")
Maximum Recommended Volume	3L

### MIX RATIO

FlowCast SPR 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)	2.5:1

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**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	2,930 cP
Viscosity: Part B at 22°C (72°F)	ASTM D2196	35 cP
Initial Mixed Viscosity at 22°C (72°F)	ASTM D2196	410 cP

**REACTIVITY**

FlowCast SPR 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-Moderate
Peak Exotherm Temperature (1 kg Casting)	125°C (257°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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**Important Note:** Processing characteristics vary significantly based on the thermal mass. 25mm (1") castings have double the thermal mass of 13mm (1/2") castings and generate heat in the center of the casting during cure. Use caution, as significant heat is generated by the casting during peak exotherm. These castings transition from tacky to set to touch while the casting temperature is at its peak (peak exotherm temperature). It is NOT recommended to pour a second layer while the casting is still at an elevated temperature. It is recommended that you wait for the casting to reach set to touch and abrade the casting before pouring a second layer

**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 152mm x 432mm (6" x 17") castings poured to depths of 25mm (1") and 13mm (1/2"). The ambient temperature was 22°C (72°F), with approximately 50% RH. These casting sizes are meant to represent the typical dimensions of the epoxy portion of a serving tray. Processing characteristics will vary depending on factors such as resin volume, casting geometry, ambient conditions, and mold materials.

PROCESSING CHARACTERISTICS	25mm (1") casting depth	13mm (1/2") casting depth
Working Time Limit	4-5 hours	6-7 hours
Tacky to Touch Period	Not applicable*	20-32 hours
Set to Touch	24 hours	32 hours
Demolding Time	24 hours	40-48 hours
Time to Finishing	Immediately after Demolding	
Full Cure	3 days	7 days

\*See the **Important Note** in processing characteristics definitions

## 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 from 25mm (1") and 13mm (1/2") depth small river castings used to determine processing properties. Tests were performed according to applicable ASTM standards. These are typical values and are provided for reference only.

CURED RESIN PROPERTIES		25mm (1") casting	13mm (1/2") casting
Density	Theoretical	1.11 g/cm <sup>3</sup> (0.040 lbs/in <sup>3</sup> )	
Shore D Hardness	ASTM D2240	80	
Glass Transition Temperature (Tg) by DSC	ASTM E1356	52°C (126°F)	39°C (101°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

## FlowCast®

The logo for FlowCast SPR consists of the word "FlowCast" in a bold, black, sans-serif font, followed by a registered trademark symbol (®). To the right of the symbol are three slanted parallel lines, and then the letters "SPR" in a bold, white, sans-serif font inside a red rectangular box.

### SAFETY AND PRECAUTIONS

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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 SPR is an inert plastic.

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