

## GelCoat

### DESCRIPTION

EcoPoxy GelCoat is an epoxy coating with superior chemical, abrasion, and thermal resistance. It can be applied with a brush, roller, or spray gun. GelCoat is designed to work with laminating systems and is widely used as an in-mold coating on composite parts to produce a durable part surface. It provides a tough and strong outer layer that resists abrasion while still curing under room temperature.

EcoPoxy GelCoat is a premium gelcoat formulated to meet the requirements of composite applications. When used with EcoPoxy Liquid Color Pigments and applied at a thickness of 0.5mm (20 mils), GelCoat provides composite parts with a durable finish and protection from the elements.

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
- Durable in-mold coating for composite parts
- Room temperature cure
- Designed for use with BioPoxy 36
- Inherent chemical resistance
- Low odor
- High adhesion
- High gloss retention
- Excellent weather ability

## PRODUCT TECHNICAL DATA

### PHYSICAL PROPERTIES

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

PHYSICAL PROPERTIES (LIQUID)		
Appearance: Part A	Visual observation	Beige viscous liquid
Appearance: Part B	Visual observation	Clear yellow liquid
System Bio-based Carbon Content	Theoretical	13%
Specific Gravity: Part A at 22°C (72°F)	Theoretical	1.16
Specific Gravity: Part B at 22°C (72°F)	Theoretical	1.01

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### WORKING TEMPERATURE

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

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

### RECOMMENDED APPLICATION THICKNESS AND COVERAGE

For best results, follow recommendations for application thickness and coverage.

APPLICATION THICKNESS & COVERAGE	
Recommended Application Thickness	0.5mm (20 mils)
Coverage Rate	2m <sup>2</sup> /L (80 sf/gal)
Opacity	Complete at 20 mils*

*\*Opacity is complete at 0.5mm (20 mils) with 3 vol% loading with EcoPoxy Liquid Color Pigments*

### MIX RATIO

GelCoat is formulated to have a 1.5:1 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)	1.5:1
Mix Ratio by Mass (A:B)	1.8:1

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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	148,000 cP
Viscosity: Part B at 22°C (72°F)	ASTM D2196	1,890 cP
Initial Mixed Viscosity at 22°C (72°F)	ASTM D2196	11,500 cP
Thixotropic Ratio	ASTM D2196	6

\*Viscosity measurements for Part A, Part B and mixed viscosity were taken with LV4, LV2 and LV3 spindles, respectively.

### REACTIVITY

GelCoat is a thermosetting epoxy coating 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. **Gel Time** is a quantitative test to measure the time to gel for a 100g sample. **Peak Exotherm** is the maximum temperature observed during the gel times cure. **Peak Exotherm Time** is the time until the peak exotherm temperature is reached. This can be affected by factors such as part volume and geometry, the temperature of resin and hardener, ambient conditions, and the ability of the mold to release heat.

REACTIVITY	
Reactivity Level	Moderate
Gel Time (100 g)	22 min
Peak Exotherm Temperature	100°C (212°F)
Peak Exotherm Time	25 min

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### 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 applying the gelcoat immediately after mixing is complete. Working times can be significantly shorter if the resin is left in the mixing container for too long.

**Tacky to Touch** is the period where a laminate can be applied without the need to abrade the surface of the gelcoat for adhesion. To determine tacky to touch, wear gloves and lightly touch the surface of the coating. 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.

**Set to Touch** defines the point at which the surface is no longer tacky. 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. Laminate application is not recommended without abrading the surface of the gelcoat.

**Time to Finishing** is the point in time at which the gelcoat has cured and has achieved sufficient hardness that subsequent finishing and handling can occur without resulting in damage.

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

The table below shows processing characteristics for a 508mm x 508mm (20" x 20") tool surface. The gelcoat was applied to the tool surface via roller application to a thickness of 0.5mm (20 mils). At tacky to touch, a 3.2mm (1/8") laminate was applied. This geometry is meant to represent the dimensions of a laminate part. Processing characteristics will vary depending on factors such as resin volume, part geometry, ambient conditions, and mold materials.

PROCESSING CHARACTERISTICS	
Working Time Limit	20-30 min
Tacky to Touch Period	4.5-6 hours
Set to Touch	6 hours
Time to Finishing	24 hours
Full Cure	7 days

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### CURED RESIN PROPERTIES

**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.

**Water Absorption** is a measure of the mass of water absorbed by a cured resin sample when fully immersed for a specific length of time.

Cured resin properties were obtained for a coating that was cured at room temperature, after a minimum of 7 days. Tests were performed according to applicable ASTM standards. These are typical values and are provided for reference only.

CURED RESIN PROPERTIES		
Shore D Hardness	ASTM D2240	75
Glass Transition Temperature (Tg) by DSC	ASTM E1356	TBD
Water Absorption	ASTM D570	TBD

### 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

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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 dust, vapors and fumes. Wash hands thoroughly after handling. During post-finishing wear proper PPE and avoid dust. When fully cured, GelCoat is an inert plastic.

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