



High performance, epoxy laminating system

Green Room Board Co.'s **BioCarbonEpoxy** is a 2 part, 100% solids, epoxy based resin and modified cycloaliphatic amine hardener system designed for the production of fiberglass reinforced marine composites. It utilizes renewable, bio-based carbon materials derived from waste streams of biodiesel, vegetable and nut oil processes to replace 28% of the normal, petroleum based resin raw materials. When properly mixed with GRBC hardeners, the final product has 19% bio-based carbon. BCE has been certified as a USDA bio-based product as well as a qualified material for the Sustainable Surf Ecoboard project. It matches the performance in terms of cosmetics, processing and physical properties of our other resins with an eco-friendly option. It has been designed with wet lay-up hand laminations in mind and has an excellent balance of low viscosity for rapid wet out and good air release; quick thin film set time to eliminate drain out; non-blushing, no shrinkage cure even in low temperature and high humidity; self leveling with high gloss; excellent color stability/UV resistance; and high strength. The system can be used with either the ULTRA-FAST, FAST or SLOW hardeners or a mixture of the ULTRA-FAST and SLOW to create intermediate cure times (see page 2). **BCE** is designed for a complete cure at room temperature, but can be post cured at elevated temperature to maximize its physical properties.

PACKAGING AND STORAGE

BCE A/B is available in quart, gallon, 5 gallon and 55 gallon kits. **BCE** should be stored in a cool, dry place in tightly sealed containers. DO NOT store above 100°F for prolonged periods. Under these conditions, shelf life is at least 12 months.

SAFETY NOTE

This product is for industrial use only. Please review all precautions before using this product. As with all products of the same nature, avoid prolonged inhalation and repeated skin contact. Always wear safety goggles and impervious rubber gloves when handling this material. Refer to the MSDS for complete handling precautions.

PHYSICAL PROPERTIES with Ultra-Fast Hardener

Density (mixed)	1.09 g/ml
Form and Color	Clear Liquid
Viscosity (mixed)	500-600 cPs@77°F
Mix Ratio by volume	100 parts A/50 parts B
Mix Ratio by weight	100 parts A/44 parts B
Pot Life (100 gm)	20-30 Minutes @ 77°F
Peak Exotherm	150°C (100 gram mass)
Thin Film Set Time	3.0-4.0 Hours @ 77°F
Full Cure Time	96 Hours @ 77°F or 24 hours @ room temperature plus 4 hours at 175°F

MECHANICAL PROPERTIES

Hardness, Shore D	80
Heat Deflection Temperature	124°F
Flex Strength, psi	13,900
Flex Modulus, psi×10 ⁵	4.96
Tensile Strength, psi	8,950
Tensile Modulus, psi×10 ⁵	4.89
Percent Elongation at Break	5.1
Compressive Strength, psi	11,990
Compressive Modulus, psi×10 ⁵	3.2
Izod impact ft. lb/in notch	0.64

IMPORTANT NOTICE

The information cited herein is based on data available to us and believed to be accurate at the time of publication. Data and parameters cited by GRBC were obtained using materials under controlled conditions. This type of data should not be used for specification for fabrication and design. It is the user's responsibility to determine this product's fitness for use. GRBC warrants only that this product will only meet the cited parameters within the established conditions. There is no warranty of merchantability, fitness of use, nor any other express implied warranty. The user's exclusive remedy and the manufacturer's liability are limited to refund of the purchase price or replacement of the product. GRBC will not be liable for incidental or consequential damages or injuries of any kind. The user should thoroughly test any proposed use of this product and independently conclude satisfactory performance in the application. Determination of the suitability of any kind of information or product for the use contemplated by the user, the manner of use and whether there is any infringement of patent is the sole responsibility of the user.



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The charts below are guidelines to mixing the GRBC Ultra-Fast and Slow Hardener to achieve different curing times with GRBC BCE resin. The Ultra-Fast and Slow hardeners can be mixed together in any proportion to create intermediate curing speeds. The mix ratio of the combined Ultra-Fast/Slow hardeners with GRBC BCE resin will remain 100 parts resin to 44 parts hardener by weight or 100 parts resin to 50 parts hardener by volume. We highly recommend that the Slow hardener be used by itself for laminations with great care. The set time is so slow that significant drainage off the rails may occur at low ambient temperatures.

Grams				@ 77°F		
Resin	Fast Hardener	Slow Hardener	Fast/slow	Gel time (mins)	Thin Film set (hrs)	Exotherm (°C)
100	44.0	0.0	100% fast	25	3.5	150
100	33.0	11.0	3 parts to 1 part	38	4.0	150
100	22.0	22.0	1 parts to 1 part	54	5.0	120
100	11.0	33.0	1 parts to 3 part	100	8.0	75
100	0.0	44.0	100% slow	190	14.0	45

Milliliters				@ 77°F		
Resin	Fast Hardener	Slow Hardener	Fast/slow	Gel time (mins)	Thin Film set (hrs)	Exotherm (°C)
100	50.0	0.0	100% fast	25	3.5	155
100	37.5	12.5	3 parts to 1part	38	4.0	155
100	25.0	25.0	1 parts to 1 part	54	5.0	120
100	12.5	37.5	1 parts to 3 part	100	8.0	75
100	0.0	50.0	100% slow	190	14.0	45