

PRODUCT DATA SHEET

SikaBiresin® CR163 (Formerly EL-315)

Epoxy Laminating System with High Temperature Resistance

TYPICAL PHYSICAL PROPERTIES (FOR FURTHER VALUES SEE SAFETY DATA SHEET)

Properties	SikaBiresin® CR163 (A) Resin	SikaBiresin® CH163-1 (B) Hardener	SikaBiresin® CH163-2 (B) Hardener	SikaBiresin® CH163-6 (B) Hardener
Composition	Epoxy	Amine	Amine	Amine
Mix ratio – by weight	100	19	25	24
Aspect	Clear liquid	Liquid	Liquid	Liquid
Color (mixed)	n/a	Amber	Black	Amber
Viscosity – Brookfield (mixed)	n/a	2,000 - 3,000 cps	2,500 – 4,000 cps	4,000 – 5,000 cps
Density at 77°F (25°C) (mixed)	n/a	9.09 lbs./gal	9.85 lbs./gal	9.51 lbs./gal
Work time at 77°F (25°C)	n/a	50 - 60 minutes	50 - 75 minutes	180 – 210 minutes

DESCRIPTION

SikaBiresin® CR163 is a premium performance, high temperature epoxy laminating system developed to withstand extreme heat conditions in composite tooling applications, such as autoclave, bonding jigs, oven cured processing, or heat induction resin transfer molding (RTM). SikaBiresin® CR163 is available with a choice of three hardener options, each offering different working times to support required construction and bagging times on various sized laminates. SikaBiresin® CR163 exhibits excellent physical and mechanical properties, resulting in a dimensionally stable and durable composite mold or final part.

PRODUCT BENEFITS

- Good wet-out
- Three hardener choices for process flexibility
- Post-curing options available
- Up to 450°F (223°C) Tg with SikaBiresin® CH163-6 (B) hardener
- Excellent bond to all fabrics
- Excellent physical and mechanical properties

QUALIFICATIONS

SikaBiresin® CR163 (A) resin and SikaBiresin CH163-2 (B) hardener meet the following qualifications:

- Boeing MMS-102
- Boeing M41-03-01 Code RHL
- IHL McDonnell Douglas C1-655, QPL Code L-3

AREAS OF APPLICATION

SikaBiresin® CR163 is suitable for manufacturing composite tools or parts that are exposed to high temperature conditions. Recommended processes and applications include oven cured vacuum bagged or autoclave molding applications, heated RTM tools and parts, bonding jigs, and others.

Tests with actual materials and conditions have to be performed to ensure satisfactory performance.

TYPICAL MECHANICAL AND THERMAL PROPERTIES (NEAT OR COMPOSITE* FORM)

Properties, Test Method	Mixed with SikaBiresin® CR163 (A) Resin		
	SikaBiresin® CH163-1 (B) Hardener	SikaBiresin® CH163-2 (B) Hardener	SikaBiresin® CH163-6 (B) Hardener
Shore D hardness, ASTM D2240	90	88	90
Glass Transition Temp. (Tg), ASTM D4065	305°F (152°C)	331°F (166°C)	450°F (232°C)
*Tensile strength, ASTM D638	62,630 psi (432 MPa)	33,690 psi (232 MPa)	56,090 psi (525 MPa)
*Tensile modulus, ASTM D638	4,048,000 psi (27,910 MPa)	2,593,000 psi (17,878 MPa)	3,504,000 psi (24,159 MPa)
*Tensile elongation, ASTM D638	1.7%	1.8%	n/a
*Flexural strength, ASTM D790	90,480 psi (624 MPa)	44,540 psi (307 MPa)	76,200 psi (525 MPa)
*Flexural modulus, ASTM D790	4,642,000 psi (32,005 MPa)	2,296,000 psi (15,830 MPa)	3,504,000 psi (24,159 MPa)
Notched izod Impact strength, ASTM D648	6.5 in-lbf/in	4.5 in-lbf/in	4.5 in-lbf/in

Cure schedule: Samples tested after 24 hours at 77°F (25°C) + 2 hours at 200°F (93°C) + 2 hours at 250°F (121°C) + 2 hours at 300°F (149°C) + 3 hours at 350°F (177°C)

* Denotes physical testing conducted on 6 ply – 7500 Style E-Glass Laminate

PROCESSING

A preliminary self-support cure schedule can be used on a model, mold, or plug. Cure for 24 hours at 77°F (25°C) + 6 hours at 150°F (66°C). You may attach support structure and demold tool after this schedule is completed, then apply post-cure. It is recommended to install thermocouples to monitor the mold temperature throughout the post cure process, if possible.

POST-CURE HEATING AND COOLING RATES

Always allow tools made with Sika® high temperature epoxy systems to gel at room temperature before subjecting them to post cure (24 hours is usually sufficient). This will prevent excessive exotherm and shrink stress from occurring. When oven curing laminated molds, always place the mold in a room temperature oven. Increase oven temperature at a rate of no more than 50°F (30°C) per hour. When heat cure is completed, turn off oven and allow molds to remain in the oven. Never remove mold from oven until mold temperature has been lowered to less than 100°F (38°C). Alternative post-cure options can be used, if needed, in processing. Contact Sika Corporation’s Industry Technical Services Department at tsmh@us.sika.com for additional information and advice.

Normal health and safety precautions should be observed when handling these products:

- Ensure adequate ventilation
- Wear gloves, glasses, and protective clothes

For further information, please consult the Safety Data Sheets.

STORAGE CONDITIONS

Shelf life of resin and hardeners is 24 months when stored in original, unopened containers between 65-77°F (15 - 25°C). Any opened can must be tightly closed.

PACKAGING INFORMATION

Packaging information is available upon request. Please contact your local Sika sales representative.

FURTHER INFORMATION

Advice on specific applications will be given on request. To contact Sika Corporation’s Industry Technical Services Department, send an email to tsmh@us.sika.com. Copies of Safety Data Sheets and Product Data Sheets are available upon request.

BASIS OF PRODUCT DATA

All technical data stated in this document are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

ENVIRONMENTAL, HEALTH AND SAFETY

For further information and advice regarding transportation, handling, storage and disposal of chemical products, user should refer to the actual Safety Data Sheets containing physical, environmental, toxicological and other safety related data. User must read the current actual Safety Data Sheets before using any products. In case of an emergency, call

CHEMTREC at 1-800-424-9300, International 703-527-3887.

LEGAL DISCLAIMER

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