Tooling & Composites

Product Data Sheet
Version 05 / 2014

Biresin® CR83
Composite resin system

Areas of Application
- For infusion and injection processing
- Specially for applications for which resins with extremely low viscosity are necessary because of the processing temperature or geometry of the components

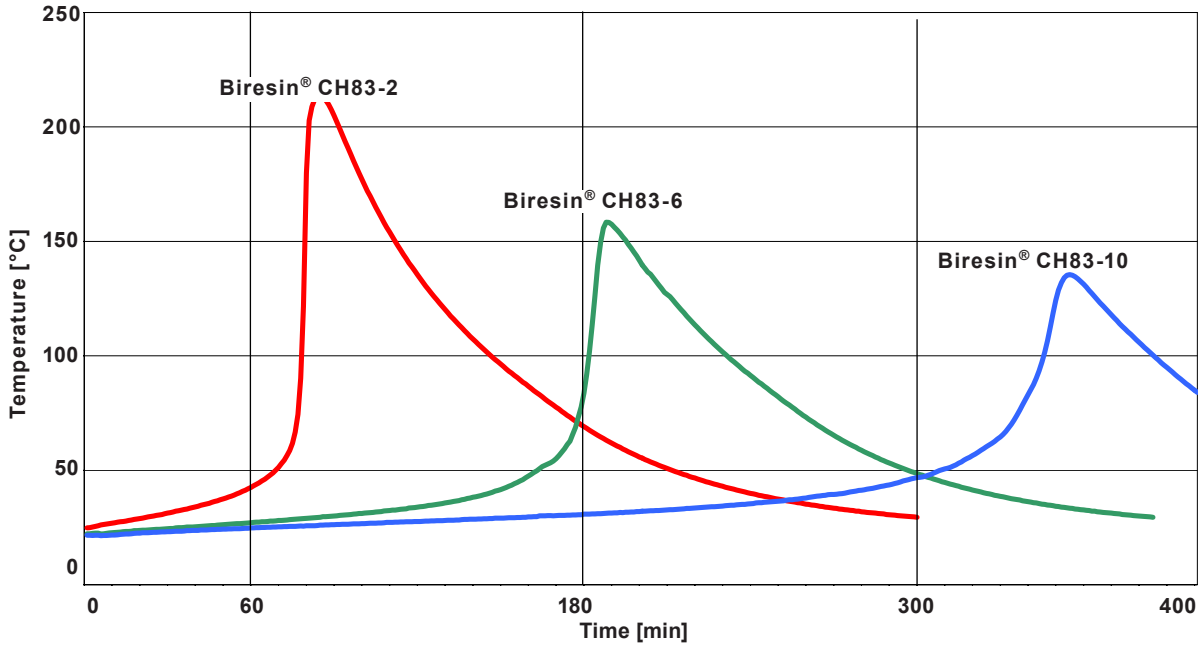
Product Benefits
- Approved by Germanischer Lloyd for the production of components
- One resin with three hardeners with different reactivity
- Uniform mixing ratio of 100 : 30
- The reactivity can be adapted by mixing the hardeners
- Because of very low mixed viscosity fast infiltration of dry fabrics and nonwovens also at low temperatures
- Glass transition temperatures up to 80°C dependent on curing conditions

Description
- Basis: Two-component-epoxy-system
- Resin (A): **Biresin® CR83**, epoxy resin, tranlucent, unfilled
- Hardener (B): **Biresin® CH83-2**, amine, colourless to yellowish
- Hardener (B): **Biresin® CH83-6**, amine, colourless to yellowish
- Hardener (B): **Biresin® CH83-10**, amine, colourless to yellowish

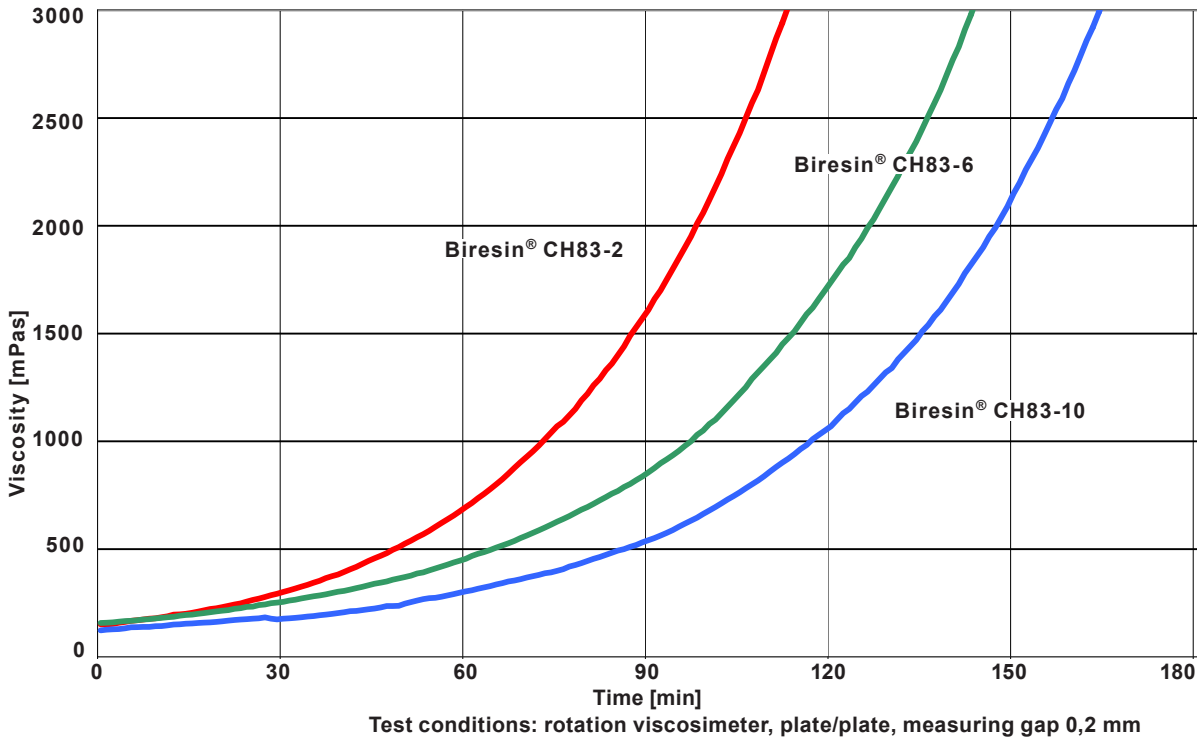
Physical Data		Resin (A)	Hardener (B)		
Individual Components		**Biresin® CR83**	**Biresin® CH83-2**	**Biresin® CH83-6**	**Biresin® CH83-10**
Viscosity, 25°C	mPas	510	< 10	< 10	< 10
Density, 25°C	g/ml	1.14	0.95	0.94	0.95
Mixing ratio	in parts by weight	100	30		
			Mixture		
Potlife, 100 g / RT, approx. values	min		60	180	300
Mixed viscosity, 25°C, approx. values	mPas		155	170	155

Processing
- The material and processing temperatures should be 15 - 35°C.
- To clean brushes or tools immediately Sika Reinigungsmittel 5 is recommended.
- Additional informations are available in “Processing Instructions for Composite Resins”.

Development of Exotherm of Biresin® CR83-Resin(A)-Hardener(B)-Mixtures, 100g / RT, insulated



Development of Viscosity of Biresin® CR83-Resin(A)-Hardener(B)-Mixtures, 25°C



Test conditions: rotation viscosimeter, plate/plate, measuring gap 0,2 mm

Mechanical Data, neat resin specimen at different post curing conditions					
Part 1: approx. values after 12 h / 55°C (source: Sika internal)					
Biresin® CR83 resin (A)	with hardener (B) **Biresin®**		**CH83-2**	**CH83-6**	**CH83-10**
Density	ISO 1183	g/cm³	1.15	1.15	1.15
Flexural-E-Modul	ISO 178	MPa	3,150	3,250	3,200
Tensile-E-Modul	ISO 527-2	MPa	3,300	3,300	3,350
Flexural strength	ISO 178	MPa	122	126	123
Tensile strength	ISO 527-2	MPa	88	93	91
Elongation at break	ISO 527-2	%	6,7	6,7	6,5
Water absorption after 7 d	ISO 175	%	0.50	0.44	0.42

Part 2: approx. values after 8 h / 70°C (source: Sika internal)					
Biresin® CR83 resin (A)	with hardener (B) **Biresin®**		**CH83-2**	**CH83-6**	**CH83-10**
Shore-hardness	ISO 868		D 85	D 85	D 85
Density	ISO 1183	g/cm³	1.15	1.15	1.15
Flexural E-Modulus	ISO 178	MPa	3,125	3,360	3,340
Tensile E-Modulus	ISO 527	MPa	2,960	3,200	3,100
Flexural strength	ISO 178	MPa	129	134	131
Elongation at break	ISO 527	%	6.7	8.4	7.9
Tensile strength	ISO 527	MPa	84	91	86
Impact resistance	ISO 179	kJ/m²	93	84	83
Compressive strength	ISO 604	N/mm²	107	111	109

Thermal data of neat resin specimen at different post curing conditions						
Biresin® CR83 resin (A)		with hardener (B) **Biresin®**		**CH83-2**	**CH83-6**	**CH83-10**
	Post curing conditions					
Heat distortion temperature	12 h/55°C	ISO 75A	°C	74	72	73
	8 h/70°C	ISO 75A	°C	79	79	78
	8 h/70°C	ISO 75B	°C	83	83	83
Glass transition temperature		ISO 11357	°C	84	80	81

Packaging

Individual components	**Biresin® CR83** resin (A)	200 kg; 10 kg net
	Biresin® CH83-2, CH83-6, CH83-10 hardener (B)	20 kg; 3.0 kg net

Storage

- Minimum shelf life of Biresin® CR83 resin (A) is 24 month and of Biresin® CH83-2, CH83-6 and CH83-10 hardener (B) is 12 month under room conditions (18 - 25°C), when stored in original unopened containers.
- The tendence of cristallisation with this system is very low. However, if cristallisation of the resin component appears, it can be easily removed by warming up the resin for a sufficient time to 50-60°C.
- Containers must be closed tightly immediately after use. The residual material needs to be used up as soon as possible.

Health and Safety Information

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safetyrelated data.

Disposal considerations

Product Recommendations: Must be disposed of in a special waste disposal unit in accordance with the corresponding regulations.
Packaging Recommendations: Completely emptied packagings can be given for recycling. Packaging that cannot be cleaned should be disposed of as product waste.

Value Bases

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

Legal Notice

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika‘s current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika‘s recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product’s suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

Further information available at:

Sika Deutschland GmbH
Subsidiary Bad Urach
Stuttgarter Str. 139
D - 72574 Bad Urach
Germany

Tel: +49 (0) 7125 940 492
Fax: +49 (0) 7125 940 401
Email: tooling@de.sika.com
Internet: www.sika.com

Statement of Approval

Approval No. **WP 1420017 HH**

The material described below complies with the applicable requirements as given in the Rules and Regulations of Germanischer Lloyd. On this basis the material is

approved as **Laminating Resin**

for the construction of components provided that the recommendations for use as specified by the producer are observed.

Type **Biresin CR83**

Description **Two Component Epoxy Resin System**

Producer **SIKA Deutschland GmbH**
Stuttgarter Str. 139
72574 Bad Urach
Germany

Normative Reference Rules for Classification and Construction,
II - Material and Welding Technology
Part 2 Non-Metallic Materials

This document consists of this page and a one-page annex which is integral part of the approval.

This Statement of Approval is valid until 2018-03-18.

Hamburg, 2014-03-19

Germanischer Lloyd

i.A. Guido Michalek

i.A. Joachim Rehbein

Statement of Approval

ANNEX

Date: 2014-03-19

Approval No. WP 1420017 HH

Reference Documents	Technical specifications deposited at Germanischer Lloyd Head Office.
Assessed Documents	- Technical Data Sheet - Test Report issued by IFB Stuttgart, dated 2009-12-10.
Fields of Application	Construction of FRP laminates of components, on condition that the fibre reinforcements comply with the applicable requirements of the Germanischer Lloyd and are compatible to the resin.
Approved Variants	Epoxy Resin Biresin CR83 with following hardeners: - Biresin CH83-2 - Biresin CH83-6 - Biresin CH83-10
Limitations	Any significant changes in design and/or quality of the material will render the approval invalid.
Remarks	This certificate supersedes the approval WP 1020014 HH.

End of Annex

Germanischer Lloyd