

Biresin® CR82

Composite resin system

Areas of Application

- For wet lay-up, pultrusion and filament winding processing
- Specially for applications when curing temperatures of $\geq 75^\circ\text{C}$ can not be implemented

Product Benefits

- Approved by Germanischer Lloyd for the production of components
- One resin (A) with four hardeners (B) with different reactivity
- Uniform mixing ratio of 100 : 27
- The reactivity can be adapted by mixing the hardeners
- Because of optimized mixed viscosity good impregnation and good non draining properties
- Glass transition temperatures up to 80°C dependent on curing conditions

Description

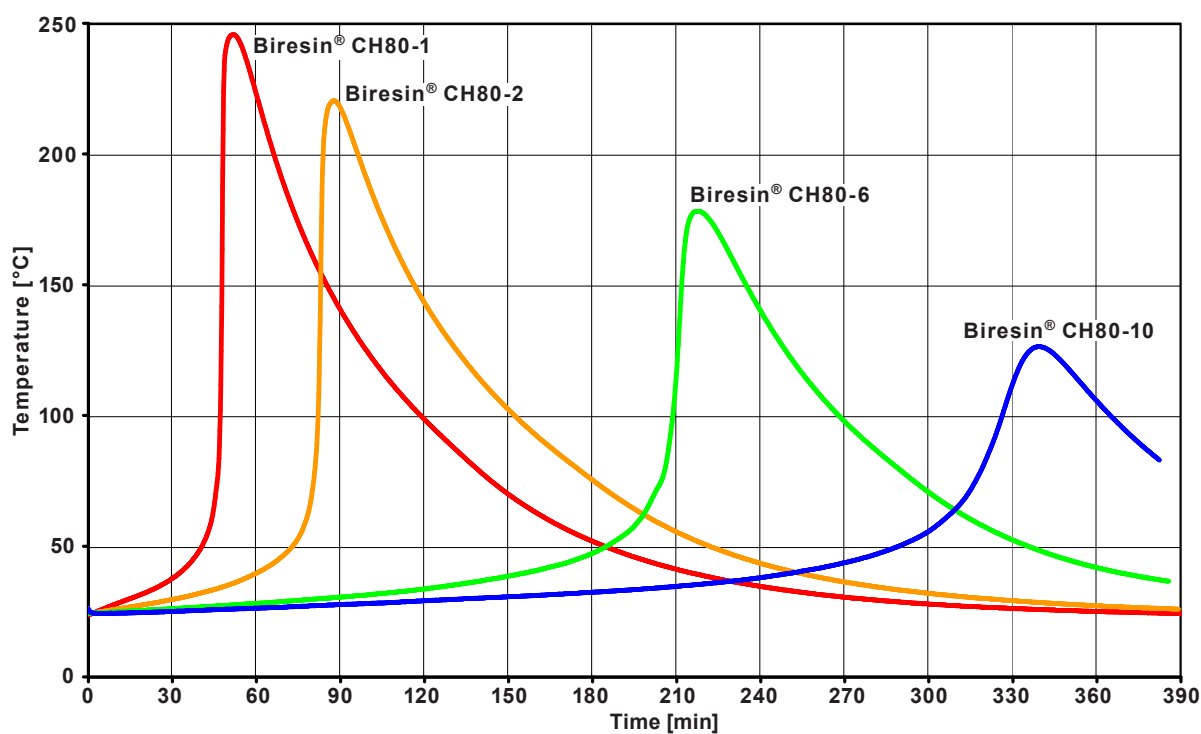
- Basis Two-component-epoxy-system
- Resin (A) **Biresin® CR82**, epoxy resin, translucent
- Hardener (B) **Biresin® CH80-1**, amine, colourless to yellowish
- Hardener (B) **Biresin® CH80-2**, amine, colourless to yellowish (also available in blue)
- Hardener (B) **Biresin® CH80-6**, amine, colourless to yellowish (also available in blue)
- Hardener (B) **Biresin® CH80-10**, amine, colourless to yellowish

Physical Data		Resin (A)		Hardener (B)		
Individual Components		Biresin® CR82	Biresin® CH80-1	Biresin® CH80-2	Biresin® CH80-6	Biresin® CH80-10
Viscosity, 25°C	mPas	1,600	50	45	< 10	< 10
Density, 25°C	g/ml	1.11	1.00	0.99	0.95	0.95
Mixing ratio	in parts by weight	100	27			
			Mixture			
Potlife, 100 g / RT, approx. values	min	50	80	220	330	
Mixed viscosity, 25°C, approx. values	mPas	740	600	400	390	

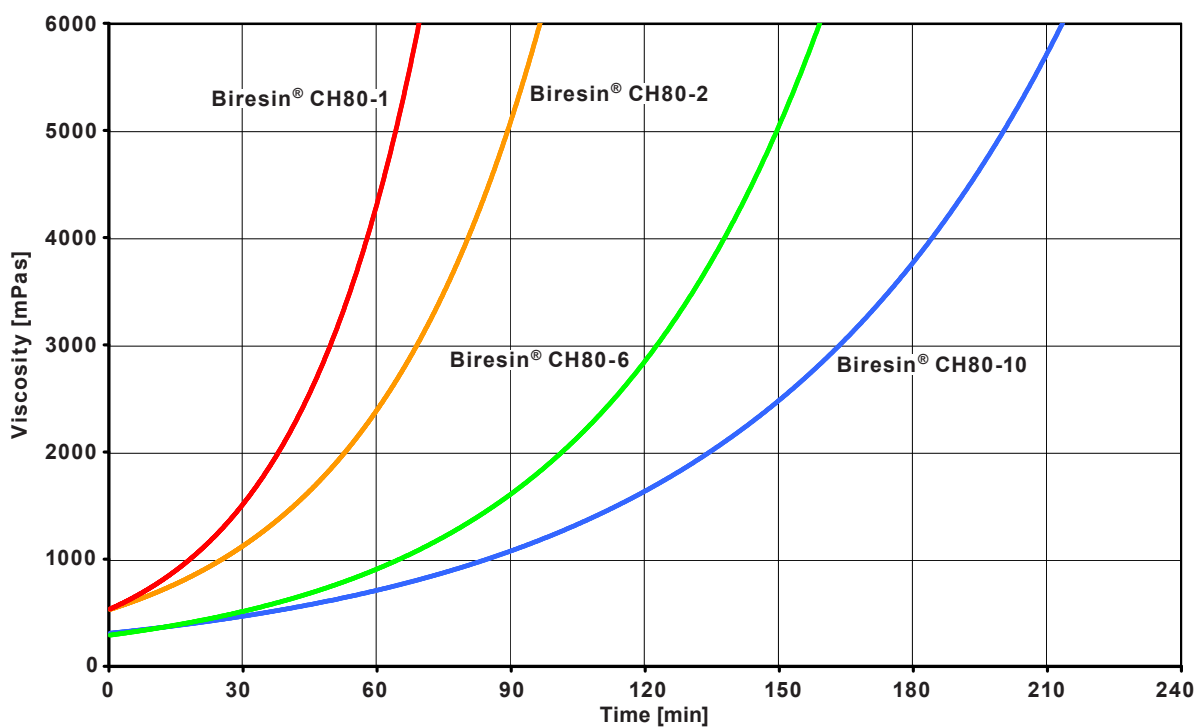
Processing

- The material and processing temperatures should be from 18 to 35°C .
- With the hardeners **Biresin® CH80-1** and **Biresin® CH80-2** demoulding after room temperature curing is possible.
- With the hardeners **Biresin® CH80-6** and **Biresin® CH80-10** curing at 45°C before demoulding is recommended dependent on components.
- 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® CR82-Resin(A)-Hardener(B)-Mixtures, 100 g / RT, insulated,



Development of Viscosity of Biresin® CR82-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 16 h / 55°C (source: accredited testing institute)

Biresin® CR82 resin (A)	with hardener (B) Biresin®		CH80-1	CH80-2	CH80-6	CH80-10
Density	ISO 1183	g/cm³	1,15	1,15	1,14	1,14
Flexural E-Modulus	ISO 178	MPa	3,500	3,700	3,700	3,600
Tensile E-Modulus	ISO 527	MPa	3,200	3,600	3,400	3,500
Flexural strength	ISO 178	MPa	125	128	131	130
Elongation at maximum flexural strength	ISO 527	%	3.9	4.5	4.7	4.6
Tensile strength	ISO 527	MPa	71	77	76	75
Elongation at maximum tensile strength	ISO 527	%	3.8	3.8	3.9	3.9
Water absorption	ISO 175	%	0.25	0.21	0.23	0.23

Part 2: approx. values after 16 h / 55°C + 3 h / 70°C (source: accredited testing institute)

Biresin® CR82 resin (A)	with hardener (B) Biresin®		CH80-1	CH80-2	-	-
Density	ISO 1183	g/cm³	1.15	1.15	-	-
Flexural E-Modulus	ISO 178	MPa	3,300	3,600	-	-
Tensile E-Modulus	ISO 527	MPa	3,100	3,300	-	-
Flexural strength	ISO 178	MPa	120	131	-	-
Elongation at maximum flexural strength	ISO 527	%	5.2	5.1	-	-
Tensile strength	ISO 527	MPa	68	74	-	-
Elongation at maximum tensile strength	ISO 527	%	4.1	4.0	-	-
Water absorption	ISO 175	%	0.27	0.22	-	-

Part 3: approx. values after 16 h / 55°C + 8 h / 70°C (source: accredited testing institute)

Biresin® CR82 resin (A)	with hardener (B) Biresin®		-	-	CH80-6	CH80-10
Flexural E-Modulus	ISO 178	MPa	-	-	3,400	3,300
Tensile E-Modulus	ISO 527	MPa	-	-	3,300	3,200
Flexural strength	ISO 178	MPa	-	-	126	122
Elongation at maximum flexural strength	ISO 527	%	-	-	5.2	5.2
Tensile strength	ISO 527	MPa	-	-	74	73
Elongation at maximum tensile strength	ISO 527	%	-	-	4.1	4.0

Part 4: approx. values after 12 h / 80 °C (source: Sika internal)

Biresin® CR82 resin (A)	with hardener (B) Biresin®		CH80-1	CH80-2	CH80-6	CH80-10
Density	ISO 1183	g/cm³	1.15	1.15	1.14	1.14
Shore hardness	ISO 868	-	D 85	D 85	D 85	D 85
Flexural E-Modulus	ISO 178	MPa	2,800	2,800	2,900	2,800
Tensile E-Modulus	ISO 527	MPa	2,900	2,900	2,900	2,900
Flexural strength	ISO 178	MPa	120	123	127	118
Compressive strength	ISO 604	MPa	107	110	110	110
Tensile strength	ISO 527	MPa	78	78	84	82
Elongation at break	ISO 527	%	6.1	6.5	6.4	6.2
Impact resistance	ISO 179	kJ/m²	68	70	55	56

Thermal data of neat resin specimen at different post curing conditions								
Biresin® CR82 resin (A)		with hardener (B) Biresin®		CH80-1	CH80-2	CH80-6	CH80-10	
Post curing conditions								
Heat distortion temperature	16 h/55°C	ISO 75A	°C	69	70	67	68	
	16 h/55°C + 3 h/70°C	ISO 75A	°C	72	73	-	-	
	16 h/55°C + 8 h/70°C	ISO 75A	°C	-	-	71	71	
Glass transition temperature		ISO 11357		°C	83	90	83	85

Packaging

Individual components	Biresin® CR82 resin (A)	200 kg; 30 kg; 11,1 kg net
	Biresin® CH80-1 hardener (B)	180 kg; 25 kg; 3.0 kg net
	Biresin® CH80-2 hardener (B)	180 kg; 25 kg; 3.0 kg net
	Biresin® CH80-2 hardener blue (B)	20 kg net
	Biresin® CH80-6 hardener (B)	180 kg; 20 kg; 3.0 kg net
	Biresin® CH80-6 hardener blue (B)	20 kg net
	Biresin® CH80-10 hardener (B)	180 kg; 25 kg; 3.0 kg net

Storage

- Minimum shelf life of Biresin® CR82 resin (A) is 24 month and of Biresin® CH80-1 hardener (A), CH80-2 hardener (B), CH80-6 hardener (B) and CH80-10 hardener (B) is 12 month under room conditions (18 - 25°C), when stored in original unopened containers.
- After prolonged storage at low temperature, crystallisation of resin may occur. This is easily removed by warming up 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:

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Statement of Approval



Approval No. **WP 1220036 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.

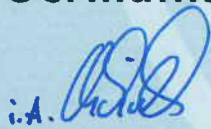
Type	Biresin CR82 - Series
Description	Two Component Epoxy Resin System
Producer	SIKA Deutschland GmbH Stuttgarter Str. 139 72574 Bad Urach Germany
Normative Reference	Rules for Classification and Construction, II - Material and Welding Technology Part 2 Non-Metallic Materials

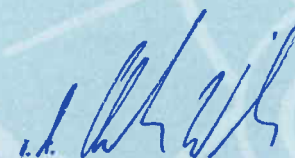
This document consists of this page and a one-page annex which is integral part of the approval.

This Statement of Approval is valid until 2016-01-31.

Hamburg, 2012-06-04

Germanischer Lloyd


i.A. **Guido Michalek**


Christian Wildhagen

Statement of Approval



ANNEX

Approval No. WP 1220036 HH

Date: 2012-06-04

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Reference Documents	Technical specifications deposited at Germanischer Lloyd Head Office.
Assessed Documents	- Technical Data Sheet 12/2006 - Test Report No. B175/7 issued by IMA Dresden - Quality Control Documents
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 CR82 with following hardeners: - CH80-1 - CH80-2 - CH80-6 - CH80-10
Limitations	Any significant changes in design and/or quality of the material will render the approval invalid.
Remarks	This certificate supersedes the approval WP 0820006 HH.
End of Annex	

Germanischer Lloyd