

## Biresin® CR80 Composite resin system

### Areas of Application

- For infusion and injection processing
- Specially for applications when curing temperatures of  $\geq 75^\circ\text{C}$  can not be implemented
- The hardeners **Biresin® CH80-1** und **CH80-2** can be applied for the manufacture of smaller parts in hand lay-up processing too

### 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 : 30
- The reactivity can be adapted by mixing the hardeners
- Because of low mixed viscosity fast infiltration of dry fabrics and nonwovens
- Glass transition temperatures up to  $80^\circ\text{C}$  dependent on curing conditions

### Description

- Basis Two-component-epoxy-system
- Resin (A) **Biresin® CR80**, epoxy resin, translucent, unfilled
- 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

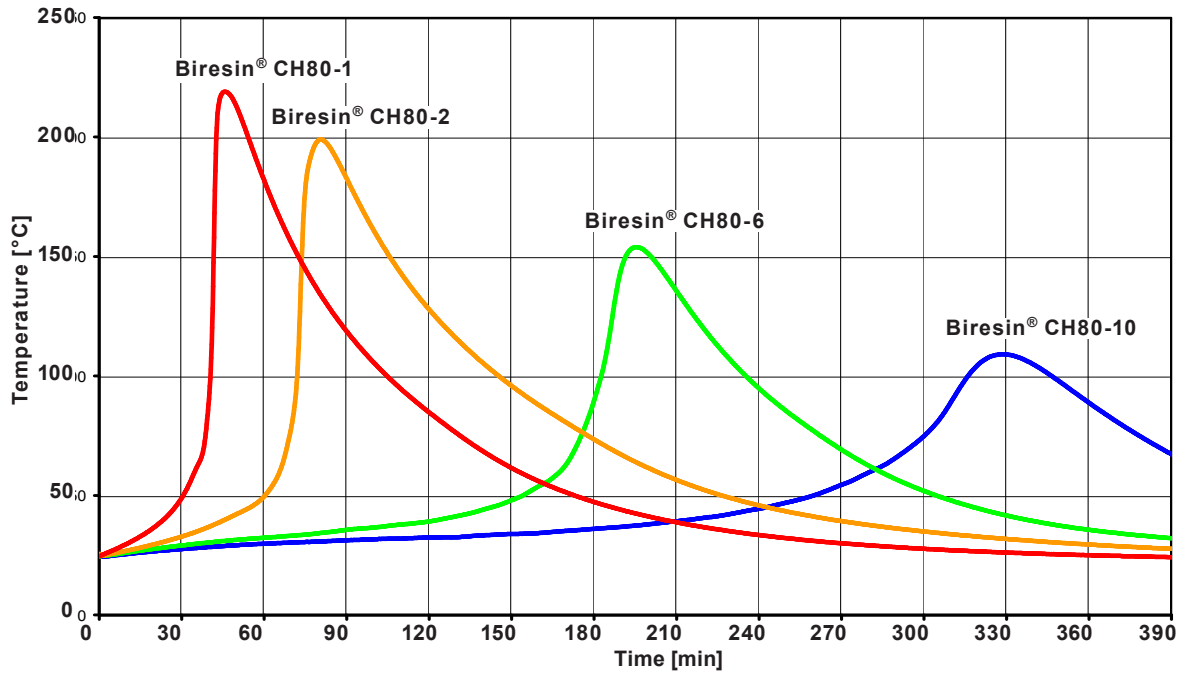
Physical Data	Resin (A)	Hardener (B)				
Individual Components	Biresin® CR80	Biresin® CH80-1	Biresin® CH80-2	Biresin® CH80-6	Biresin® CH80-10	
Viscosity, $25^\circ\text{C}$ mPas	900	50	45	< 10	< 10	
Density, $25^\circ\text{C}$ g/ml	1.13	1.00	0.99	0.95	0.95	
Mixing ratio in parts by weight	100	30				
		Mixture				
Potlife, 100 g / RT, approx. values min		45	80	190	330	
Mixed viscosity, $25^\circ\text{C}$ , approx. values mPas		400	350	230	210	

### Processing

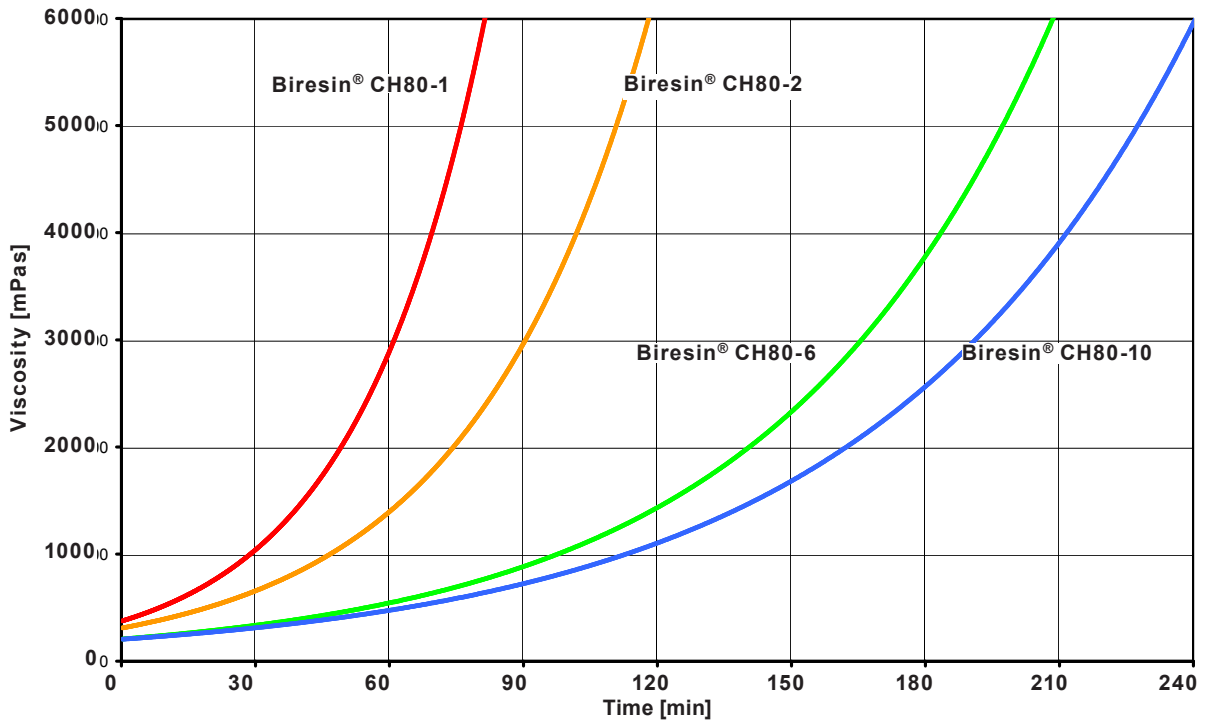
- The material and processing temperatures should be  $18 - 35^\circ\text{C}$ .
- With the hardeners **Biresin® CH80-1** and **Biresin® CH80-2** demoulding after room temperature curing is possible.
- With the hardeners **Biresin® CH80-6** and **Biresin® CH80-10** curing at  $45^\circ\text{C}$  before demoulding is required 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® CR80-Resin(A)-Hardener(B)-Mixtures, 100g / RT, insulated**



**Development of Viscosity of Biresin® CR80-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)**

<b>Biresin® CR80 resin (A)</b>	<b>with hardener (B) Biresin®</b>	<b>CH80-1</b>	<b>CH80-2</b>	<b>CH80-6</b>	<b>CH80-10</b>
Density	ISO 1183 g/cm <sup>3</sup>	1.17	1.17	1.16	1.16
Flexural E-Modulus	ISO 178 MPa	3,400	3,800	3,600	3,600
Tensile E-Modulus	ISO 527 MPa	3,200	3,400	3,400	3,300
Flexural strength	ISO 178 MPa	120	132	127	122
Elongation at maximum flexural strength	ISO 178 %	4.9	4.7	4.6	4.6
Tensile strength	ISO 527 MPa	69	76	72	69
Elongation at maximum tensile strength	ISO 527 %	3.9	3.8	3.6	3.6
Water absorption	ISO 175 %	0.37	0.25	0.30	0.31

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

<b>Biresin® CR80 resin (A)</b>	<b>with hardener (B) Biresin®</b>	<b>CH80-1</b>	<b>CH80-2</b>	<b>-</b>	<b>-</b>
Density	ISO 1183 g/cm <sup>3</sup>	1.17	1.17	-	-
Flexural E-Modulus	ISO 178 MPa	3,300	3,600	-	-
Tensile E-Modulus	ISO 527 MPa	3,000	3,300	-	-
Flexural strength	ISO 178 MPa	116	129	-	-
Elongation at maximum flexural strength	ISO 178 %	5.2	5.1	-	-
Tensile strength	ISO 527 MPa	65	73	-	-
Elongation at maximum tensile strength	ISO 527 %	4.3	4.0	-	-
Water absorption	ISO 175 %	0,37	0,26	-	-

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

<b>Biresin® CR80 resin (A)</b>	<b>with hardener (B) Biresin®</b>	<b>-</b>	<b>-</b>	<b>CH80-6</b>	<b>CH80-10</b>
Flexural E-Modulus	ISO 178 MPa	-	-	3,400	3,400
Tensile E-Modulus	ISO 527 MPa	-	-	3,300	3,200
Flexural strength	ISO 178 MPa	-	-	126	121
Elongation at maximum flexural strength	ISO 178 %	-	-	5.3	5.3
Tensile strength	ISO 527 MPa	-	-	73	70
Elongation at maximum tensile strength	ISO 527 %	-	-	4.2	4.2

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

<b>Biresin® CR80 resin (A)</b>	<b>with hardener (B) Biresin®</b>	<b>CH80-1</b>	<b>CH80-2</b>	<b>CH80-6</b>	<b>CH80-10</b>
Density	ISO 1183 g/cm <sup>3</sup>	1.18	1.18	1.17	1.17
Shore hardness	ISO 868 -	D 86	D 86	D 86	D 86
Flexural E-Modulus	ISO 178 MPa	2,700	2,800	2,900	2,900
Tensile E-Modulus	ISO 527 MPa	2,900	2,900	3,000	3,000
Flexural strength	ISO 178 MPa	117	120	126	124
Compressive strength	ISO 604 MPa	101	107	110	106
Tensile strength	ISO 527 MPa	78	81	83	80
Elongation at break	ISO 527 %	7.1	6.1	6.3	6.5
Impact resistance	ISO 179 kJ/m <sup>2</sup>	84	75	68	76



### Thermal data of neat resin specimen at different post curing conditions

Biresin® CR80 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	69	67	66
	16 h/55°C + 3 h/70°C	ISO 75A °C	73	74	-	-
	16 h/55°C + 8 h/70°C	ISO 75A °C	-	-	72	72
Glass transition temperature		ISO 11357 °C	88	92	85	85

### Packaging

Individual components	<b>Biresin® CR80 resin (A)</b>	200 kg; 30 kg; 10 kg net
	<b>Biresin® CH80-1 hardener (B)</b>	180 kg; 25 kg; 3.0 kg net
	<b>Biresin® CH80-2 hardener (B)</b>	180 kg; 25 kg; 3.0 kg net
	<b>Biresin® CH80-2 hardener blue (B)</b>	20 kg net
	<b>Biresin® CH80-6 hardener (B)</b>	180 kg; 20 kg; 3.0 kg net
	<b>Biresin® CH80-6 hardener blue (B)</b>	20 kg net
	<b>Biresin® CH80-10 hardener (B)</b>	180 kg; 25 kg; 3.0 kg net

### Storage

- Minimum shelf life of Biresin® CR80 resin (A) is 24 month and of Biresin® CH80-1, CH80-2, CH80-6 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.



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# Statement of Approval



Approval No. **WP 1220037 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	<b>Biresin CR80 - Series</b>
Description	<b>Two Component Epoxy Resin System</b>
Producer	<b>SIKA Deutschland GmbH Stuttgarter Str. 139 72574 Bad Urach Germany</b>
Normative Reference	<b>Rules for Classification and Construction, II - Material and Welding Technology Part 2 Non-Metallic Materials</b>

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.d.  
Guido Michalek

  
i.d.  
Christian Wildhagen

# Statement of Approval



## ANNEX

Approval No. WP 1220037 HH

Date: 2012-06-04

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Reference Documents Technical specifications deposited at Germanischer Lloyd Head Office.

Assessed Documents - Technical Data Sheet  
- 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 CR80 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 0820005 HH.

End of Annex

Germanischer Lloyd 