

Biresin® CR82 Composite resin system

Product Description

Biresin® CR82 is an epoxy resin system designed for the hand lay-up, vacuum bagging and filament-winding processes, especially for applications where curing temperatures of $\geq 75^\circ\text{C}$ cannot be implemented.

Application Areas

Biresin® CR82 is especially suitable for the hand lay-up process and can be used in many areas including marine and general industrial composite.

Features / Advantages

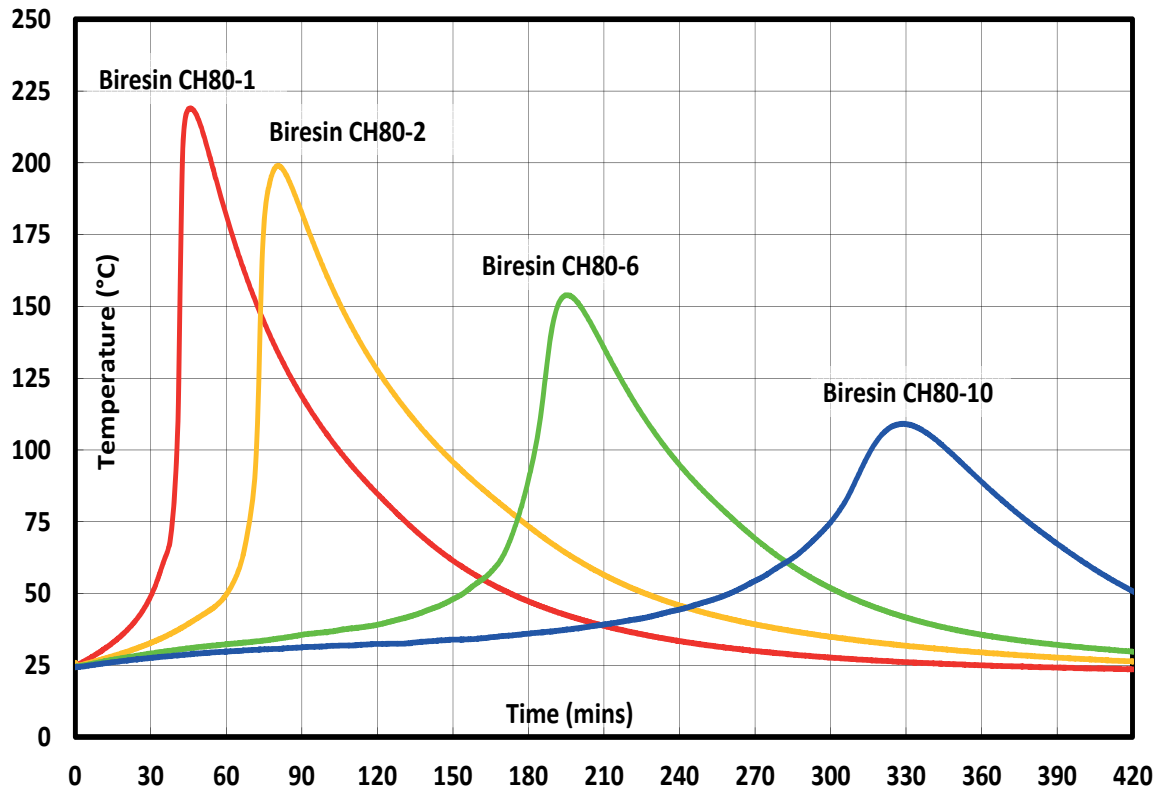
- 4 hardeners (B) with just one mixing ratio by weight, give a wide range of processing times
- The reactivity can be adapted by mixing the hardeners
- Biresin® CR82 systems have optimized viscosity and thus good impregnation and non-draining properties.
- All systems are Germanischer Lloyd approved. Certificate No. WP 1620020 HH (attached)
- Glass transition temperatures up to 80°C can be achieved dependent on curing conditions
- Hardeners (B) Biresin® CH80-2 and CH80-6 are also available in blue

Physical Data		Resin (A)		Hardener (B)		
Individual Components		Biresin® CR82	Biresin® CH80-1	Biresin® CH80-2	Biresin® CH80-6	Biresin® CH80-10
Mixing Ratio, parts by	Weight	100	27			
Mixing Ratio, parts by	Volume		32	31	32	32
Colour		translucent	colourless to yellow	colourless to yellow or blue		colourless to yellow
Viscosity, 25°C	mPa.s	~1,600	~50	~45	< 10	< 10
Density, 25°C	g/ml	1.11	0.95	0.99	0.95	0.95
			Mixture			
Potlife, 100 g / RT, approx. values	min		50	80	220	330
Mixed viscosity, 25°C , approx. values	mPa.s		850	600	400	390

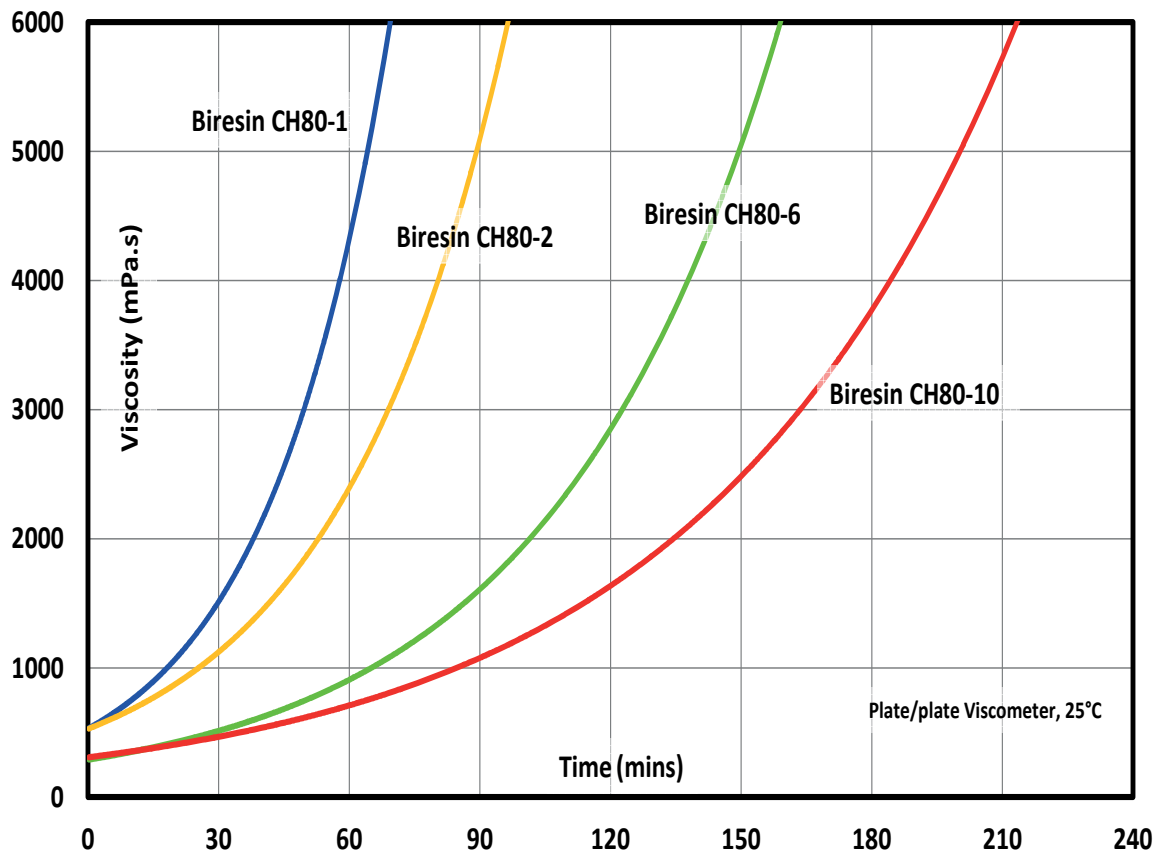
Processing

- The material and processing temperatures should be from 18 to 35°C .
- The mixing ratio must be followed accurately to obtain best results. Deviating from the correct mix ratio will lead to lower performance.
- The final mechanical and thermal values are dependent on the applied postcuring cycles.
- With the hardeners Biresin® CH80-1 and Biresin® CH80-2 demoulding after room temperature curing is possible.
- With the hardeners (B) 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 information is available in "Processing Instructions for Composite Resins".

Development of Exotherm of Biresin® CR82-Resin(A)-Hardener(B)-Mixtures, 100 g / RT, insulated,



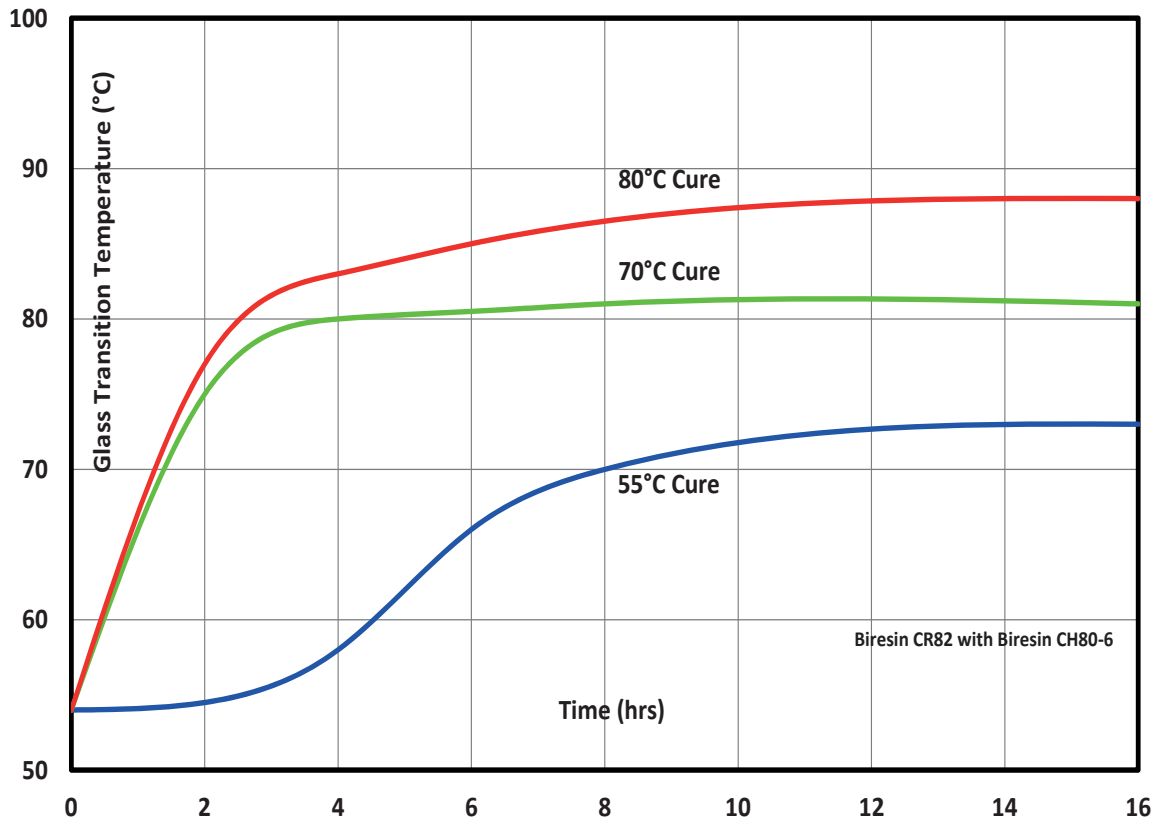
Development of Viscosity of Biresin® CR82-Resin(A)-Hardener(B)-Mixtures, 25°C



Typical Mechanical Properties of Fully Cured Neat Resin (source: Sika internal)						
Biresin® CR82 resin (A)	with hardener (B) Biresin®		CH80-1	CH80-2	CH80-6	CH80-10
Tensile strength	ISO 527	MPa	94	90	84	82
Tensile E-Modulus	ISO 527	MPa	3,000	3,000	2,900	2,900
Elongation at break	ISO 527	%	4.9	5.6	6.4	6.2
Flexural strength	ISO 178	MPa	140	130	127	118
Flexural E-Modulus	ISO 178	MPa	3,300	3,200	2,900	2,800
Compressive strength	ISO 604	MPa	120	105	110	110
Density	ISO 1183	g/cm ³	1.14	1.14	1.14	1.14
Shore hardness	ISO 868	-	D 85	D 85	D 85	D 85
Impact resistance	ISO 179	kJ/m ²	38	66	55	56

Typical Thermal Properties of Fully Cured Neat Resin						
Biresin® CR82 resin (A)	with hardener (B) Biresin®		CH80-1	CH80-2	CH80-6	CH80-10
Heat distortion temperature	ISO 75A	°C	93	83	71	71
Glass transition temperature	ISO 11357	°C	97	90	83	85

Glass Transition Temperature vs. Cure Cycle



When curing a composite part, the whole of the part (including the very middle of the laminate) needs to see the cure temperature.

Packaging (net weight, kg)

Biresin® CR82 resin (A)	1,000	200	30	11.1
Biresin® CH80-1 hardener (B)		180	25	3
Biresin® CH80-2 hardener (B)		180	25	3
Biresin® CH80-2 hardener, blue (B)			20	
Biresin® CH80-6 hardener (B)		180	20	3
Biresin® CH80-6 hardener, blue (B)			20	
Biresin® CH80-10 hardener (B)		180	25	3

Storage

- Minimum shelf life of Biresin® CR82 resin (A) is 24 month and of Biresin® CH80-1, CH80-2, CH80-6 and CH80-10 hardener (B) is 12 months under room conditions (18 - 25°C), when stored in original unopened containers.
- After prolonged storage at low temperature, crystallisation of resin (A) may occur. This is easily removed by warming up for a sufficient time to at least 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 safety related 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 re-recommendations in accordance to our most recent product data sheet. 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 General Terms and Conditions of Sales, Delivery and Payment. The most recent product data sheet applies. General Terms and product data sheets can be requested from us or are available to download at www.sika.de. Please check availability of local product data sheet at your local website. In cases of doubt the German text is valid.

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Statement of Approval

DNV·GL

Approval No. **WP 1629020 HH**

The material described below complies with the applicable requirements as given in the Rules and Regulations of GL. 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	GL 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 2020-06-08.

Hamburg, 2016-06-09

DNV GL



Guido Michalek



Joachim Rohrborn

Statement of Approval

DNV-GL

ANNEX

Date: 2016-06-09

Approval No. WP 1620020 HH

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Reference Documents Technical specifications deposited at DNV GL SE, Hamburg.

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 GL and are compatible to the resin.

Approved Variants Epoxy Resin Biresin CR32 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 1220036 HH.

End of Annex

DNV GL