Product Data Sheet
Version 09 / 2020

Biresin® CR80
Composite resin system

Product Description

Biresin® CR80 is a low viscosity epoxy resin system suitable for the production of high performance fibre reinforced composites parts and moulds with thermal properties up to 80°C

Application Areas

Biresin® CR80 is especially suited to the infusion and injection processes due to its low viscosity range. It can be used in the marine, wind turbine and general industrial composite areas

Features / Advantages

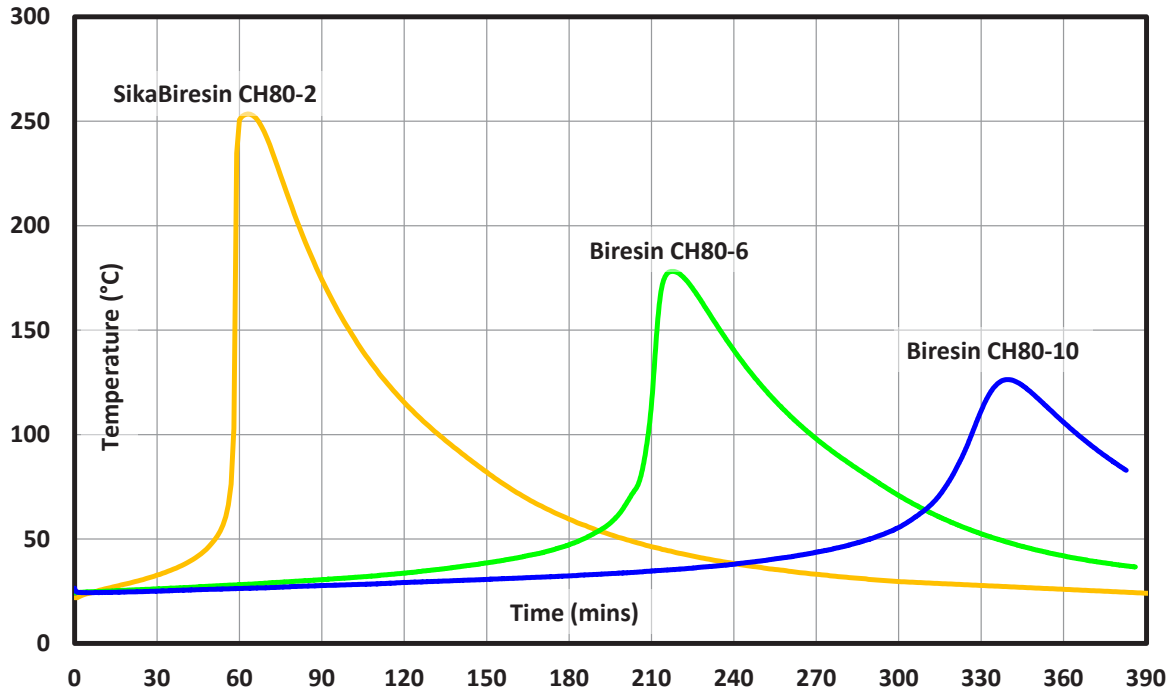
- 3 hardeners (B) give a wide range of processing times
- Uniform mixing ratio of 100:30 by weight gives even more processing flexibility
- Fast infusion and good wet-out of fabrics and non-wovens due to low viscosity and good wetting characteristics
- Hardeners Biresin® CH80-6 and Biresin® CH80-10 are DNV GL approved. Certificate No. TAK00001YE
- Particularly good for applications where curing temperatures cannot be >75°C
- Hardener (B) SikaBiresin® CH80-2 can also be used for the manufacture of smaller parts in hand lay-up processing
- With hardener (B) SikaBiresin® CH80-2 demoulding after room temperature cure is possible.

Physical Data		Resin (A)			
Individual Components		**Biresin® CR80**	**SikaBiresin® CH80-2**	**Biresin® CH80-6**	**Biresin® CH80-10**
Mixing Ratio, parts by	**Weight**	100	30		
Mixing Ratio, parts by	**Volume**	100	34	36	36
Colour		translucent	colourless to brownish	colourless to yellow	
Viscosity, 25°C	mPa.s	~900	~80	< 10	< 10
Density, 25°C	g/ml	1.13	1.01	0.95	0.95
Potlife, 100 g / RT, approx. values		min	60	190	330
Mixed viscosity, 25°C, approx. values		mPa.s	500	230	210

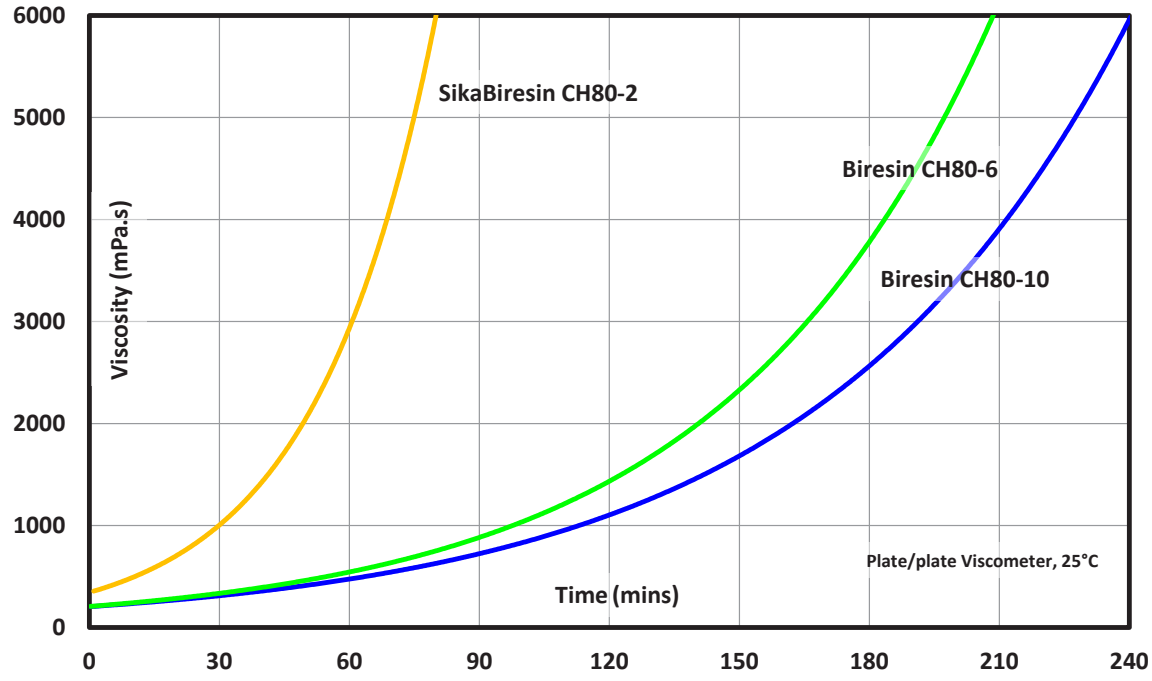
Processing

- 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.
- 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® CR80-Resin(A)-Hardener(B)-Mixtures, 100g / RT, insulated



Development of Viscosity of Biresin® CR80-Resin(A)-Hardener(B)-Mixtures, 25°C



Typical Mechanical Properties of Fully Cured Neat Resin					
Biresin® CR80 resin (A)	with hardener (B)		**SikaBiresin® CH80-2**	**Biresin® CH80-6**	**Biresin® CH80-10**
Tensile strength	ISO 527	MPa	83	83	80
Tensile E-Modulus	ISO 527	MPa	2,900	3,000	3,000
Tensile elongation (at break)	ISO 527	%	5.8	6.3	6.5
Flexural strength	ISO 178	MPa	122	126	124
Flexural E-Modulus	ISO 178	MPa	2,950	2,900	2,900
Compressive strength	ISO 604	MPa	99	110	106
Density	ISO 1183	g/cm³	1.17	1.17	1.17
Shore hardness	ISO 868	-	D 84	D 86	D 86
Impact resistance	ISO 179	kJ/m²	29	68	76

Typical Thermal Properties of Fully Cured Neat Resin					
Biresin® CR80 resin (A)	with hardener (B)		**SikaBiresin® CH80-2**	**Biresin® CH80-6**	**Biresin® CH80-10**
Heat distortion temperature	ISO 75A	°C	89	72	72
Glass transition temperature	ISO 11357	°C	93	85	85

Postcuring

The suitable cure cycle and the attainable mechanical and thermal values depend on various factors, such as laminate thickness, fibre volume, reactivity of the resin system etc.
An appropriate cure cycle could look as follows:

- Heat-up rate of ca. 0.2°C/Minute until approx. 10°C below the required glass transition temperature (Tg)
- Followed by a dwell at that temperature of between 2 and 12 hours.
- Part(s) should then be cooled at ~0.5°C per minute

The specific postcure should be adapted to the required technical and economic requirements.

- With hardener (B) SikaBiresin® CH80-2 demoulding after room temperature cure is possible.
- With hardeners (B) Biresin® CH80-6 and CH80-10 curing at 45°C before demoulding is required dependent on components.

To measure the mechanical performance of the resin system a Sika Advanced Resins standard cycle is used to ensure that the full Tg potential of the system in question is reached.

Packaging (net weight, kg)				
Biresin® CR80 resin (A)	1000	200	30	10
SikaBiresin® CH80-2 hardener (B)		180		3
Biresin® CH80-6 hardener (B)		180	20	3
Biresin® CH80-10 hardener (B)		180	25	3

Storage

- Minimum shelf life of Biresin® CR80 resin (A) is 24 month and of hardeners (B) SikaBiresin® CH80-2, Biresin® CH80-6 and Biresin® CH80-10 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 at a minimum 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.

Source of Data

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-commendations 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.

Further information available at:

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Email: tooling@de.sika.com
Internet: www.sika.com

DNV·GL

Certificate No:
TAK00001YE

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Epoxy Systems

with type designation(s)
Biresin CR80 - Series

Issued to
Sika Deutschland GmbH
Bad Urach, Baden-Württemberg, Germany

is found to comply with
DNV GL class programme DNVGL-CP-0089 – Type approval – Epoxy resin systems
DNV GL rules for classification – High speed and light craft
DNV GL rules for classification – Yachts

Application :

Laminating resin for construction of laminates made of fibre reinforced plastics

Issued at **Hamburg** on **2020-10-01**
This Certificate is valid until **2025-09-30**.
DNV GL local station: **Augsburg**

Approval Engineer: **Joachim Rehbein**

for **DNV GL**

Thorsten Lohmann
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id: **262.1-033893-1**
Certificate No: **TAK00001YE**

Product description

Epoxy resin Biresin CR80 with following hardener:
- Biresin CH80-1
- Biresin CH80-2
- Biresin CH80-6
- Biresin CH80-10

Material Properties

The following properties (mean value) have been verified by initial type testing:

Property	Test Method		CR80/ CH80-1	CR80/ CH80-2	CR80/ CH80-6	CR80/ CH80-10
Tensile Strength[1]	ISO 527-2	MPa	88	80	79	78
Tensile Modulus[1]	ISO 527-2	MPa	3428	3285	3346	3313
Fracture Elongation[1]	ISO 527-2	%	4.8	6.2	6.9	6.7
HDT (A)	ISO 75-2	°C	68.6	69.1	66.7	66.1
DSC[2]	ISO 11357	°C	80.77	70.16	66.71	66.51
Water Absorption[3]	ISO 175	mg	44	29	35	36
Curing procedure used for type testing: 16h at 55ºC						

Notes:
[1]: Material test by Sika Deutschland GmbH, dated 2020-08-14
[2]: Onset temperature, second run
[3]: Water absorption after 168h

Application/Limitation

The resin complies with the applicable requirements of DNV GL and is compatible to the fibres, adhesives and core materials. Any significant changes in design and / or quality of the material will render the approval invalid.

Type Approval documentation

Marking of product

Product shall be marked with *manufacturer's name*, *place of production, type designation* and *batch number*.

The marking is to be carried out in such a way that it is visible, legible and indelible. The marking of product is to enable traceability to the DNV GL Type Approval Certificate.

Assessed production sites

SIKA Deutschland GmbH
Stuttgarter Str. 117
72574 Bad Urach
Germany

Periodical assessment

Periodical assessments for type approvals with a validity period of five years will be required after 2 years and after 3.5 years.
If an approval of manufacturer certificate which is still valid for at least one year is available, an exemption from the obligation concerning retention and renewal surveys listed in the class programme will apply.

END OF CERTIFICATE