Tooling & Composites

Product Data Sheet
Version 06 / 2016

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

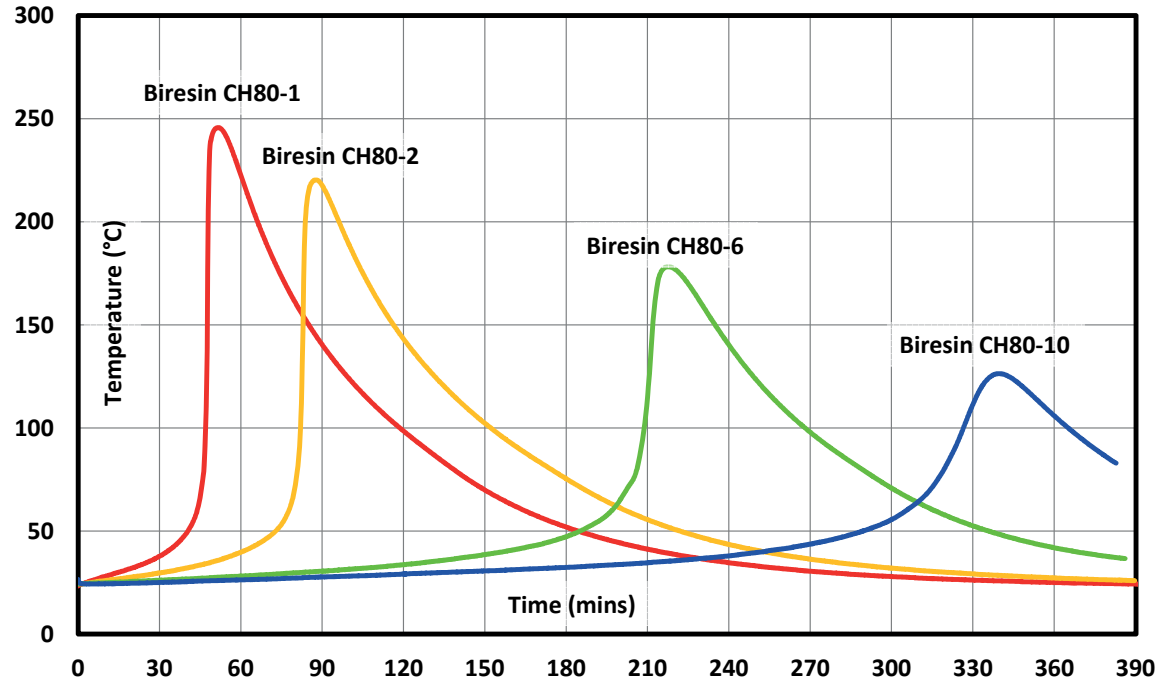
- 4 hardeners (B) give a wide range of processing times
- Uniform mixing ratio of 100:30 by weight gives even more processing flexibility
- Fast infusion and good wet-out of fabrics and non-wovens due to low viscosity and good wetting characteristics
- All systems are Germanischer Lloyd approved. Certificate No. WP 1620019 HH (attached)
- Particularly good for applications where curing temperatures cannot be >75°C
- Hardeners (B) Biresin® CH80-1 and CH80-2 can also be used for the manufacture of smaller parts in hand lay-up processing
- Hardeners (B) Biresin® CH 80-2 and CH 80-6 are also available in blue

Physical Data		Resin (A)	Hardener (B)			
Individual Components		**Biresin® CR80**	**Biresin® CH80-1**	**Biresin® CH80-2**	**Biresin® CH80-6**	**Biresin® CH80-10**
Mixing Ratio, parts by	**Weight**	100	30			
Mixing Ratio, parts by	**Volume**	100	34	34	36	36
Colour		translucent	colourless to yellow	colourless to yellow or blue		colourless to yellow
Viscosity, 25°C	mPa.s	~900	~50	~45	< 10	< 10
Density, 25°C	g/ml	1.13	1.00	0.99	0.95	0.95
			Mixture			
Potlife, 100 g / RT, approx. values	min		45	80	190	330
Mixed viscosity, 25°C, approx. values	mPa.s		400	350	230	210

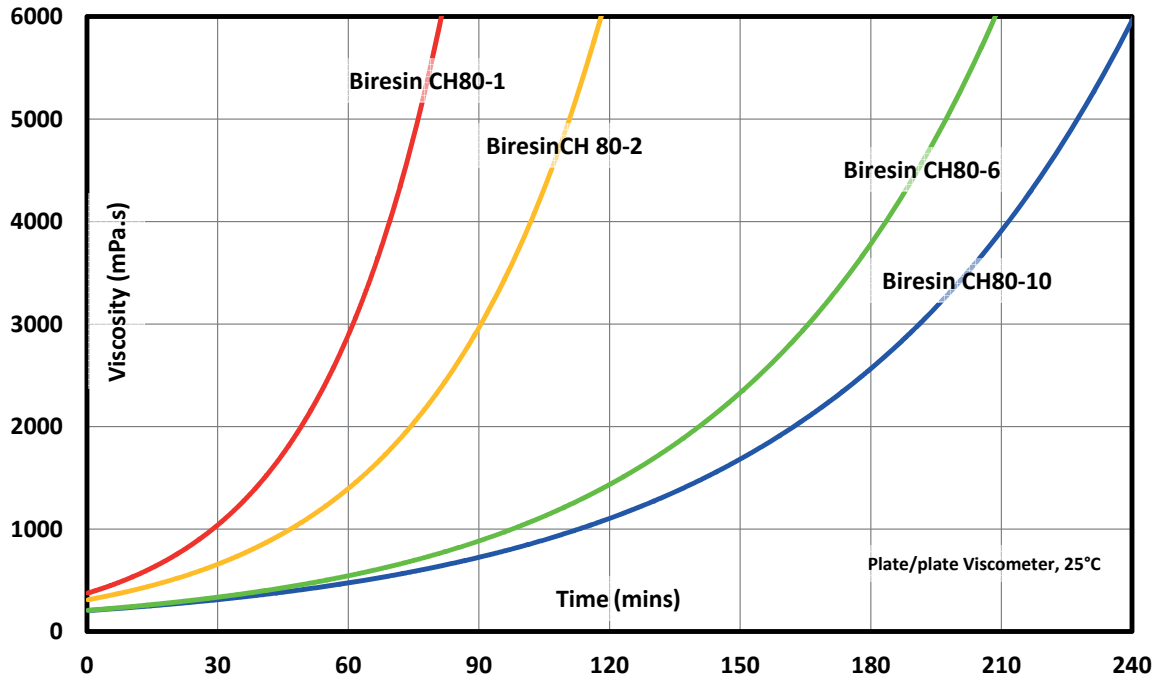
Processing

- The material and processing temperatures should be in the range 18 - 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 (B) 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 required dependent on components.
- It is recommended to clean brushes or tools immediately after use with Sika Reinigungsmittel 5. 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

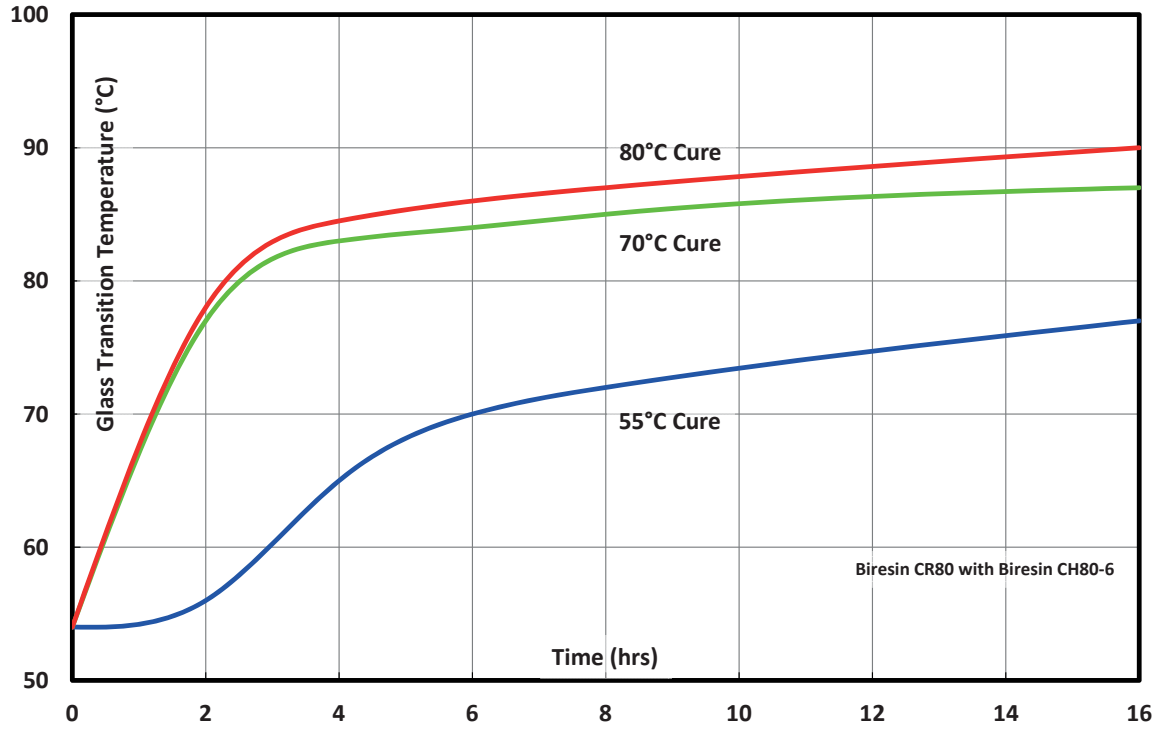


BUILDING TRUST

Typical Mechanical Properties of Fully Cured Neat Resin						
Biresin® CR80 resin (A)	with hardener (B) **Biresin®**		**CH80-1**	**CH80-2**	**CH80-6**	**CH80-10**
Tensile strength	ISO 527	MPa	95	88	83	80
Tensile E-Modulus	ISO 527	MPa	3,000	2,900	3,000	3,000
Tensile elongation (at break)	ISO 527	%	6.0	6.0	6.3	6.5
Flexural strength	ISO 178	MPa	130	125	126	124
Flexural E-Modulus	ISO 178	MPa	3,300	3,100	2,900	2,900
Compressive strength	ISO 604	MPa	115	104	110	106
Density	ISO 1183	g/cm³	1.18	1.16	1.17	1.17
Shore hardness	ISO 868	-	D 86	D 86	D 86	D 86
Impact resistance	ISO 179	kJ/m²	50	67	68	76

Typical Thermal Properties of Fully Cured Neat Resin						
Biresin® CR80 resin (A)	with hardener (B) **Biresin®**		**CH80-1**	**CH80-2**	**CH80-6**	**CH80-10**
Heat distortion temperature	ISO 75A	°C	95	89	72	72
Glass transition temperature	ISO 11357	°C	100	93	85	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® CR80 resin (A)	1000	200	30	10
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® CR80 resin (A) is 24 month and of hardeners (B) Biresin® CH80-1, CH80-2, CH80-6 and 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

Further information available at:

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Statement of Approval

DNV·GL

Approval No. **WP 1620019 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 CR80 - 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

i.A.
Guido Michalek

i.A.
Joachim Rehbein

Statement of Approval

DNV·GL

ANNEX

Date: 2016-06-09

Approval No. WP 1620019 HH

Reference Documents	Technical specifications deposited at DNV GL SE, Hamburg.
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 GL 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 1220037 HH.

End of Annex

DNV GL