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 Germanischer Lloyd approved. Certificate No. WP 1620019 HH (attached)
- 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	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”.

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:

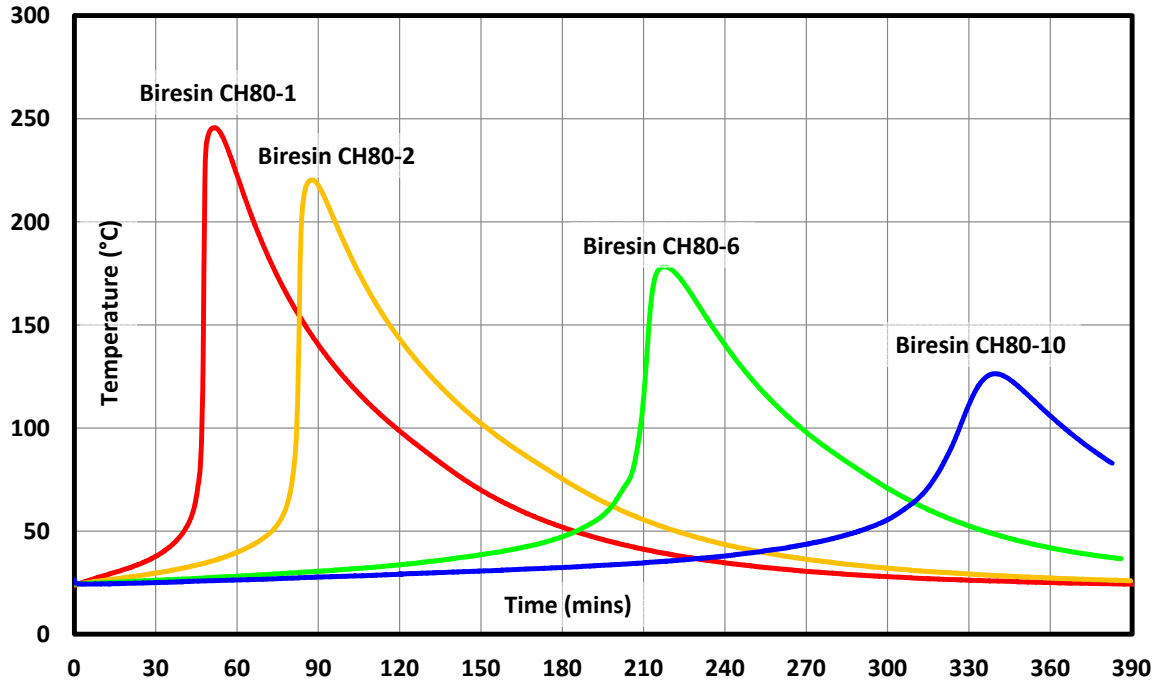
- Heat-up rate of ca. 0.2°C/Minute until approx. 10°C below the required glass transition temperature (Tg)
- Followed by a dwell at that temperature of between 2 and 12 hours.
- Part(s) should then be cooled at ~0.5°C per minute

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

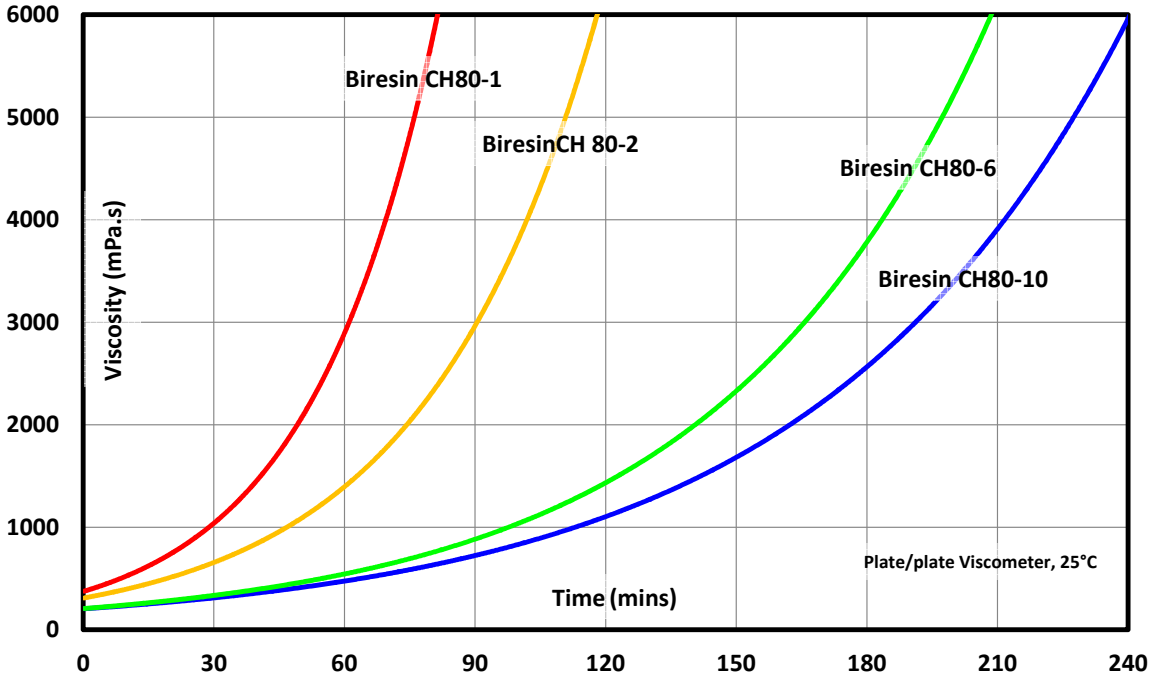
- With hardener (B) SikaBiresin® CH80-2 demoulding after room temperature cure is possible.
- With hardeners (B) Biresin® CH80-6 and CH80-10 curing at 45°C before demoulding is required dependent on components.

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

Development of Exotherm of Biresin® CR80-Resin(A)-Hardener(B)-Mixtures, 100g / RT, insulated



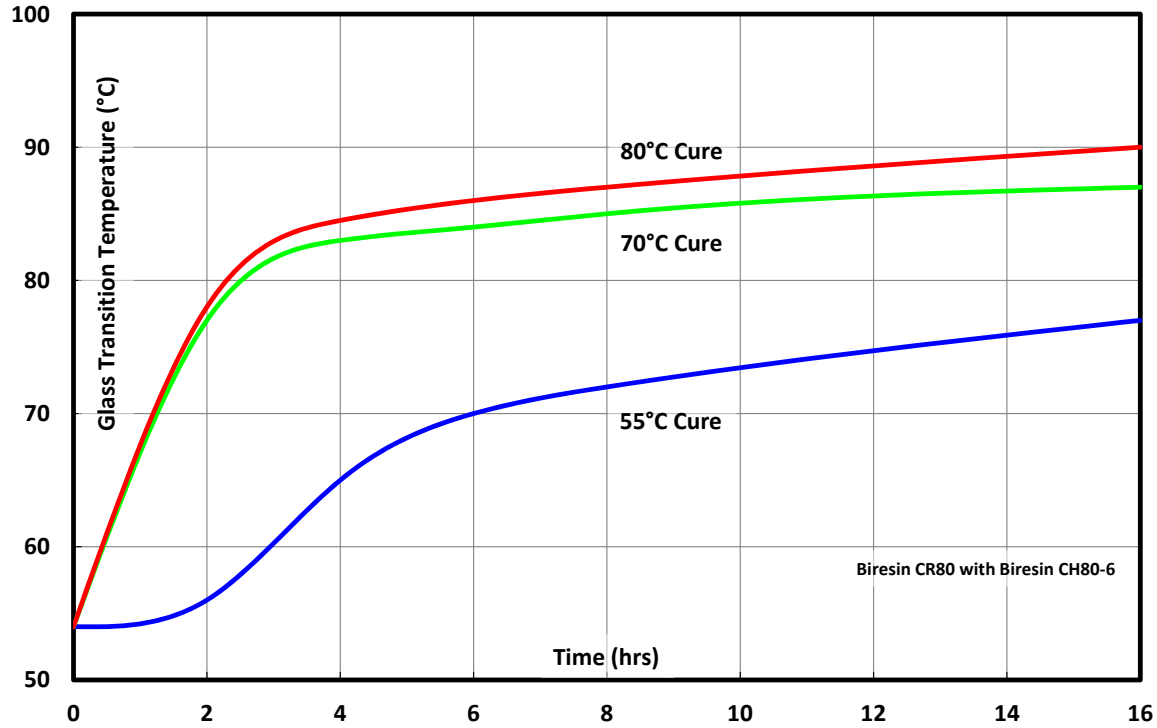
Development of Viscosity of Biresin® CR80-Resin(A)-Hardener(B)-Mixtures, 25°C



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

Glass Transition Temperature vs. Cure Cycle



The test specimens were produced from 3 mm thick pure resin. Before the above postcuring, the samples were cured for 7 days at 23°C. 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® CH80-2 hardener (B)		180	25	3
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

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