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 ≥ 75 °C cannot be implemented.

Application Areas

Biresin® CR82 is especially suitable for the hand lay-up process and can be used in many areas incuding 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.
- 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:

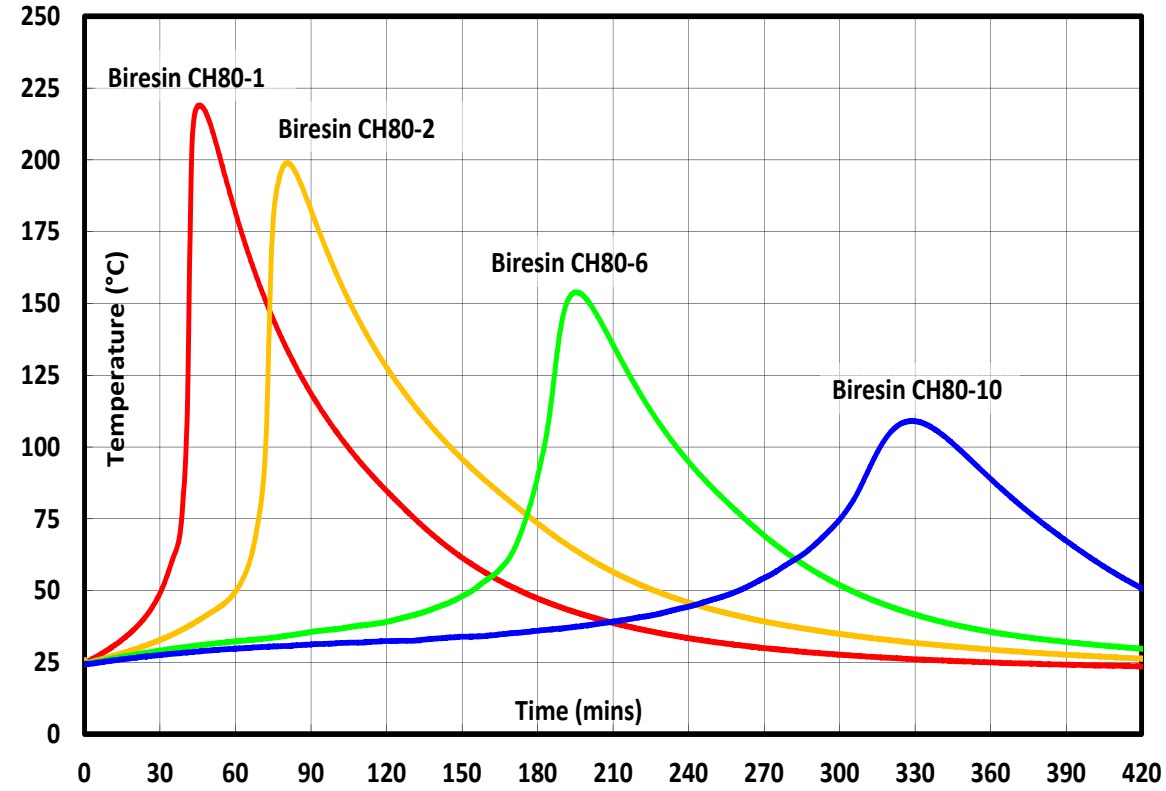
- Heat-up rate of ca. 0.2°C/Minute until approx. 10°C below the required glass transition temperature (Tg)
- Followed by a dwell at that temperature of between 2 and 12 hours.
- Part(s) should then be cooled at ~0.5°C per minute

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

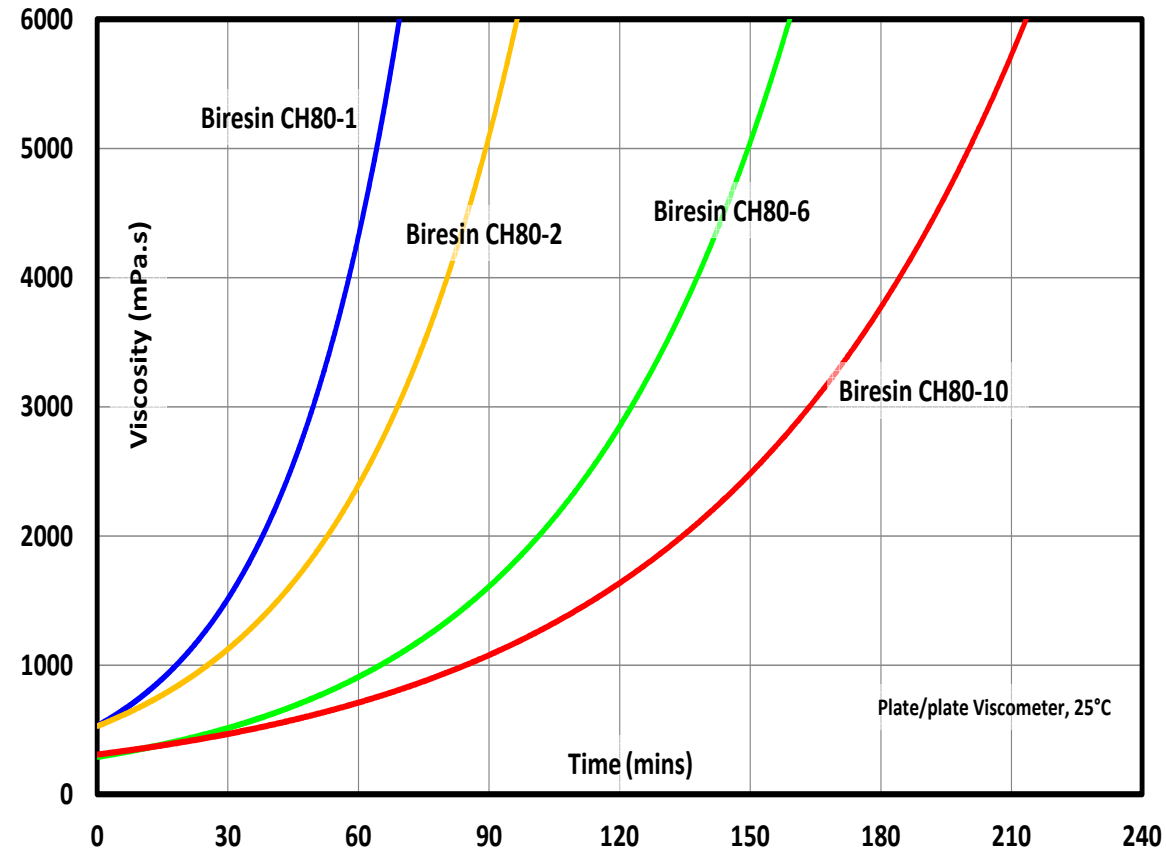
- With hardeners (B) Biresin® CH80-1 and CH80-2 demoulding after room temperature cure is possible.
- With hardeners (B) Biresin® CH80-6 and CH80-10 curing at 45°C before demoulding is required dependent on components.

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



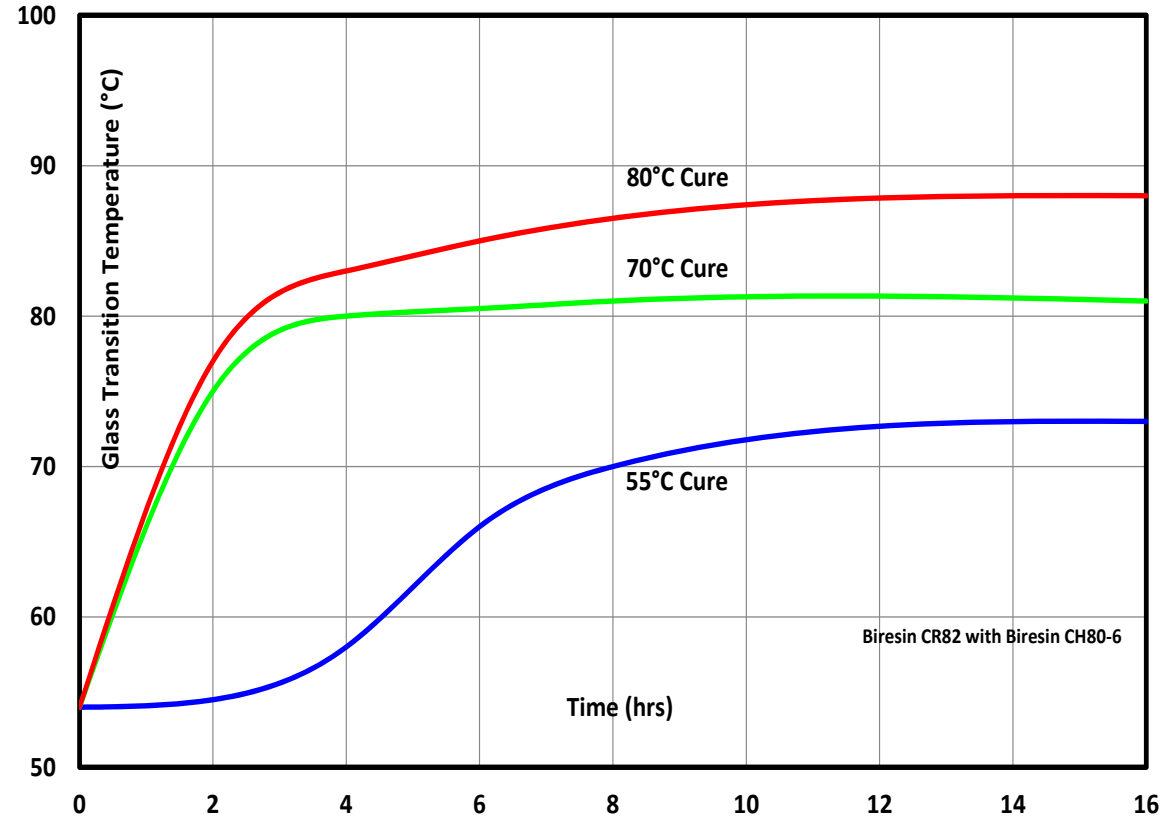
Development of Viscosity of Biresin® CR82-Resin(A)-Hardener(B)-Mixtures, 25°C



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/cm³	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/m²	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



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® 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

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