

## Biresin® CR170 with Biresin® CH170-3 Hardener Composite resin system

### Product Description

Biresin® CR170 resin cured with Biresin® CH170-3 hardener (B) is an epoxy resin system suitable for the production of high performance fibre reinforced components by the RTM process, especially where high thermal performance, up to 180°C, is required.

### Areas of Application

Biresin® CR170/CH170-3 is especially suited to injection processes due to its viscosity range and reactivity. The resin should be processed at elevated temperatures (60°C) and used in areas where high thermal performance is required, for example in the production of automotive parts.

### Features / Advantages

- Low mixed viscosity at processing temperature (60°C) leads to a fast and effective wetting of dry fabrics and nonwovens
- Glass transition temperatures up to 170°C are possible depending on curing conditions

Physical Data		Resin (A)	Hardener (B)
<b>Individual Components</b>		<b>Biresin® CR170</b>	<b>Biresin® CH170-3</b>
Mixing Ratio, parts by	<b>Weight</b>	100	16
Mixing Ratio, parts by	<b>Volume</b>	100	19
Colour		translucent	colourless to brownish
Viscosity, 25°C	mPa.s	~13,000	~30
Density, 25°C	g/ml	1.14	0.96
		Mixture	
Potlife, 100 g / RT, approx. values	min	90	
Mixed viscosity, 25°C,	mPa.s	1,250	
Mixed viscosity, 50°C,	mPa.s	340	
Mixed viscosity, 70°C,	mPa.s	120	
Mixed viscosity, 90°C,	mPa.s	70	

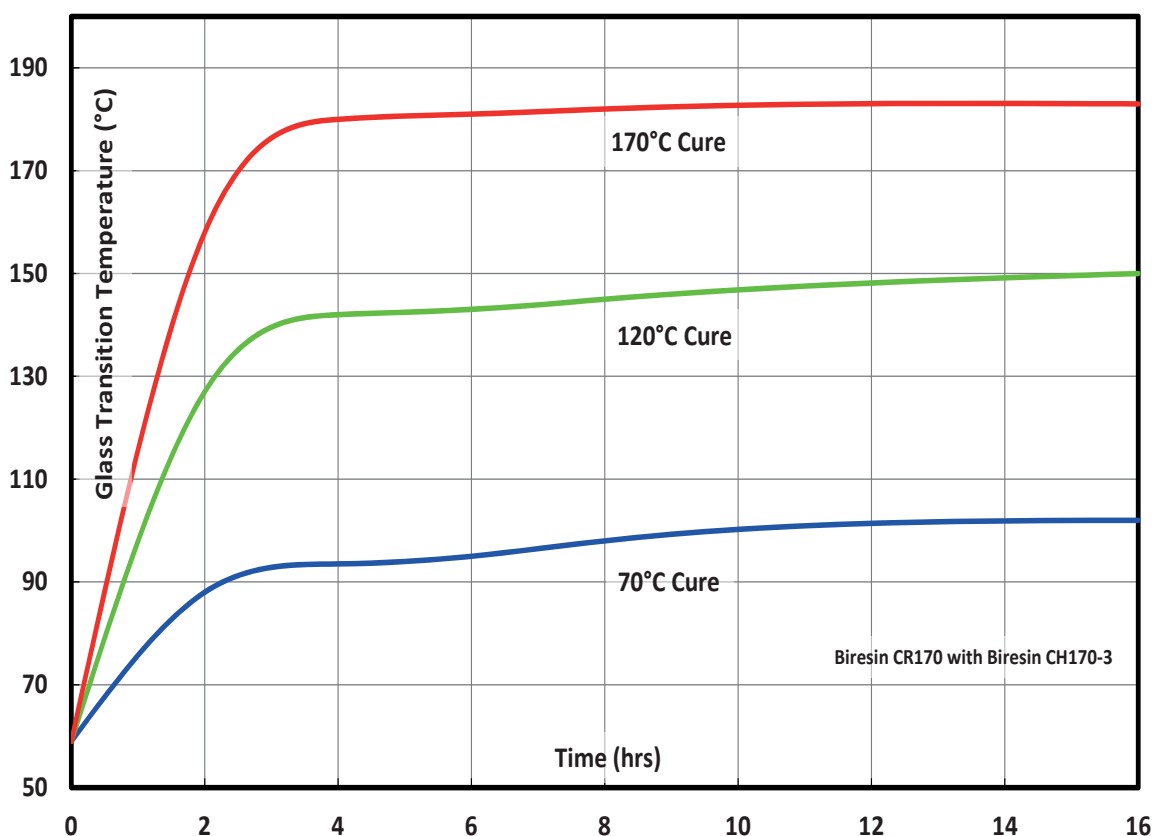
### Processing and processing properties

- 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.
- Before demoulding precuring of at least 2 h at 60°C is recommended.
- The final mechanical and thermal values are dependent on the applied postcuring cycles.
- 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".

Typical Mechanical Properties of Fully Cured Neat Resin			
Biresin® CR170 resin (A)	with hardener (B)		Biresin® CH170-3
Tensile strength	ISO 527	MPa	69
Tensile E-Modulus	ISO 527	MPa	2,650
Elongation at break	ISO 527	%	6.1
Flexural strength	ISO 178	MPa	128
Flexural E-Modulus	ISO 178	MPa	2,750
Density	ISO 1183	g/cm <sup>3</sup>	1.17
Compressive strength	ISO 604	MPa	135
Shore hardness	ISO 868	-	D 86
Impact resistance	ISO 179	kJ/m <sup>2</sup>	28

Thermal Data, neat resin specimen: approx. values after 3 h / 60 and 4 h / 160°C			
Biresin® CR170 resin (A)	with hardener (B)		Biresin® CH170-3
Heat distortion temperature	ISO 75B	°C	170
Glass transition temperature	ISO 11357	°C	172

### 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.

## 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 (T<sub>g</sub>)
- 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.

To measure the mechanical performance of the resin system a SikaAxson standard cycle is used to ensure that the full T<sub>g</sub> potential of the system in question is reached.

## Packaging (net weight, kg)

Biresin® CR170 resin (A)	1,000	200		10
Biresin® CH170-3 hardener (B)		180	16	1.7

## Storage

- Minimum shelf life of Biresin® CR170 resin (A) is 24 month and of Biresin® CH170-3 hardener (B) is 12 month 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 of 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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