Tooling & Composites

Product Data Sheet
Version 07 / 2010

Biresin® CR120
Composite resin system

Areas of Application

- For infusion or injection processing
- Specially for applications when higher temperature resistance is required

Product Benefits

- Approved by Germanischer Lloyd for the production of components
- One resin with two hardeners with different reactivity
- Uniform mixing ratio of 100 : 30
- The reactivity can be adapted by mixing the hardeners
- Because of low mixed viscosity fast infiltration of dry fabrics and nonwovens
- Glass transition temperatures up to 120°C dependent on curing conditions

Description

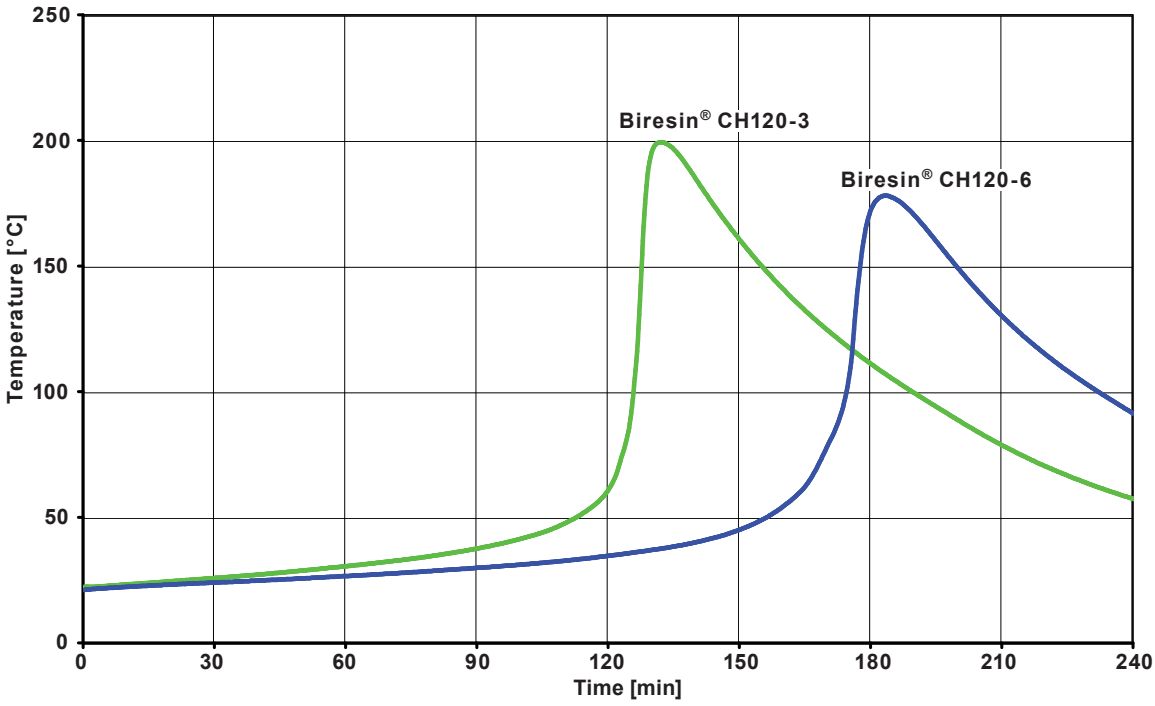
- Basis: Two-component-epoxy-system
- Resin: **Biresin® CR120**, epoxy resin, tranlucent
- Hardener: **Biresin® CH120-3**, amine, colourless to yellowish
- Hardener: **Biresin® CH120-6**, amine, colourless to yellowish

Physical Data		Resin	Hardener	
Individual Components		**Biresin® CR120**	**Biresin® CH120-3**	**Biresin® CH120-6**
Viscosity, 25°C	mPas	900	< 10	35
Density, 25°C	g/ml	1.13	0.94	0.93
Mixing ratio	in parts by weight	100	30	
			Mixture	
Potlife, 100 g / RT, approx. values	min		90	180
Mixed viscosity, 25°C, approx. values	mPas		240	250

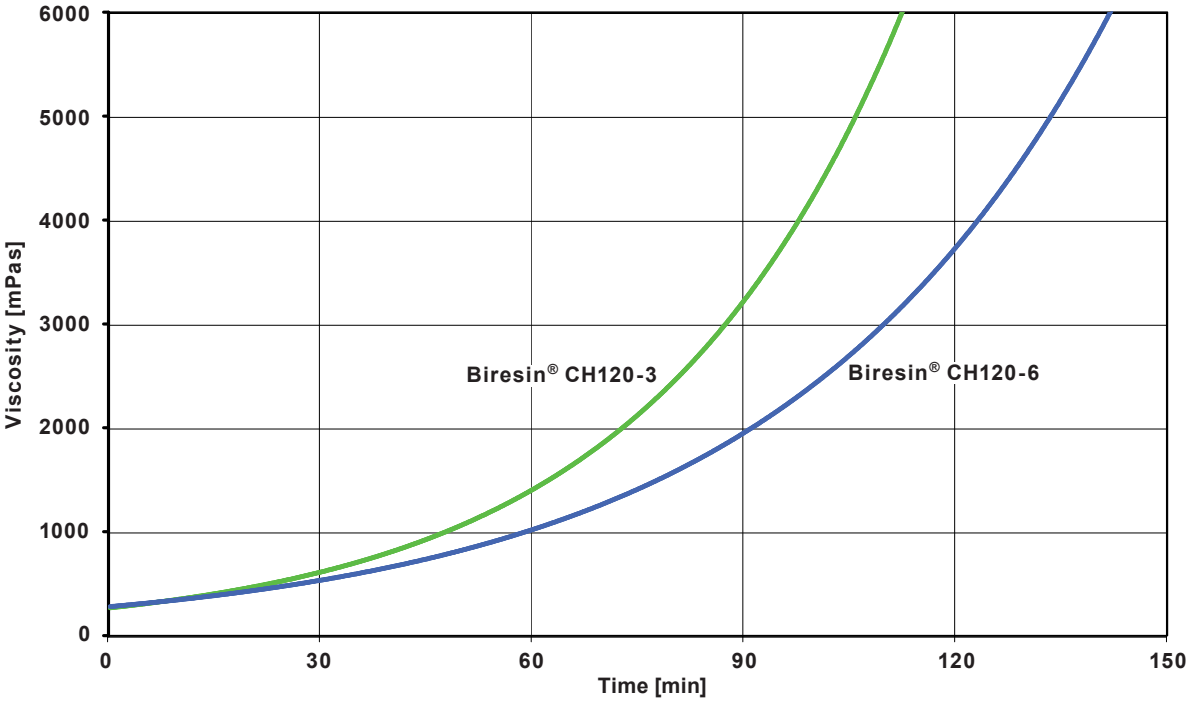
Processing

- The material and processing temperatures should be from 18 to 35°C.
- Before demoulding precuring of at least 2 h at 60°C is recommended.
- To clean brushes or tools immediately Sika Reinigungsmittel 5 is recommended.
- Additional informations are available in “Processing Instructions for Composite Resins”.

Development of Exotherm of Biresin® CR120-Resin-Hardener-Mixtures, 100g / 23°C, insulated,



Development of Viscosity of Biresin® CR120-Resin-Hardener-Mixtures, 25°C



Test conditions: rotation viscosimeter, plate/plate, measuring gap 0,2 mm

Mechanical Data, neat resin specimen at different post curing conditions				
Part 1: approx. values after 16 h / 55°C (source: accredited testing institute)				
Biresin® CR120 resin	with hardener **Biresin®**		**CH120-3**	**CH120-6**
Density	ISO 1183	g/cm³	1.16	1.15
Flexural E-Modulus	ISO 178	MPa	3,600	3,600
Tensile E-Modulus	ISO 527	MPa	3,400	3,400
Flexural strength	ISO 178	MPa	132	133
Elongation at maximum flexural strength	ISO 527	%	5.0	3.6
Tensile strength	ISO 527	MPa	76	77
Elongation at maximum tensile strength	ISO 527	%	3.8	4.0
Water absorption	ISO 175	%	0.28	0.26

Part 2: approx. values after 16 h / 55°C + 3 h / 70°C (source: accredited testing institute)				
Biresin® CR120 resin	with hardener **Biresin®**		**CH120-3**	**CH120-6**
Density	ISO 1183	g/cm³	1.16	1.15
Flexural E-Modulus	ISO 178	MPa	3,400	3,500
Tensile E-Modulus	ISO 527	MPa	3,200	3,300
Flexural strength	ISO 178	MPa	129	126
Elongation at maximum flexural strength	ISO 527	%	5.3	3.5
Tensile strength	ISO 527	MPa	74	74
Elongation at maximum tensile strength	ISO 527	%	4.2	4.1
Water absorption	ISO 175	%	0.28	0.28

Part 3: approx. values after 12 h / 120 °C (source: Sika internal)				
Biresin® CR120 resin	with hardener **Biresin®**		**CH120-3**	**CH120-6**
Density	ISO 1183	g/cm³	1.14	1.14
Shore hardness	ISO 868	-	D 85	D 85
Flexural E-Modulus	ISO 178	MPa	2,600	2,500
Tensile E-Modulus	ISO 527	MPa	2,800	2,700
Flexural strength	ISO 178	MPa	115	120
Compressive strength	ISO 604	MPa	108	110
Tensile strength	ISO 527	MPa	80	80
Elongation at break	ISO 527	%	5.8	6.1
Impact resistance	ISO 179	kJ/m²	55	50

Thermal data of neat resin specimen at different post curing conditions					
Biresin® CR120 resin		with hardener **Biresin®**		**CH120-3**	**CH120-6**
	Post curing conditions				
Heat distortion temperature	16 h/55°C	ISO 75A	°C	74	73
	16 h/55°C + 3 h/70°C	ISO 75A	°C	81	78
	12 h/120°C	ISO 75B	°C	115	121
Glass transition temperature		ISO 11357	°C	113	115

Packaging

Individual components	**Biresin® CR120** resin	1000 kg; 200 kg; 10 kg net
	Biresin® CH120-3 hardener	180 kg; 3.0 kg net
	Biresin® CH120-6 hardener	900 kg; 20 kg 3.0 kg net

Storage

- Minimum shelf life of Biresin® CR120 resin is 24 month and of Biresin® CH120-3 hardener and CH120-6 hardener is 12 month under room conditions (18 - 25°C), when stored in original unopened containers.
- After prolonged storage at low temperature, crystallisation of resin may occur. This is easily removed by warming up for a sufficient time to 50-60°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 and storage of products, users should refer to the current Safety Data Sheet 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

Further information available at:

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Statement of Approval

Approval No. **WP 0820007 HH**

The material described below complies with the applicable requirements as given in the Rules and Regulations of Germanischer Lloyd. 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 CR120**

Description **Epoxy Resin with different Hardener**

Producer **SIKA Deutschland GmbH**
Stuttgarter Str. 139
72574 Bad Urach
Germany

Normative Reference 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 2012-01-20.

Hamburg, 2008-01-21

Germanischer Lloyd

i.V. Sven Koller

i.A. Dr. Eva Junghans

Statement of Approval

ANNEX

Date: 2008-01-21

Approval No. WP 0820007 HH

Reference Documents	Technical specifications deposited at Germanischer Lloyd Head Office.
Assessed Documents	Technical Data Sheet 12/2006 Test Report B175/7 issued by IMA Dresden
Fields of Application	Construction of FRP laminates of components, on condition that the fibre reinforcements comply with the applicable requirements of the Germanischer Lloyd and are compatible to the resin.
Approved Variants	Biresin CR120 with hardener CH120-3 and CH120-6
Limitations	Any significant changes in design and/or quality of the material will render the approval invalid.

End of Annex

Germanischer Lloyd