Tooling & Composites

Product Data Sheet
Version 05 / 2014

Biresin® CR120
Composite resin system

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

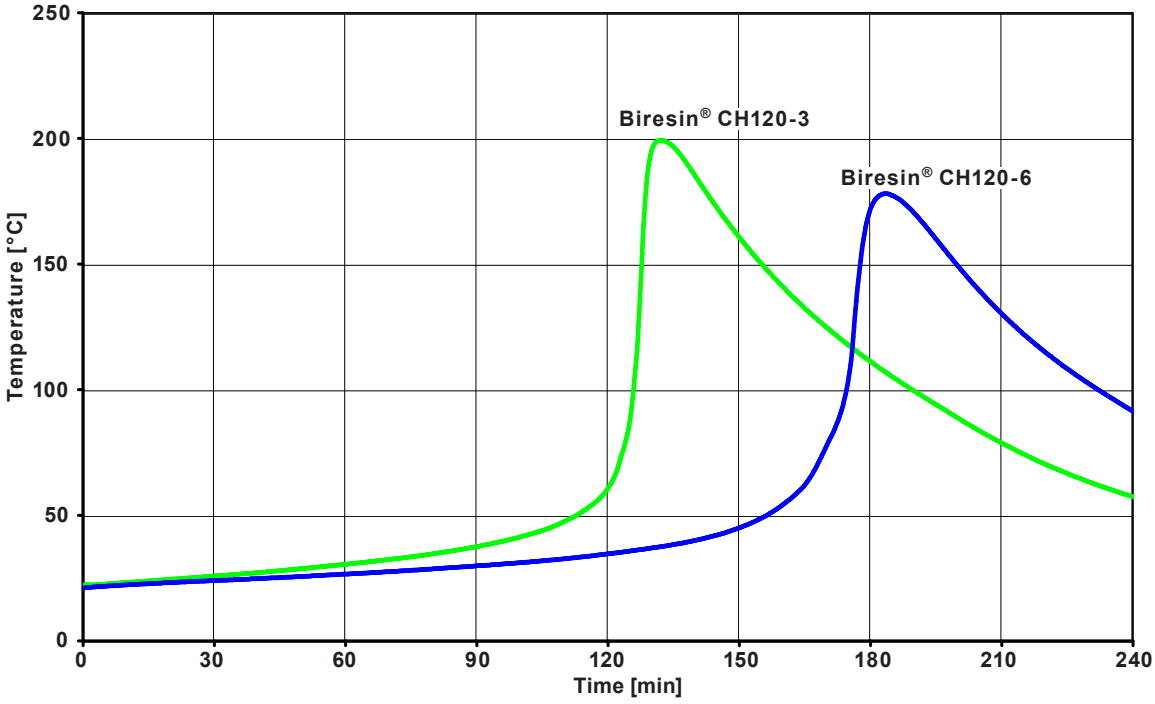
Product Benefits
- Approved by Germanischer Lloyd for the production of components
- One resin with two hardeners with different reactivity
- Uniform mixing ratio of 100 : 30
- The reactivity can be adapted by mixing the hardeners
- Because of low mixed viscosity fast infiltration of dry fabrics and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

Description
- Basis — Two-component-epoxy-system
- Resin (A) — **Biresin® CR120**, epoxy resin, tranlucent
- Hardener (B) — **Biresin® CH120-3**, amine, colourless to yellowish
- Hardener (B) — **Biresin® CH120-6**, amine, colourless to yellowish

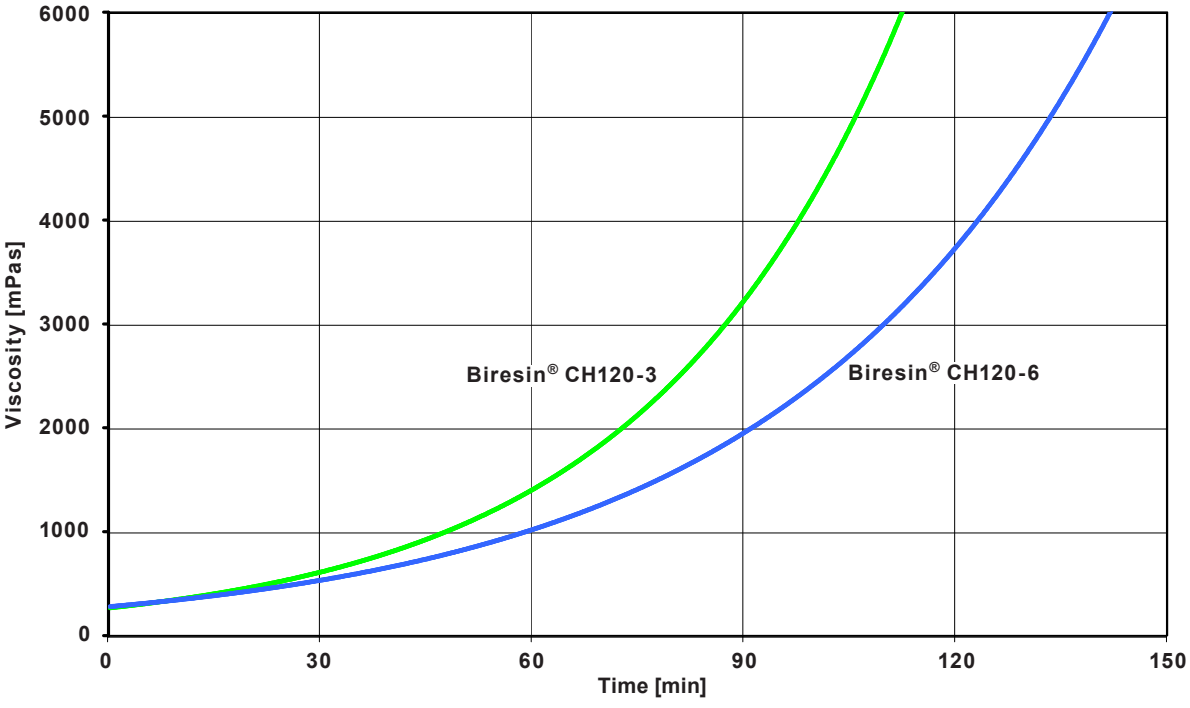
Physical Data			Resin (A)	Hardener (B)	
Individual Components			**Biresin® CR120**	**Biresin® CH120-3**	**Biresin® CH120-6**
Viscosity, 25°C		mPas	900	< 10	35
Density, 25°C		g/ml	1.13	0.94	0.93
Mixing ratio	in parts by weight		100	30	
				Mixture	
Potlife, 100 g / RT, approx. values		min		90	180
Mixed 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(A)-Hardener(B)-Mixtures, 100g / 23°C, insulated,



Development of Viscosity of Biresin® CR120-Resin(A)-Hardener(B)-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 (A)	with hardener (B) **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 (A)	with hardener (B) **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 (A)	with hardener (B) **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 (A)	with hardener (B) **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 (A)	1000 kg; 200 kg; 10 kg net
	Biresin® CH120-3 hardener (B)	180 kg; 20 kg; 3.0 kg net
	Biresin® CH120-6 hardener (B)	900 kg; 20 kg; 3.0 kg net

Storage

- Minimum shelf life of Biresin® CR120 resin (A) is 24 month and of Biresin® CH120-3 hardener (B) and CH120-6 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 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, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safetyrelated 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 1220035 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 - Series**

Description **Two Component Epoxy Resin System**

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 2016-01-31.

Hamburg, 2012-06-04

Germanischer Lloyd

i.A.
Guido Michalek

i.A.
Christian Wildhagen

Statement of Approval

ANNEX

Approval No. WP 1220035 HH

Date: 2012-06-04

Reference Documents	Technical specifications deposited at Germanischer Lloyd Head Office.
Assessed Documents	- Technical Data Sheet 12/2006 - 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 the Germanischer Lloyd and are compatible to the resin.
Approved Variants	Epoxy Resin Biresin CR120 with following hardeners: - CH120-3 - CH120-6
Limitations	Any significant changes in design and/or quality of the material will render the approval invalid.
Remarks	This certificate supersedes the approval WP 0820007 HH.

End of Annex

Germanischer Lloyd