

Biresin® CR120

Composite resin system

Product Description

Biresin® CR120 is a low viscosity epoxy resin system suitable for the production of high performance fibre reinforced composites with thermal performance up to 120°C

Application Areas

Biresin® CR120 is especially suited to the infusion and injection processes due to its low viscosity range. It can be used in the production of general industrial composites as well as in the production of composite tooling by infusion where higher temperature performance is needed

Features / Advantages

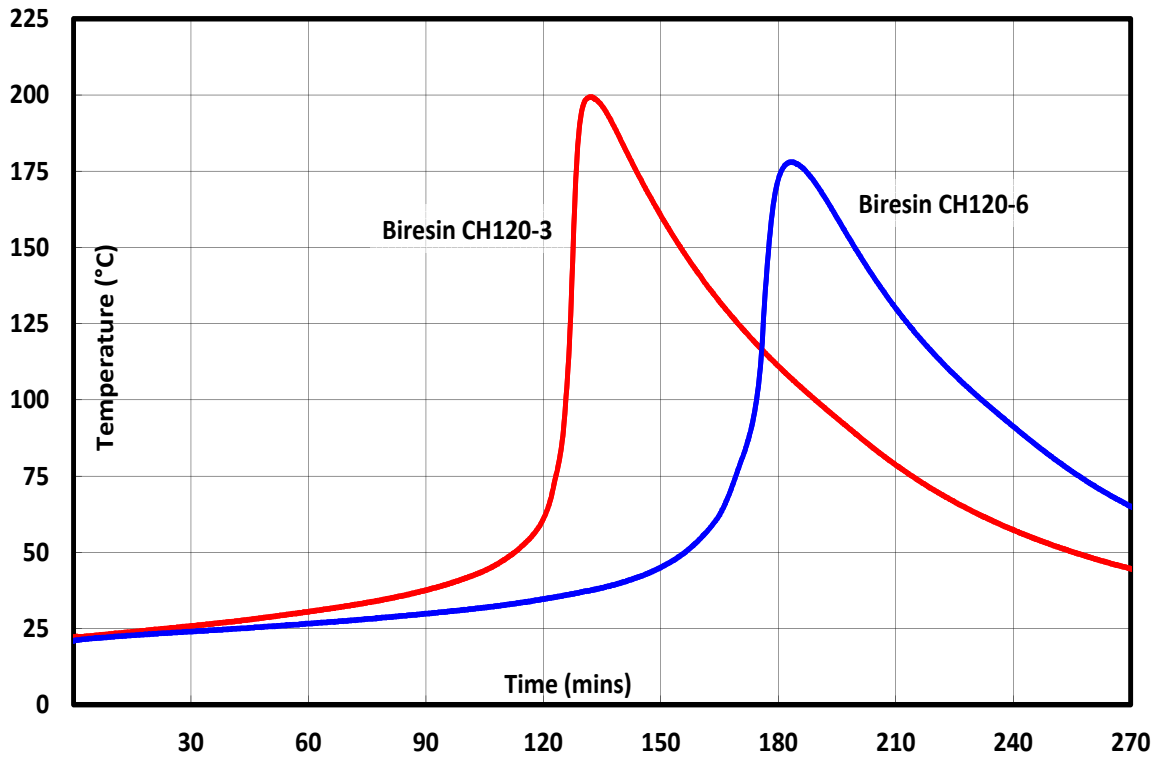
- Fast infusion and good wet-out of fabrics and non-wovens due to low viscosity and good wetting characteristics
- All systems are DNV GL approved. Certificate No. TAK00001YD
- Glass transition temperatures of up to 115°C depending on curing conditions
- 2 hardeners (B) give a range of processing times
- Uniform mixing ratio of 100:30 gives processing flexibility
- The reactivity can be adapted by mixing the hardeners

Physical Data		Resin (A)		Hardener (B)	
Individual Components		Biresin® CR120	Biresin® CH120-3	Biresin® CH120-6	
Mixing Ratio, parts by	Weight	100	30		
Mixing Ratio, parts by	Volume	100	36		
Colour		translucent	colourless to yellowish		
Viscosity, 25°C	mPa.s	~900	<10	~35	
Density, 25°C	g/ml	1.13	0.94	0.93	
		Mixture			
Potlife, 100 g / RT, approx. values		min	90	180	
Mixed viscosity, 25°C, approx. values		mPa.s	240	250	

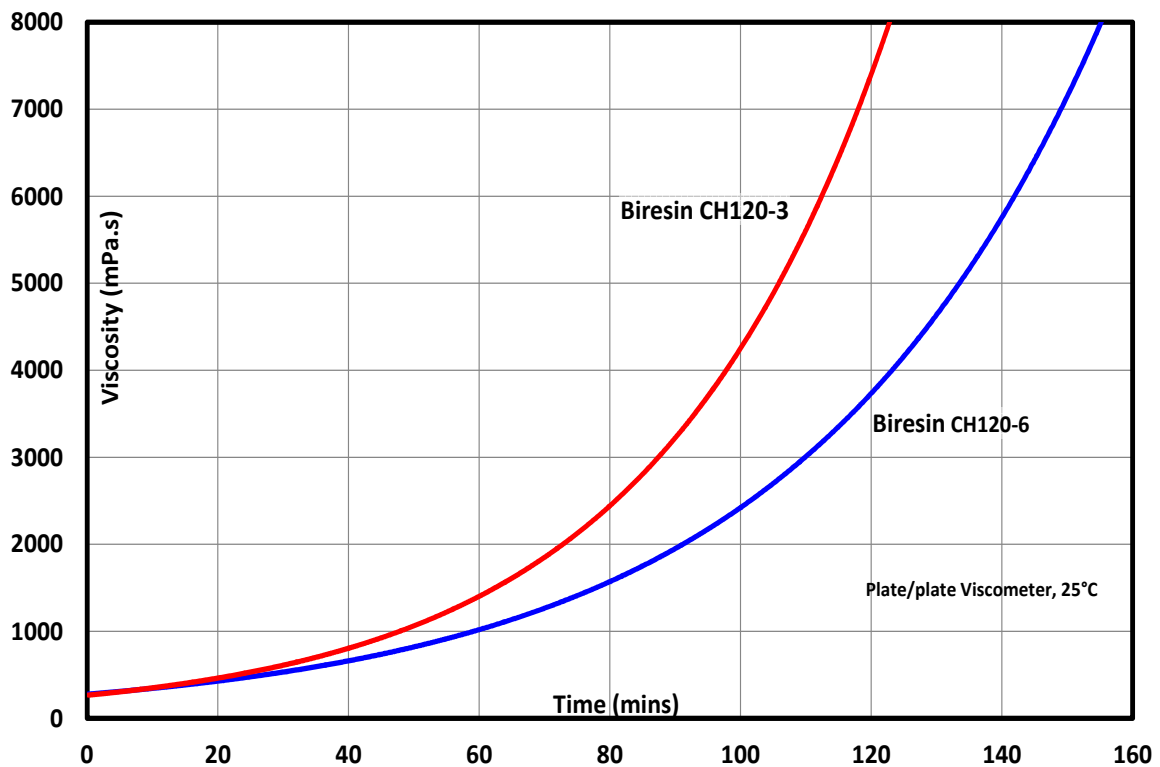
Processing

- 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.
- 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".

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



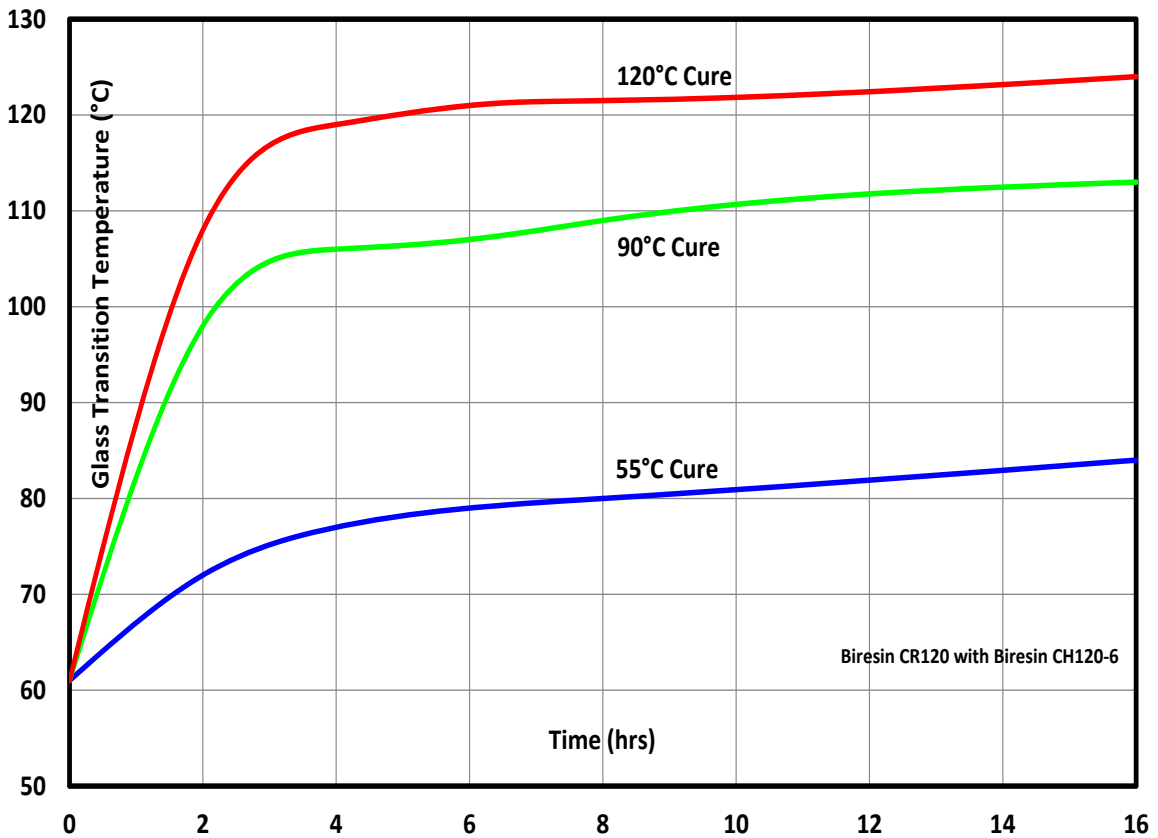
Development of Viscosity of Biresin® CR120 Resin (A)-Hardener (B) Mixtures, 25°C



Typical Mechanical Properties of Fully Cured Neat Resin				
Biresin® CR120 resin (A)	with hardener (B) Biresin®		CH120-3	CH120-6
Tensile strength	ISO 527	MPa	80	80
Tensile E-Modulus	ISO 527	MPa	2,800	2,700
Elongation at break	ISO 527	%	5.8	6.1
Flexural strength	ISO 178	MPa	115	120
Flexural E-Modulus	ISO 178	MPa	2,600	2,500
Compressive strength	ISO 604	MPa	108	110
Density	ISO 1183	g/cm ³	1.14	1.14
Shore hardness	ISO 868	-	D 85	D 85
Impact resistance	ISO 179	kJ/m ²	55	50

Typical Thermal Properties of Fully Cured Neat Resin				
Biresin® CR120 resin (A)	with hardener (B) Biresin®		CH120-3	CH120-6
Heat distortion temperature	ISO 75B	°C	115	121
Glass transition temperature	ISO 11357	°C	113	115

Glass Transition Temperature vs. Cure Cycle



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_g)
- 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_g potential of the system in question is reached.

Packaging (net weight, kg)

Biresin® CR120 resin (A)	1000	200	10
Biresin® CH120-3 hardener (B)		180	3
Biresin® CH120-6 hardener (B)		20	3

Storage

- Minimum shelf life of Biresin® CR120 resin (A) is 24 month and of hardeners (B) Biresin® CH120-3 and CH120-6 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 to 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

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

Further information available at:

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Internet: www.sikaadvancedresins.com



TYPE APPROVAL CERTIFICATE

This is to certify:**That the Epoxy Systems**

with type designation(s)
Biresin CR120 - Series

Issued to

Sika Deutschland GmbH
Bad Urach, Baden-Württemberg, Germany

is found to comply with

DNV GL class programme DNVGL-CP-0089 – Type approval – Epoxy resin systems
DNV GL rules for classification – High speed and light craft
DNV GL rules for classification – Yachts

Application :

Laminating resin for construction of laminates made of fibre reinforced plastics

Issued at **Hamburg** on **2020-10-01**

This Certificate is valid until **2025-09-30**.

for **DNV GL**

DNV GL local station: **Augsburg**

Approval Engineer: **Joachim Rehbein**

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Thorsten Lohmann
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Job Id: **262.1-033897-1**
Certificate No: **TAK00001YD**

Product description

Epoxy resin Biresin CR120 with following hardener:

- Biresin CH120-3
- Biresin CH120-6

Material Properties

The following properties (mean value) have been verified by initial type testing:

Property	Test Method		CR120/ CH120-3	CR120/ CH120-6
Tensile Strength ¹	ISO 527-2	MPa	84	84
Tensile Modulus ¹	ISO 527-2	MPa	3342	3268
Fracture Elongation ¹	ISO 527-2	%	5.8	5.7
HDT (A)	ISO 75-2	°C	73.7	72.5
DSC ²	ISO 11357	°C	81.45	80.28
Water Absorption ³	ISO 175	mg	32	31
Curing procedure used for type testing: 16h at 55°C				

Notes:

¹: Material test by Sika Deutschland GmbH, dated 2020-08-14

²: Onset temperature, second run

³: Water absorption after 168h

Application/Limitation

The resin complies with the applicable requirements of DNV GL and is compatible to the fibres, adhesives and core materials. Any significant changes in design and / or quality of the material will render the approval invalid.

Type Approval documentation

Marking of product

Product shall be marked with *manufacturer's name, place of production, type designation and batch number*.

The marking is to be carried out in such a way that it is visible, legible and indelible. The marking of product is to enable traceability to the DNV GL Type Approval Certificate.

Assessed production sites

SIKA Deutschland GmbH
Stuttgarter Str. 117
72574 Bad Urach
Germany

Periodical assessment

Periodical assessments for type approvals with a validity period of five years will be required after 2 years and after 3.5 years.

If an approval of manufacturer certificate which is still valid for at least one year is available, an exemption from the obligation concerning retention and renewal surveys listed in the class programme will apply.

END OF CERTIFICATE