DNV·GL

Certificate No:
TAK00001YE

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Epoxy Systems

with type designation(s)
Biresin CR80 - 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**.
DNV GL local station: **Augsburg**

Approval Engineer: **Joachim Rehbein**

for **DNV GL**

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.

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Job Id: **262.1-033893-1**
Certificate No: **TAK00001YE**

Product description

Epoxy resin Biresin CR80 with following hardener:
- Biresin CH80-1
- Biresin CH80-2
- Biresin CH80-6
- Biresin CH80-10

Material Properties

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

Property	Test Method		CR80/ CH80-1	CR80/ CH80-2	CR80/ CH80-6	CR80/ CH80-10
Tensile Strength[1]	ISO 527-2	MPa	88	80	79	78
Tensile Modulus[1]	ISO 527-2	MPa	3428	3285	3346	3313
Fracture Elongation[1]	ISO 527-2	%	4.8	6.2	6.9	6.7
HDT (A)	ISO 75-2	°C	68.6	69.1	66.7	66.1
DSC[2]	ISO 11357	°C	80.77	70.16	66.71	66.51
Water Absorption[3]	ISO 175	mg	44	29	35	36
Curing procedure used for type testing: 16h at 55ºC						

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