DNV·GL

Certificate No:
TAK00001Z2

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Gelcoats and Topcoats

with type designation(s)
BÜFA-Marine-NPG-Gelcoat

Issued to
BÜFA Composite Systems GmbH & Co. KG
RASTEDE, Germany

is found to comply with
DNV GL class programme DNVGL-CP-0083 – Type approval – Polyester resin, vinylester resin, gelcoat and topcoat
DNV GL rules for classification – Ships

Application :

Unsaturated Polyester Resin

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Issued at **Hamburg** on **2020-11-16**
This Certificate is valid until **2025-11-15**.
DNV GL local station: **Hamburg – CMC North/East**

Approval Engineer: **Gabi Dau**

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: **262.1-033592-1**
Certificate No: **TAK00001Z2**

Product description

BÜFA-Marine-NPG-Gelcoat: Unsaturated coating polyester resin

The following properties have been established by type testing of cured resin.

Property	**Test Method**	**Value** *	
Tensile strength	ISO 527-2	67.3	MPa
Tensile modulus	ISO 527-2	3147	MPa
Elongation at break	ISO 527-2	4.4	%
Flexural strength	ISO 178	126.5	MPa
Flexural modulus	ISO 178	3434	MPa
Flexural strain at break	ISO 178	5.9	%
Barcol hardness	ASTM D 2583	39.3	-
Heat deflection temperature (HDT)	DIN EN ISO 75-2	63.0	°C
Water absorption	DIN EN ISO 62	0.45	%
Density	DIN EN ISO 2811-1	1.12	g/cm³
Curing procedure	Post curing 16h at 50°C		
* *mean values*			

Approved Variants
- BÜFA Marine-NPG-Gelcoat-S (Spray Application)
- BÜFA Marine-NPG-Gelcoat-H (Brush Application)

Limitation

Approved for maritime applications.
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

Tests carried out

Type Testing carried out according to **Type Approval documentation**.

Marking of product

Product shall be marked with *manufacturer's name* and *type designation*.

Assessed production site(s)

BÜFA Composite Systems GmbH & Co. KG
Hohe Looge 2-8
26180 Rastede
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