Certificate no.:
TAK00002BH

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Glass Fibre Products

with type designation(s)
G-WEAVE™: Woven Roving (150 - 3000 g/m²)

issued to
CHOMARAT TEXTILES INDUSTRIES SAS
Le Cheylard, Ardeche, **France**

is found to comply with
DNV class programme DNV-CP-0467 – Type approval – Uni- and multi-axial multi-ply fabrics made of glass fibres
DNV rules for classification – High speed and light craft
DNV standard DNV-ST-0342 – Craft

Application:

Manufacturing of FRP laminates.

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

Issued at **Hamburg** on **2024-04-24**
This Certificate is valid until **2029-04-23**.
DNV local unit: **France CMC**

for **DNV**

Approval Engineer: **Gisle Hersvik**

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 AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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.

Product description

G-WEAVE™: Glass Fibre Woven Rovings (0°/90°) (150 – 3000 g/m²)

Fibre material: E-Glass

The following properties have been obtained during Type Testing of laminates:

Properties	Test Method	G-WEAVE™ 235P	G-WEAVE™ 1500T3	Unit	
Tensile strength - 0°	ISO 527-4	573,7	375,0	MPa	mean
Tensile modulus - 0°	ISO 527-4	27,38	26,22	GPa	mean
Tensile strength - 90°	ISO 527-4	-	518,4	MPa	mean
Tensile modulus - 90°	ISO 527-4	-	30,75	GPa	mean
Flexural strength - 0°	ISO 14125	625,4	527,8	MPa	mean
Fibre Volume Fraction, FVF	-	49,40 (tensile) / 50,17 (flexural)	55,37 (tensile/flexural)	%	mean
Resin used		ENYDYNE® I 69473 A (orthophtalic Polyester resin) (Polynt Composites)			
Curing procedure used for type testing		16 hrs at 40°C + 2 hrs at 90°C (vacuum assisted resin infusion: Vacuum: - 700 mbar +/- 25)			

mean: Average of test results.

Application/Limitation

The fabric complies with the applicable requirements of DNV and is compatible to the laminating resin.

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 in accordance with **Type Approval documentation**.

Marking of product

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

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 Type Approval Certificate.

Periodical assessment

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

Periodical assessments (for Certificate Retention / Certificate Renewal) shall be performed according to DNV-CP-0338.

This certificate is only valid if required Periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com

END OF CERTIFICATE