Certificate no.:
TAK00002BC

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Carbon Fibre Products

with type designation(s)
Tri-axials: (+45º/90º/-45º)-Series (225-1000 g/m²)

issued to
Formosa Taffeta Co., Ltd.
Yunlin County, **Taiwan Region**

is found to comply with
DNV class programme DNV-CP-0434 – Type approval – Uni- and multi-axial multi-ply fabrics made of carbon fibres
DNV rules for classification – High speed and light craft
DNV standard DNV-ST-0342 – Craft

Application:

For use in marine vessels according to stated Rules/Standards.

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

Issued at **Hamburg** on **2024-01-22**
This Certificate is valid until **2029-01-21**.
DNV local unit: **Kaohsiung**

Approval Engineer: **Gisle Hersvik**

for **DNV**

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

Tri-axial Carbon Fibre products of +45º/90°/-45º orientations.
Weight range: 225-1000 g/m^2

The following indicative properties have been verified by Type Testing of laminates:

Property	**Test Method**	**ECMF38 - 900 g/m^3**		
Tensile Strength – 90º	ISO 527–4,5	719	MPa	mean
Tensile Modulus – 90º	ISO 527–4,5	57.5	GPa	mean
Compressive Strength – 90º	ISO 14126	435	MPa	mean
Compressive Modulus – 90º	ISO 14126	50.6	GPa	mean
Flexural Strength – 90º	ISO 14125	831	MPa	mean
Fibre volume fraction, FVF	-	54.2 / 51.7	%	mean
Resin		WB-02AB (YU PO Chemical Co., Ltd.), Epoxy Resin/VARTM		
Curing Procedure for Type Testing		8 hrs at 80°C, demolding temperature below 50°C		

EC: Composite materials department
F: Designated fibre
M: Multi-axial braid
38: Product weight code (FAW:900g/m^2)

Legend:
mean = Mean of Type Test results

Application/Limitation

Area of application will be evaluated during approval of classified objects.

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 shall be marked with *manufacturer's name*: **Formosa Taffeta Co., Ltd.**, **Taiwan Region** and *type designation,* and *length/lot number/gross weight/Net weight*.

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