

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Carbon Fibre Products**

with type designation(s)

Bi-axial; (0°/90°) (200-1200 g/m²) and (+45°/-45°) (200-1200 g/m²) with or without chopped strand mats (50-500 g/m²),**Bi-axial; (0°/90°) (200-1200 g/m²) and (+45°/-45°) (200-1200 g/m²) with or without veil (15-100 g/m²)**

Issued to

**Telateks Tekstil Urunleri Sanayi Ve Ticaret A.S.
(METYX Composites)
Tuzla Istanbul, Turkey**

is found to comply with

DNV GL class programme DNVGL-CP-0434 – Type approval – Uni- and multi-axial multi-ply fabrics made of carbon fibres**DNV GL rules for classification – High speed and light craft****DNV GL standard DNVGL-ST-0342 – Craft****Det Norske Veritas' Standards for Certification No. 2.20, Lifeboats and Rescue Boats, 2007****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 GL.**Issued at **Høvik** on **2017-02-26**This Certificate is valid until **2022-02-25**.for **DNV GL**DNV GL local station: **Istanbul**Approval Engineer: **Gisle Hersvik****Martin Strande
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.



Product description

METYX® Carbon Fibre Reinforcements:

Bi-axial Carbon Fibre products of 0°/90° orientations and Double-bias Carbon Fibre products of ±45° orientations:

(LT,0°/90°) (200-1200 g/m²) and (X,+45°/-45°) (200-1200 g/m²) with or without CSM (50-500 g/m²)
(LT,0°/90°) (200-1200 g/m²) and (X,+45°/-45°) (200-1200 g/m²) with or without veil (15-100 g/m²)

Legends:

C	Carbon
CSM	Chopped Strand Mat
L	Longitudinal (0°)
T	Transverse (90°)
X	Double-bias (+45°/-45°)

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

Property	Test Method	CX400		
Tensile Strength – 0°	ISO 527 – 4	690	MPa	msmv
Tensile Modulus – 0°	ISO 527 – 4	34	GPa	msv
Tensile Elongation – 0°	ISO 527 – 4	2.9 / 2.6	%	mean/msmv
Compressive Strength – 0°	ASTM D695	116	MPa	msmv
Compressive Modulus – 0°	ASTM D695	22	GPa	msv
Compressive Elongation – 0°	ASTM D695	1.4 / 1.0	%	mean/msmv
Fibre content (by weight)	-	70	%	mean
Resin	Scott Bader Crystic VE676-03 Vinyl Ester Resin			
Curing Procedure for Type Testing	24 hrs at room temperature, 3 hrs at 80°C			

Legend:

msmv = Manufacturer's Specified Minimum Value (verified to be below mean - 2 standard deviation of Type Test results)

msv = Manufacturer's Specified Value

mean = Mean of Type Test results

Application/Limitation

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

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*: **Telateks Tekstil Urunleri Sanayi Ve Ticaret A.S. (METYX Composites), Tuzla / Istanbul, Turkey** and *type designation*.



Job Id: **262.1-012206-2**
Certificate No: **TAK00000R7**

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.

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 Assessment to be performed after 2 and 3.5 years (Certificate Retention) and at renewal after 5 years (Certificate Renewal).

The main elements of the Periodical Assessment are to:

- Ensure that **Type Approval documentation** is available.
- Review design, materials, production process, and performance with respect to possible changes, in order to ensure compliance with **Type Approval documentation** and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and DNV GL Type Approval Certificate.

END OF CERTIFICATE