DNV·GL

Certificate No:
TAK00000RA

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Carbon Fibre Products

with type designation(s)
Carbon Woven (160-900 g/m²) with or without chopped strand mats (50-1500 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
Det Norske Veritas' Type Approval Programme 1-501.19, 2009, Carbon Fibre Reinforcements
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**.
DNV GL local station: **Istanbul**

Approval Engineer: **Gisle Hersvik**

for **DNV GL**

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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Job Id: **262.1-012206-6**
Certificate No: **TAK00000RA**

Product description

METYX® Carbon Fibre Reinforcements.
Carbon Woven (160-900 g/m²) with or without CSM (50-1500 g/m²)
- 2x2 twill woven

Legends:

C	Carbon
W	Woven
CSM	Chopped Strand Mat

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

Property	**Test Method**	**CW600**		
Tensile Strength – 0°	ISO 527 – 4	853	MPa	msmv
Tensile Modulus – 0°	ISO 527 – 4	40	GPa	msv
Tensile Elongation – 0°	ISO 527 – 4	3.0 / 2.7	%	mean/msmv
Compressive Strength – 0°	ASTM D695	110	MPa	msmv
Compressive Modulus – 0°	ASTM D695	22	GPa	msv
Compressive Elongation – 0°	ASTM D695	1.1 / 0.8	%	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*.

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