



TYPE APPROVAL CERTIFICATE

Certificate No:
TAK00000UJ
Revision No:
1

This is to certify:

That the Glass Fibre Products

with type designation(s)
**Metycore RTM Fabrics,
MetycoreMax RTM Fabrics**

Issued to

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

is found to comply with
**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 **Høvik** on **2023-01-10**

This Certificate is valid until **2028-01-09**.

DNV local unit: **Istanbul**

for **DNV**

Approval Engineer: **Gisle Hersvik**

**Gustav Heiberg
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 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

Metycore RTM Fabrics and MetycoreMax RTM Fabrics

Metycore RTM Fabrics: CSM layers separated by non-woven PP core [Example: 600M / 180PP / 600M].

- PP non-woven core material areal weight of 125-250 g/m² [180 g/m²],
- Glass fibre CSM areal weight: 200-1200 g/m² with two or single CSM skin [600 g/m²].
- Surface veil, biaxial skin options can be added to structure.

MetycoreMax RTM Fabrics: CSM layers separated by a 3D PP core [Example: 600M / HFD7 / 600M].

- PP 3D-knitted core material with areal weight of 100-280 g/m² [155 g/m²],
- Glass fibre CSM areal weight: 200-1200 g/m² with two or single CSM skin [600 g/m²].
- Surface veil, biaxial skin options can be added to structure.

Legends:

CSM Fibres: Roving 2400 tex
 CSM: Chopped Strand Mat
 PP: Polypropylene
 RTM: Resin Transfer Moulding

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

Property	Test Method	Metycore 600/180PP/600	MetycoreMax 600/HFD7/600		
Tensile Strength – 0° / 90°	ISO 527 – 4	103.5 / 71.6	120.9 / 88.1	MPa	mean
Tensile Modulus – 0° / 90°	ISO 527 – 4	8.6 / 6.4	9.1 / 8.0	GPa	mean
Tensile Elongation – 0° / 90°	ISO 527 – 4	1.5 / 1.4	1.8 / 1.4	%	mean
Flexural Strength – 0° / 90°	ISO 14125	286.2 / 214.2	256.6 / 247.5	MPa	mean
Flexural Modulus – 0° / 90°	ISO 14125	10.3 / 8.3	9.9 / 10.0	GPa	mean
Glass fibre content (by weight)	-	27.1	29.1	%	mean
Resin	Crystic VE 679-03PA Vinylester (Scott Bader)				
Curing Procedure for Type Testing	24 hrs at 20°C, 3 hrs at 80°C				

Legend:

mean = Mean of Type Test results

Application/Limitation

The use of the Metycore RTM Fabrics and MetycoreMax RTM Fabrics to be evaluated in each individual project.

Metycore RTM Fabrics

The approval is valid for the following standard weight variants:

- 200M / 180PP / 200M
- 200M / 250PP / 200M
- 300M / 180PP / 300M
- 300M / 250PP / 300M
- 600M / 180PP / 600M
- 600M / 250PP / 600M
- 450M / 180PP / 450M
- 450M / 250PP / 450M
- 750M / 180PP / 750M
- 750M / 250PP / 750M
- 900M / 180PP / 900M
- 900M / 250PP / 900M

however, other weight combinations within the weight range given above are covered by this certificate. Surface veil, biaxial skin options can be added to structure.

MetycoreMax RTM Fabrics

The approval is valid for the following standard weight combinations:

- Core material areal weight variations, g/m²: 100, 112, 135, 150, 155, 163, 280
- CSM variations, g/m²: 200, 300, 450, 600, 750, 900, 1200

however, other weight combinations within the weight range given above are covered by this certificate. Surface veil, biaxial skin options can be added to structure.

The approval covers the weight ranges stated above.

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**.

Note that the DNV GL Class Programme DNV-CP-0467 – Type approval – Uni- and multi-axial multi-ply fabrics made of glass fibres, is not dedicated for this special type of product, hence the DNV TAP No. 1-501.8 is used as reference for this special product until a suitable DNV-CP is established for such products.

Marking of product

Product/package shall be marked with *manufacturer's name*; **Telateks Tekstil Urunleri Sanayi Ve Ticaret A.S. (METYX Composites), 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 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