DNV·GL

Certificate No:
TAK00000UJ

TYPE APPROVAL CERTIFICATE

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, Turkey

is found to comply with
DNV GL class programme DNVGL-CP-0467 – Type approval – Uni- and multi-axial multi-ply fabrics made of glass fibres
Det Norske Veritas' Type Approval Programme 1-501.8, 2009, Glass 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 **2017-05-22**
This Certificate is valid until **2022-05-21**.
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.

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Job Id: **262.1-025179-1**
Certificate No: **TAK00000UJ**

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**	**Metyxcore 600/180PP/600**	**MetyxcoreMax 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

Metycore RTM Fabrics
The approval is valid for the following standard weight variants;
- 200M / 180PP / 200M
- 200M / 250PP / 200M
- 600M / 180PP / 600M
- 600M / 250PP / 600M
- 300M / 180PP / 300M
- 300M / 250PP / 300M
- 750M / 180PP / 750M
- 750M / 250PP / 750M
- 450M / 180PP / 450M
- 450M / 250PP / 450M
- 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.

Type Approval documentation

Tests carried out

Type Testing carried out in accordance with **Type Approval documentation.**

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