



Certificate No:
TAK0000257

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Glass Fibre Products

with type designation(s)
EWB (200-800 g/m²),
WRM (EWB/EMK) (300-1250 g/m²)

Issued to

Wanda New Material (Thailand) Co., Ltd
Chonburi, Thailand

is found to comply with

DNV class programme DNV-CP-0467 – Type approval – Uni- and multi-axial multi-ply fabrics made of glass fibres

DNV standard DNV-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.

Issued at **Høvik** on **2022-09-30**

This Certificate is valid until **2027-09-29**.

DNV local station: **Bangkok**

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.



Form code: TA 251

Revision: 2021-03

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Product description

Woven Rovings and Woven Rovings combined with Chopped Strand Mats:

- **EWR (200-800 g/m²)**
- **WRM (EWR/EMK) (300-1250 g/m²)** [EWR (200-800 g/m²) plus EMK (100-450 g/m²)]

Legends:

E: E-glass

WR = Woven Roving

WRM: WR with MK

MK = Chopped Strand Mat

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

Property	Test Method	EWR600		
Tensile Strength	ISO 527	381	mean	MPa
Tensile Modulus	ISO 527	70.35	mean	GPa
Tensile Elongation	ISO 527	1.61	mean	%
Flexural Strength	ISO 14125	577	mean	MPa
Flexural Modulus	ISO 14125	38.3	mean	GPa
Flexural Deflection	ISO 14125	3.01	mean	%
Glass fibre volume fraction	ISO 1172	50.8	mean	%
Resin	Polyester: GT168PT (BERKIN Co., Ltd.)			
Curing Procedure used for Type Testing	24 hrs at room temperature, 3 hrs at 60°C, 3 hrs at 100°C			

Legend:

mean = Mean of Type Test results (values are mean of tests in two directions)

Application/Limitation

The fabric complies with the applicable requirements of DNV and is compatible to the laminating resin.

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*: **Wanda New Material (Thailand) Co., Ltd.**, *type designation/product code, batch no., density, net and gross weights and width of roll*.

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