

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

**Stitch-Bonded Fabrics; TIANMA EWFC 800, TIANMA EWFC 900, TIANMA EWFC 950,
TIANMA EWFC 1100, TIANMA EWFC 1250 and TIANMA EWFC 1450**

Issued to

**Changzhou Tianma Group Co.,Ltd.
(Building Materials No.253 plant)
CHANGZHOU, JIANGSU, China**

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****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**.for **DNV GL**DNV GL local station: **Nanjing**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

Stitch-Bonded Glass Fibre Reinforcement Fabrics of 0°/90°-orientation;

TIANMA EWFC 800

TIANMA EWFC 900

TIANMA EWFC 950

TIANMA EWFC 1100

TIANMA EWFC 1250

TIANMA EWFC 1450

- Glass fibres; Rovings 1200 tex

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

Property	Test Method	800	900	950	1100	1250	1450		
Tensile Strength	ISO 527	373	366	364	368	371	380	MPa	mean
Tensile Modulus	ISO 527	23.56	24.01	25.89	24.52	26.75	27.58	GPa	mean
Tensile Elongation	ISO 527	2.29	2.33	2.32	2.35	2.37	2.39	%	mean
Flexural strength	ISO 14125	479	481	480	482	504	510	MPa	mean
Glass content	ISO 1172	50.3	50.1	50.2	49.3	50.0	50.7	%	mean
Resin	TM-25								
Curing Procedure for Type Testing	24 hrs at room temperature, 4 hrs at 80°C								

Legend:

mean = Mean of Type Test results

Application/Limitation

The approval is valid for the above-listed nominal weight variants, i.e. TIANMA EWFC 800 - 1450.

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*; **Changzhou Tianma Group Co., Ltd., Jiangsu, China** 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.



Job Id: **262.1-013498-2**
Certificate No: **TAK00000US**

- 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