

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

E-Glass Chopped Strand Mat; EMC-Series (200 - 900 g/m²)

Issued to

**Changshu Dongyu Insulated Compound Materials Co., Ltd.
Changshu, 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**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 **2017-07-07**This Certificate is valid until **2022-07-06**.for **DNV GL**DNV GL local station: **Shanghai**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

E-Glass Chopped Strand Mat; EMC-Series (200 - 900 g/m²)

Fibres: Roving 2400 tex.

The EMC-Series, powder or emulsion bonded types, are made from chopped strands around 50 mm in length.

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

Property	Test Method	EMC450		
Tensile Strength – 0° / 90°	ISO 527 – 4,5	104 / 101	MPa	mean
Tensile Modulus – 0° / 90°	ISO 527 – 4,5	8.12 / 8.05	GPa	mean
Tensile Elongation – 0° / 90°	ISO 527 – 4,5	1.8 / 1.7	%	mean
Flexural Strength – 0° / 90°	ISO 14125	145 / 159	MPa	mean
Flexural Modulus – 0° / 90°	ISO 14125	7.25 / 7.35	GPa	mean
Flexural Deflection – 0° / 90°	ISO 14125	5.3 / 5.6	%	mean
Fibre content (by weight)	-	29.8	%	mean
Resin	Polyester resin, TM-107 (Changzhou Tianma Group Co., Ltd.)			
Curing Procedure for Type Testing	24 hrs at room temperature, 24 hrs at 50°C			

Legend:

mean = Mean of Type Test results

Application/Limitation

The approval is valid for the following standard weight variants; EMC200, EMC225, EMC300 EMC450, EMC600, EMC900, however, other EMC-products within the weight range given above is covered by this certificate.

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 CSM products, hence the DNV TAP No. 1-501.8 may be used as reference for these kind of products until a specific DNVGL-CP is established for CSM products.

Marking of product

Product/package shall be marked with *manufacturer's name*; **Changshu Dongyu Insulated Compound Materials Co.,Ltd., Jiangsu, China**, type designation and batch no./production date.

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.



Job Id: **262.1-025702-1**
Certificate No: **TAK00000U8**

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