

# TYPE APPROVAL CERTIFICATE

Certificate no.:  
**TAK00001TJ**  
Revision No:  
**1**

## This is to certify:

that the **Glass Fibre Products**

with type designation(s)  
**Chopped Strand Mats: EMC300, EMC450, EMC600 and EMC900**

issued to

**Jushi Group Co., Ltd.**  
**Tongxiang, ZHEJIANG, China**

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 rules for classification – High speed and light craft**  
**DNV standard DNV-ST-0342 – Craft**

## Application:

**Manufacturing of FRP laminates.**

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.**

Issued at **Hamburg** on **2024-11-01**

This Certificate is valid until **2029-10-28**.

DNV local unit: **Shanghai**

Approval Engineer: **Gisle Hersvik**

for **DNV**



Digitally Signed By:  
Martin Wenning  
Location: DNV Hamburg,  
Germany

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 USD 300 000.



Job ID: **262.1-031277-2**  
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## Product description

Chopped Strand Mats: **EMC300, EMC450, EMC600 and EMC900**

E: E-Glass  
 MC: Chopped Mat  
 300, 450, 600, 900: Weight per unit area, g/m<sup>2</sup>

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

| Properties              | Test Method | EMC300                 | EMC450                 | EMC600                 | EMC900 |      |     |
|-------------------------|-------------|------------------------|------------------------|------------------------|--------|------|-----|
| Tensile Strength        | ISO 527-1,4 | 130.30                 | 121.40                 | 122.72                 | 134.14 | mean | MPa |
| Tensile Modulus         | ISO 527-1,4 | 9.60                   | 9.67                   | 9.47                   | 10.15  | mean | GPa |
| Flexural Strength       | ISO 14125   | 238.22                 | 228.19                 | 225.83                 | 218.64 | mean | MPa |
| Flexural Modulus        | ISO 14125   | 9.79                   | 9.62                   | 10.07                  | 9.24   | mean | GPa |
| Fibre content by weight | ISO 1172    | 36.18 (t)<br>36.15 (f) | 36.56 (t)<br>36.71 (f) | 33.26 (t)<br>33.07 (f) | 37.75  | mBT  |     |



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## **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