Certificate no.:
TAK00002GD

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Composite Tank Supports

with type designation(s)
GFRP Insulation Support Block

issued to
CSSC Sdari-Eco (Shanghai) Co., Ltd.
Shanghai, **China**

is found to comply with
DNV class programme DNV-CP-0099 – Type approval – Hardwood for tank supports

Application:

For use as supporting material between cargo tanks for liquified gas and support in hull structure. Minimum temperature of cargo -196°C.

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

Issued at **Hamburg** on **2025-09-26**
This Certificate is valid until **2030-09-25**.
DNV local unit: **Shanghai**

for **DNV**

Approval Engineer: **Gisle Hersvik**

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.

Product description

GFRP Insulation Support Block: Composite tank support, which is comprised of glass fibre, resin, and insulated filler.

Material properties

Properties	Test Method	GFRP [specified]		GFRP [tested]		
Density, +25°C	ISO 1183-1	1.5-1.6	-	1.567	mean	g/cm³
Compressive strength ⊥						
-196°C	ISO 604	210	msmv	331	mean	MPa
-50°C		240	msmv	314	mean	MPa
+25°C		240	msmv	321	mean	MPa
Compressive strength ||						
-196°C	ISO 604	180	msmv	297	mean	MPa
-50°C		170	msmv	238	mean	MPa
+25°C		160	msmv	255	mean	MPa

Notes:
All testing with regular, not submerged material
⊥ = Perpendicular to laminate
|| = Parallel to laminate
mean = Mean of test results
msmv = Manufacturer's Specified Minimum Value

Manufactured by

Jiangsu Changzhuo Technology Co., Ltd., 4 Building, No. 92 Jintan Avenue, Jintan District, Changzhou City, Jiangsu Province, P.R. China

- under an agreement with CSSC Sdari-Eco (Shanghai) Co., Ltd.

DNV local station: Shanghai

Responsibility

The Company (stated on the front page of this Certificate) takes the responsibility that both design and production are in compliance with Rules, Standards and/or Regulations listed on page 1 of this certificate.

Application/Limitation

For use as supporting material for LNG independent tank (type A/B/C) between cargo tanks for liquified gas and support in hull structure, for minimum temperature of cargo -196°C.

Dynamic Compressive Behaviour testing performed documenting no reduction below specified compressive properties.

Application Temperature Range in accordance with manufacturer's (preliminary) Technical Data Sheet.

Product transport and storage, handling, and installation to be in accordance with manufacturer's recommendations, ref. "Product Recommendation", Document No. SEM2024ER02-00 and "Installation Principle Process Manual", Document No. SEM2024ER02-002.

Repairs of installed *GFRP Insulation Support Block* to be informed to the Society and to be in accordance with manufacturer's recommendations, ref. "Repair Principle Process Manual", Document No. SEM2024ER02-003.

For further information regarding properties, applications and limitations please refer to manufacturer's (preliminary) Technical Data Sheet.

Drawings showing arrangement of the *GFRP Insulation Support Block* together with calculation of the compressive stresses shall be submitted for approval for each ship application.

The *GFRP Insulation Support Block* shall be delivered with a certificate in accordance with EN 10204/3.1, or equivalent.

This approval is solely connected to the physical and strength properties of the material. The approval does not include any evaluation of toxicity, contamination, pollution, or fire technical properties.

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/package shall be marked with *manufacturer's name*: **CSSC Sdari-Eco (Shanghai) Co., Ltd., China**, *place of manufacture*, *type designation*: **GFRP Insulation Support Block**, shipment *quantity/weight/date*, *storage instructions* and *quality guarantee period*.

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