Certificate no.:
TAK00002HE

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Wood Products

with type designation(s)
Compressed Laminated Wood JZC6R

issued to
Linyi Yingzhong New Material Co., Ltd.
Linyi, Shandong, 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, for minimum temperature of cargo -170°C.

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

Issued at **Hamburg** on **2025-08-01**
This Certificate is valid until **2030-07-31**.
DNV local unit: **Qingdao NB & CMC**

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

Compressed Laminated Wood JZC6R for LNG and LPG tank supports.

Compressed laminated wood of crosswise arranged beech veneers, impregnated with phenolic formaldehyde resin and densified under high pressure and temperature.

Application/Limitation

For use as supporting material between cargo tanks for liquified gas and support in hull structure, for minimum temperature of cargo -170°C.

For regular, not submerged material, the Manufacturer has specified:

	23°C	-50°C	-170°C	
Compressive strength perpendicular (⊥) to veneers, minimum	240	240	240	[MPa] [ISO 604]
Compressive strength parallel (‖) to veneers, minimum	240	255	260	[MPa] [ISO 604]
Shear strength perpendicular (⊥) to veneers, minimum	60	60	60	[MPa] [IEC 61061-2]
Shear strength parallel (‖) to veneers, minimum	50	50	50	[MPa] [IEC 61061-2]

Density, 23°C	1.32 – 1.48	[g/cm^3] [ISO 1183-1]
Water absorption, 23°C	≤0.5	[%] [ISO 62:2008, Method 1]
Oil absorption, 23°C	≤0.4	[%] [ISO 62:2008, Method 1]
Compressive strength after 4 weeks water absorption, 23°C	≥97	[%] [ISO 604]
Compressive strength after 5 weeks water absorption, 23°C	≥97	[%] [ISO 604]

Application Temperature Range in accordance with manufacturer's Material Performance Table (JZC6R), WI-SOP-002.

Storage, handling, and installation to be in accordance with manufacturer's recommendations, ref. "Marine Load-bearing Wood (JZC6R) Maintenance, Storage, and Installation Standards", Document No. QC-SOP-113, Version No.01.

Repairs of installed wooden blocks to be informed to the Society and to be in accordance with manufacturer's recommendations, ref. "Marine Load-bearing Wood (JZC6R) Maintenance, Storage, and Installation Standards", Document No. QC-SOP-113, Version No.01.

For further information regarding properties, applications and limitations please refer to manufacturer's Material Performance Table (JZC6R), WI-SOP-002.

Drawings showing arrangement of the laminated compressed wood together with calculation of the compressive stresses shall be submitted for approval for each ship application.

The compressed wood 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*: **Linyi Yingzhong New Material Co., Ltd., China** or *manufacturer's symbol*, and *type designation*: **Compressed Laminated Wood JZC6R**.

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