Certificate no.:
TAK00002CD

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Wood Products

with type designation(s)
GJ-01

issued to
Jiangsu GuangJia New Material Technology Co., Ltd.
Jingjiang, **China**

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

Application:

Supporting material between cargo and fuel tanks for liquified gas and support in hull structure, for minimum temperature of cargo of - 196°C.

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

Issued at **Hamburg** on **2024-04-26**
This Certificate is valid until **2029-04-25**.
DNV local unit: **Jiangyin NB & CMC**

for **DNV**

Approval Engineer: **Joachim Rehbein**

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 300,000 USD.

Product description

GJ-01: Compressed laminated wood of crosswise arranged beech veneers, impregnated with phenolic formaldehyde resin.

Material properties

The following manufacturer's specified minimum values have been confirmed by type testing:

Properties	Test Method	GJ-01	Unit	Value
Density, +20°C	ISO 1183-1	1.30	g/cm³	msmv
Compressive strength ⊥				
- 196°C	ISO 604	245	MPa	msmv
+ 23°C		245		
Compressive strength ||				
- 196°C	ISO 604	175	MPa	msmv
+ 23°C		175		

Notes:
All testing with regular, not submerged material.
All -196°C tests are performed at room temperature after one hour stored at -196°C.
⊥ = Perpendicular to laminate
|| = Parallel to laminate
msmv = Manufacturer's Specified Minimum Value

Assessed production site

Jiangsu GuangJia New Material Technology Co., Ltd.
NO.61 Weiyi Road,
North of zhe Jingjiang City Industrial Park,
Jiangsu Province,
China

Application/Limitation

For use as supporting material between fuel or cargo tanks for liquified gas and the support in hull structure, for minimum temperature of cargo -196°C.

Drawings showing arrangement of the compressed wood supports 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 according to EN 10204/3.1 or equivalent.

Storage, handling and installation to be in accordance with manufacturer's recommendations. Any repairs of installed wooden blocks to be in accordance with manufacturer's recommendations and be informed to the Society.

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 according to **Type Approval documentation**.

Marking of product

Product/package shall be marked with *manufacturer's name* or *manufacturer's symbol* and *type designation.*

Periodical assessments

A condition for retention of the TA certificate in its validity period is that periodical assessments are successfully carried out. The objective of the periodical assessment is to verify that the conditions for the TA have not been altered.

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