



Certificate no.:
TAK00002KY

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Hardwood for Tank Supports

with type designation(s)
KLY-LW

issued to

Kang Liyuan Science & Technology (Tianjin) Co., Ltd.
Tianjin, 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 -165°C.

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

Issued at **Hamburg** on **2025-12-30**

This Certificate is valid until **2030-12-29**.

for **DNV**

DNV local unit: **Dalian NB & CMC**

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 USD 300 000.

Product description

KLY-LW: Laminated compressed wood of crosswise arrangement of beech veneers, impregnated with phenolic resin.

Material properties

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

Properties	Test Method	KLY-LW	Unit	Value
Density, +20°C	ISO 1183-1	1.3	g/cm³	msmv
Compressive strength ⊥				
- 196°C	ISO 604	120	MPa	msmv
+ 23°C		120		
Compressive strength				
- 196°C	ISO 604	120	MPa	msmv
+ 23°C		120		

Notes:

Compression testing carried out static, 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

Kang Liyuan Science & Technology (Tianjin) Co., Ltd., No.12, Qingtong Road, Wang Qingtuo Town, Wuqing District, Tianjin, China.

Application/Limitation

For use as supporting material between cargo tanks for liquified gas and support in hull structure, for minimum temperature of cargo -165°C.

Arrangement drawing of supports including calculation of the compressive stresses shall be submitted for approval for each application.

The compressed wood shall be delivered with a quality certificate according to EN ISO 10204.

Storage, handling and installation to be in accordance with manufacturer's recommendations. Any repairs of installed 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 in accordance with Type Approval documentation.

Marking of product

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

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

Job ID: **262.1-043335-1**
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