

TYPE APPROVAL CERTIFICATE

This is to certify:

That the FRP Grating

with type designation(s)

FRP Pultruded Phenolic Grating PHP-6038, FRP Pultruded Grating I-6038 MINCOM-PFR, FRP Moulded Grating (38 x 38 x 38) MFRP-HFR

Issued to

Nantong Mincom Composite Materials Co.,Ltd.
Nantong, China

is found to comply with

DNV offshore standards

DNV rules for classification – Ships

DNV statutory interpretations DNV-SI-0364 – SOLAS interpretations, Edition July 2021

Application :

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

Issued at **Hamburg** on **2021-11-01**

This Certificate is valid until **2025-08-30**.

for **DNV**

DNV local station: **Nantong**

Approval Engineer: **Timo Linn**

Jörg Kallies
Head of Section

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

"FRP Pultruded Phenolic Grating PHP-6038, FRP Pultruded Grating I-6038 MINCOM-PFR, FRP Moulded Grating (38 x 38 x 38) MFRP-HFR"

Technical dimensions:

Model PHP-6038

FRP pultruded phenolic grating; 6 feet long, 24 inch. wide, 1.5 inch. thick. 60% OPENING.

Model I-6038, MINCOM-PFR

FRP pultruded Isophthalic grating; 6 feet long, 24.21 inch. wide, 1.5 inch. thick. 60% OPENING

Model FRP Grating (38 x 38 x 38) MFRP-HFR

FRP moulded Isophthalic grating of square mesh; 5.99 feet long, 24 inch. wide, 1.5 inch. thick.

Product	Structural Fire Integrity Level (ASTM F3059)	Flame Spread Index (ASTM E84)	Smoke Developed Index (ASTM E84)	Smoke and Toxicity (2010 FTP Code Annex1, Part2)	Surface Flammability (2010 FTP Code Annex 1, Part5)
FRP Pultruded Phenolic Grating PHP-6038	L2, L2 ₃	0	0	Meets	Meets
FRP Pultruded Isophthalic Grating MINCOM-PFR	L0	20	185	/	/
FRP Grating (38 x 38 x 38) MFRP-HFR	L0	10	20	/	/

Application/Limitation

The FRP grating is only evaluated in accordance with fire technical requirements. Other requirements such as strength etc. has to be evaluated in each case.

For use in locations according to the below Structural Fire Integrity Matrix.

Structural Fire Integrity Matrix (ASTM F3059-15)

Location	Service	Fire Integrity
Machinery Spaces	Walkways or areas which may be used for escape, or access for fire fighting, emergency operation or rescue	L1 ₁
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	L3
Cargo Pump Rooms	All personnel walkways, catwalks, ladders, platforms or access areas	L1
Cargo Holds	Walkways or areas which may be used for escape, or access for fire fighting, emergency operation or rescue	L1
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	L0
Cargo Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	L0 ₂
Fuel Oil Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	L0
Ballast Water Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	L0
Cofferdams, void spaces, double	All personnel walkways, catwalks, ladders, platforms or access areas	L0 ₅

bottoms, pipe tunnels, etc.		
Accommodation, service, and control spaces	All personnel walkways, catwalks, ladders, platforms or access areas	Not permitted
Lifeboat embarkation or temporary safe refuge stations in open deck areas	All personnel walkways, catwalks, ladders, platforms or access areas	L2
Open Decks or semi-enclosed areas	Operational areas and access routes for deck foam firefighting systems on tank vessels	L2
	Walkways and areas that may be used for escape, or access for firefighting systems and AFFF hose reels, emergency operation, or rescue on MODUs and production platforms including safe access to tanker bows	L2 ₄
	Walkways or areas that may be used for escape or access for fire fighting, emergency operation or rescue other than those used above	L3
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	L3
	Gangway for safe access to bow on tankers according to IMO MSC.62(67)	L2 ₃

Footnote:

- 1) If machinery space does not contain any internal combustion machinery, other oil burning, oil heating or oil pumping units, fuel oil filling stations, or other potential hydrocarbon fire sources and has not more than 2.5 kg/m² of combustible storage, gratings of L3 integrity may be used in lieu of L1.
- 2) Gratings that are electrically conductive shall be required. Acceptance criteria for resistance per unit length and to earth is: < 0.1 M Ω to earth. Test standard ASTM D257-91, ref. DNV-CP-0070 "Fibre reinforced thermosetting plastic piping systems - Non-metallic materials"
- 3) Also required to be tested according to IMO 2010 FTP Code Part 5 and 2 for floor covering (IMO MSC.1/Circ.1504).
- 4) Tested with furnace temperature curve according to ASTM E119 (i.e. not tested for Hydrocarbon or Jet fire exposure).
- 5) For passenger ships required to meet the safe return to port regulations, MSC.1/Circ.1369 Interpretation No. 8 to be specially considered to determine if it is a space in which the risk of a fire originating is negligible or not.

This Certificate does not cover testing of the FRP grating subjected to Hydrocarbon or Jet fire exposure. DNV recommend that for any area where FRP grating is arranged and with possible exposure to

Hydrocarbon or Jet fire, Risk Assessment is conducted to ensure that the use of FRP does not have any negative effect with respect to Escape, Safe Evacuation, Firefighting and Escalation of the original fire incident.

Each product is to be supplied with its manual for installation and maintenance.

Type Approval documentation

Certification in accordance with Class Programme DNV-CP-0338, September 2021.

Test Report No. 104032284SAT-002_Rev.3 dated 20 April 2020 from Intertek Testing Services Ltd., Texas, USA.

Test Report No. 191225004SHF-001-R1 dated 8 January 2020 from Intertek Testing Services Shenzhen Ltd., Shanghai Fengxian Branch, China.

Test Report No. 190522006SHF-001 dated 31 May 2019 Intertek Testing Services Shenzhen Ltd., Shanghai Fengxian Branch, China.

Test Report No. FT21173 dated 31 May 2021 by FEFTC, Far EAST Fire Testing Centre, Shanghai, China.

Test Report No. FT21196 dated 24 June 2021 by FEFTC, Far EAST Fire Testing Centre, Shanghai, China.

Tests carried out

Tested according to ASTM F3059 and ASTM E84.

Tested according to IMO Res. MSC.307(88) – 2010 FTP Code Annex 1, Part 5 and Part 2.

Structural fire integrity was tested with furnace temperature curve according to ASTM E119.

Marking of product

Each FRP grating shall be marked as a minimum with the brand and the appropriate fire rating (L1, L2, L3 or L0). The label shall be molded into the grating or included on a permanently attached label.

Periodical assessment

DNV surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Programme DNV-CP-0338, Section 4.