

TYPE APPROVAL CERTIFICATE

This is to certify:**That the FRP Grating**

with type designation(s)

FRP Moulded Grating: IFR, VFR and PFR**FRP Pultruded Grating: IFR**

Issued to

Dongtai Structured Composites Co.,Ltd.
Dong Tai, Jiangsu, China

is found to comply with

DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations**DNV GL rules for classification – Ships****DNV GL offshore standards****Application :****For use in locations according to enclosed Structural Fire Integrity Matrix.****Application is to be considered and accepted for each case/project.**Issued at **Høvik** on **2018-06-29**This Certificate is valid until **2023-06-28**.for **DNV GL**DNV GL local station: **Nantong**Approval Engineer: **Nanna Martine Jacobsen**

Mårten Schei-Nilsson
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.



Product description

FRP Moulded Grating: IFR, VFR and PFR
FRP Pultruded Grating: IFR

Composed of continuous fiber glass, aluminium hydroxide and unsaturated resin according to below table:

<i>FRP Moulded Grating</i>	<i>Resin</i>
IFR	Isophthalic resin
VFR	Vinyl ester resin
PFR	Orthophthalic resin

<i>FRP Pultruded Grating</i>	<i>Resin</i>
IFR	Isophthalic resin

FRP Moulded Grating:

- nominal thickness: 35 mm
- nominal wide: 610 mm
- nominal long: 910 mm

FRP Pultruded Grating:

- nominal thickness: 38 mm
- nominal wide: 585 mm
- nominal long: 910 mm

Tests results according to ASTM E84-12:

<i>FRP Moulded Grating</i>	<i>Flame Spread Index</i>	<i>Smoke Developed Index</i>
IFR	15	155
VFR	5	140
PFR	15	150

<i>FRP Pultruded Grating</i>	<i>Flame Spread Index</i>	<i>Smoke Developed Index</i>
IFR	25	400

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.

The FRP grating is for use in locations according to the below Structural Fire Integrity Matrix.

Structural Fire Integrity Matrix:

Location	Service	Fire Integrity required	FRP Moulded Grating	FRP Pultruded Grating
Machinery Spaces	Walkways or areas which may be used for escape, or access for fire fighting, emergency operation or rescue	L1 ₁	NO	NO
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	L3	NO	NO
Cargo Pump Rooms	All personnel walkways, catwalks, ladders, platforms or access areas	L1	NO	NO
Cargo Holds	Walkways or areas which may be used for escape, or access for fire fighting, emergency operation or rescue	L1	NO	NO

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	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	None required	YES	NO
Cargo Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	None required _{2,4}	YES	YES
Fuel Oil Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	None required ₂	YES	YES
Ballast Water Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	None required ₂	YES	YES
Cofferdams, void spaces, double bottoms, pipe tunnels, etc.	All personnel walkways, catwalks, ladders, platforms or access areas	None required ₂	YES	YES
Accommodation, service, and control spaces	All personnel walkways, catwalks, ladders, platforms or access areas	L1	NO	NO
Lifeboat embarkation or temporary safe refuge stations in open deck areas	All personnel walkways, catwalks, ladders, platforms or access areas	L2	NO	NO
Open Decks or semi-enclosed areas	Walkways or areas which may be used for escape, or access for fire fighting, emergency operation or rescue	L3 ₃	NO	NO
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	None required	YES	YES
	Gangway for safe access to bow on tankers according to IMO MSC.62(67)	L2	NO	NO

Notes:

- (1) The machinery space shall **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 shall **not** have more than 2.5 kg/m² of combustible storage.
- (2) Only if these spaces are normally **not** entered when underway.
- (3) Platforms and access serving deck foam fire fighting systems require gratings of L2 integrity.
- (4) 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 GL-CP-0070 "Fibre reinforced thermosetting plastic piping systems - Non-metallic materials"

Not tested with respect to hydrocarbon pool or jet fire exposures.

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

Type Approval documentation

Certification in accordance with Class Programme DNVGL-CP-0338, October 2017.

Test reports no.:

- AJD201306510-1 dated 2 December 2013 from SGS, China
- SDHGR121102481FM dated 23 November 2012 from SGS, China
- SDHGR121102482FM dated 23 November 2012 from SGS, China
- SDHGR121102483FM dated 23 November 2012 from SGS, China

Tests carried out

Tested according to ASTM E84-12.

Marking of product

The product or packing is to be marked with name and address of manufacturer and type designation.



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Periodical assessment

DNV GL's 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 DNVGL-CP-0338, Section 4.