

TYPE APPROVAL CERTIFICATE

This is to certify:

That the FRP Grating

with type designation(s)

Jossongrate (Powergrate) Pultruded and Molded Fiberglass Grating

Issued to

Nantong Josson New Material Technology Co., Ltd.
Nantong Jiangsu, China

is found to comply with

Det Norske Veritas' Offshore Standards

Det Norske Veritas' Rules for Classification of Ships

Det Norske Veritas' Interpretation of SOLAS 1974 Convention as Amended

Application :

For use in locations according to enclosed Structural Fire Integrity Matrix. Application is to be considered and accepted for each case/project.

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

This Certificate is valid until **2017-12-31**.

Issued at **Høvik** on **2015-07-22**

for **DNV GL**

DNV GL local station: **Nantong**

Approval Engineer: **Ragnar Tonjer**

Petter Langnes
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

"Jossongrate (Powergrate) Pultruded Fiberglass Grating" with the following properties and test results:

Product name (ref. test report)	Flame Spread Index	Smoke Developed Index	Weight [Kg/m ²]
IFR-25 (ISOPHTHALIC RESIN), I6015, 1 1/2" THICK, 60% OPENING	20	400	16.1
VEFR-10 (VINYL ESTER RESIN), I6015, 1 1/2" THICK, 60% OPENING	5	350	16.1

"Jossongrate (Powergrate) Molded Fiberglass Grating" with the following properties and test results:

Product name (ref. test report)	Flame Spread Index	Smoke Developed Index	Weight [Kg/m ²]
OFR-25 (ORTHOPHTHALIC RESIN), 1" THICK x 1 1/2" x 1 1/2" SQUARE MESH	15	250	12.3
VEFR-10 (VINYL ESTER RESIN) 1" THICK x 1 1/2" x 1 1/2" SQUARE MESH	0	195	12.3
IFR-10 (ISOPHTHALIC RESIN), 1" THICK x 1 1/2" x 1 1/2" SQUARE MESH	0	135	12.3
IFR-25 (ISOPHTHALIC RESIN), 1" 1/2" THICK x 1 1/2" x 1 1/2" SQUARE MESH	15	200	19.5
IFR-25 (ISOPHTHALIC RESIN), 40 mm THICK x 38 mm X 38 mm SQUARE MESH, INCLUDES 3 mm FRP FLAT SHEET	5	350	25.5
IFR-25 (ISOPHTHALIC RESIN), 1" THICK x 1" x 4" RECTANGULAR MESH, BEARING BAR (TOP/BOTTOM): 6.5/5.0 mm	10	400	13.83
IFR-25 (ISOPHTHALIC RESIN), 1" THICK x 1" x 4" RECTANGULAR MESH, BEARING BAR (TOP/BOTTOM): 10.5/8.0 mm (HEAVY DUTY)	5	350	19.8

Application/Limitation

For use in locations according to enclosed Structural Fire Integrity Matrix.

Structural Fire Integrity Matrix.

Location	Service	IFR-25, VEFR-10, OFR-25, IFR-10, IFR-25 and VEFR-10
Machinery Spaces	Walkways or areas which may be used for escape, or access for fire fighting, emergency operation or rescue	NO
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	NO
Cargo Pump Rooms	All personnel walkways, catwalks, ladders, platforms or access areas	NO
Cargo Holds	Walkways or areas which may be used for escape, or access for fire fighting, emergency operation or rescue	NO

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	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	YES
Cargo Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	NO
Fuel Oil Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	YES ₁
Ballast Water Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	YES ₁
Cofferdams, void spaces, double bottoms, pipe tunnels, etc.	All personnel walkways, catwalks, ladders, platforms or access areas	YES ₁
Accommodation, service, and control spaces	All personnel walkways, catwalks, ladders, platforms or access areas	NO
Lifeboat embarkation or temporary safe refuge stations in open deck areas	All personnel walkways, catwalks, ladders, platforms or access areas	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	NO
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	YES
	Gangway for safe access to bow on tankers according to IMO MSC.62(67)	NO

(1) The grating can only be used if these spaces are normally not entered when underway.

Type Approval documentation

Certification in accordance with Standard for Certification No. 1.2, Type Approval, January 2013.

Test Report Nos. AJD201301926 (**IFR-25**) dated 2013-06-18 and AJD201301927 (**VEFR-10**) dated 2013-06-17, both from SGS-CSTC Co., Ltd., China.

Test Report Nos. AJD201301924 (**OFR-25**) dated 2013-04-25, AJD201301923 (**IFR-10**) dated 2013-06-17, AJD201303125 (**VEFR-10**) dated 2013-06-18 and AJD201303125-1 (**IFR-25 1" ½"**) dated 2013-06-19, AJHG1506004339FB (**IFR-25 40 mm**) dated 2015-06-23, AJHG1506004340FB (**IFR-25 1"**) dated 2015-06-18 and AJHG1506004338FB (**IFR-25 1"**) dated 2015-06-23, all from SGS-CSTC Co., Ltd., China.

Tests carried out

Tested according to ASTM E84-12 and ASTM E84-15a.

Marking of product

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

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 Standard for Certification No. 1.2 Type Approval Item 4.