Certificate no.:
TAF00001Y6

TYPE APPROVAL CERTIFICATE

This is to certify:

that the FRP Grating

with type designation(s)
Fiber-Reinforced Polymer Gratings Model: SRGS-6015I

issued to
Luoyang Sunrui Rubber & Plastic Science and Technology Co., Ltd.
Luoyang, Henan Province, China

is found to comply with

DNV statutory interpretations DNV-SI-0364 – SOLAS interpretations, Edition July 2021
DNV offshore standards
DNV rules for classification – Ships

Application:

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

Application is to be considered and accepted for each case/project.

Product approved by this certificate is accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2024-11-13**
This Certificate is valid until **2029-11-12**.
DNV local unit: **Wuhan NB & CMC**

for **DNV**

Approval Engineer: **Joanna Kowalczuk**

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

"Fiber-Reinforced Polymer Gratings Model: SRGS-6015I"

Tests results according to ASTM F3059-SECTION 16、ASTM F3059-SECTION 17

Grating	Flame Spread Index	Smoke Developed Index	Structural Fire Intergrity Level
Fiber-Reinforced Polymer Gratings (coated, Non-grit side to flame) (24.5-ft. long x 24-in. wide x 1.5-in. thick)	0	5	L2
Fiber-Reinforced Polymer Gratings (coated, Grit side to flame) (24.5-ft. long x 24-in. wide x 1.5-in. thick)	0	5	
Fiber-Reinforced Polymer Gratings (non-coated, Bottom side to flame) (24.5-ft. long x 24-in. wide x 1.5-in. thick)	5	50	
Fiber-Reinforced Polymer Gratings (non-coated, Top side to flame) (24.5-ft. long x 24-in. wide x 1.5-in. thick)	5	25	

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 bottoms, pipe tunnels, etc.	All personnel walkways, catwalks, ladders, platforms or access areas	$L0_5$
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 mot 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 Program DNV-CP-0338, September 2021.

Test Report No. 105653188SAT-001A, dated 11 March 2024 from Intertek Testing Services Ltd., Texas, USA
Test Report No. 105653188SAT-001B, dated 11 March 2024 from Intertek Testing Services Ltd., Texas, USA
Test Report No. 105653188SAT-001C, dated 11 March 2024 from Intertek Testing Services Ltd., Texas, USA
Test Report No. 105653188SAT-001D, dated 11 March 2024 from Intertek Testing Services Ltd., Texas, USA
Test Report No. G105653188SAT-002 R0, dated 27 March 2024 from Intertek Testing Services Ltd., Texas, USA.

Tests carried out

Tested according to: ASTM E84-23 and ASTM F3059.

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’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 DNV-CP-0338, Section 4.