

## CERTIFICATE OF FIRE APPROVAL

This is to certify that

The product detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations, for use on ships classed with Lloyd's Register, and for use on ships when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

<b>Manufacturer</b>	Strongwell Chatfield
<b>Address</b>	1610 Highway 52 South Chatfield, MN 55923 United States of America
<b>Type</b>	<b>FIBER REINFORCED PLASTIC GRATING</b>
<b>Description</b>	Fire Resisting FRP Gratings meeting Structural Fire Integrity Requirements- Type: "DURAGRID Phenolic Pultruded Gratings 38mm and 45mm" Fire Resisting FRP Gratings meeting Structural Fire Integrity, Smoke and Toxicity and Low Flame Spread Requirements-Type: "DURAGRID Phenolic Pultruded Gratings 38mm and 45mm with earthenware topcoat and grit"
<b>Specified Standards</b>	ASTM F3059-15 "Standard Specification for Fiber-Reinforced Polymer (FRP) Gratings used in Marine Construction and Shipbuilding"; IMO Res. MSC.307(88)-(2010 FTP Code) Annex 1, Part 2 and Part 5; IMO Resolution MSC. 62(67) and IMO MSC.1/Circular.1504 - Guidelines for Safe Access to Tanker Bows

The attached Design Appraisal Document forms part of this certificate.

This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.

Date of issue	21 September 2017	Expiry date	20 September 2022
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Certificate No.	SAS F170229	Signed	
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Sheet No	1 of 3	Name	S. Abraham Surveyor to Lloyd's Register EMEA A Member of the Lloyd's Register Group
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**Note:**

**This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register of any modification or changes to the equipment in order to obtain a valid Certificate.**

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



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### DESIGN APPRAISAL DOCUMENT

Date	Quote this reference on all future communications
21 September 2017	SOUTSO/SFS/TA/SA/WP29755118

#### ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F170229

This Design Appraisal Document forms part of the Certificate.

#### APPROVAL DOCUMENTATION

Intertek Testing Services NA Inc. Elmendorf, Texas, United States of America; Fire test reports No: 102299027SAT-003A dated 25 November 2015 (for ASTM F3059-15 Structural Fire Integrity Test), 102429778SAT-003A Rev 1 and 102429778SAT -003B Rev 1, both dated 5 February 2016 (for ASTM E84 Surface flammability Tests), 103131845MID-001REV1 dated 1 August 2017 (IMO 2010 FTP Code Annex 1 Part 2 Test) and 103131845SAT-002A dated 26 July 2017 (IMO 2010 FTP Code Annex 1 Part 5 Test).

Composite Materials Technology Centre, Winona, Minnesota, United States of America; COMTEC Job File #061812-01 for ASTM F3059-15 Durability Test dated 11 July 2012, COMTEC Job File #121115-02 for Deflection Limits Test dated 22 January 2016, Assembled Grating Ultimate Failure Test, Wheel loading Test, Assembled Panel Impact Resistance Test, UV Resistance Test and Saltwater Spray Test, all dated 26 January 2016.

Smith-Emery Laboratories, Minnesota, United States of America; Test Project No: 31371-1 for ASTM F3059-15 Skid Resistance Tests dated 14 January 2016

#### CONDITIONS OF CERTIFICATION

1. "DURAGRID Phenolic FRP Pultruded Gratings" have achieved Structural Fire Integrity Level 2 (L2) and Surface Flammability Requirements according to ASTM F3059-15 and therefore may be considered for applications where Structural Fire Integrity Levels L2, L3 or L0 (Flame spread only) according to ASTM F3059-15 is required
2. "DURAGRID Phenolic FRP Pultruded Gratings" with "Strongwell Earthenware top coat and grit outer surface" may be considered for applications as described in 1 above and additionally where Smoke and Toxicity and Low Flame Spread Properties relevant for Primary deck coverings or Floor Coverings in accordance with IMO FTP Code Annex 1 Part 2 and Part 5 respectively are required (For example, for providing safe access to tanker bows in accordance with IMO Resolution MSC.62(67) and IMO MSC.1/Circular.1504)
3. DURAGRID gratings may be used in applications onboard ships only; their use for offshore platforms where they could be subjected to a hydrocarbon and/or jet fire exposure is outside the scope of this certificate and any such applications must be separately approved by the Project Plan Approval Authority on a case-by-case basis
4. Any surface coating used with the product, other than the "Strongwell Earthenware top coat and grit outer surface" mentioned in 2 above, is to be separately approved at its maximum thickness intended to be used in practice
5. The use of DURAGRID gratings in each case is to be approved by the design Plan Approval Authority for each project in accordance with relevant Flag Administration requirements. Generally, they may be considered on a case by case basis for walkways, ladders and platforms which are clearly not used for escape, or access for fire-fighting, emergency or rescue operations
6. Maximum unsupported span: 1118 mm (44 in)
7. Bearing bar thickness tested: 38.1mm (1.5 in) and 45mm (1.77 in)



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### DESIGN APPRAISAL DOCUMENT

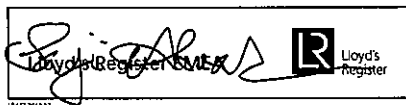
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#### ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F170229

8. Maximum bearing bar spacing: 38.1 mm (1.5 in)
9. Maximum cross rod (tie bar) spacing: 152mm (6 in)
10. DURAGRID Grating 38mm and 45mm construction, reinforcements, resins, adhesives, and construction details to be as indicated in the Follow-up Procedure Document, SwRI Project No. 01.25000.02.184 Revision 2, issued July 2016
11. Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as the approved prototype

#### PLACE OF PRODUCTION

Strongwell - Chatfield  
1610 Highway 52 South  
Chatfield, MN 55923  
United States of America



Saji Abraham  
Senior Specialist  
Statutory Fire & Safety  
Southampton Technical Support Office  
Marine & Offshore Lloyd's Register

#### Supplementary Type Approval Terms and Conditions

*This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s).*

