



Marine & Offshore
Division

Certificate number: 09504/D1 BV

File number: ACI 1310/061/001

Product code: 6474H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

STRONGWELL

Chatfield - UNITED STATES OF AMERICA

for the type of product

GRATINGS

Duradek, Duragrid, Duragrid Phenolic Fire Integrity Gratings

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships and Offshore Units,
SOLAS 74, as amended, chapter II-2
ASTM Standards (E119/ E84 / D635 / F3059)

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 14 Sep 2021

For BUREAU VERITAS,

At BV PORT EVERGLADES CENTRE, on 08 Dec 2016,
Flavio Rosas



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine & Offshore Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 October 2014

This certificate consists of 4 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

- 1 - **DURADEK**, high strength fiberglass gratings
 - Model series I-6000 1", I-6000 1.5" and T-5000 2"
- 2 - **DURAGRID**, custom fiberglass grids and gratings
 - Model I, T, ET, WT, R and HD Bar (profile of the bearing bar).
 - Sizes (depth or thickness) range from 1" through 2-1/2" in basis 1/4" increments
 - Configurations range from 0000 and 8000 (open area from 0% (completely closed) to 80% open)
- 3 - **DURAGRID**, phenolic fire integrity grating
 - Duragrid Phenolic Series I-0000 through I-6000
 - Grating thickness 38 mm and 45 mm

2. DOCUMENTS AND DRAWINGS:

- 2.1 - DURADEK and DURAGRID, commercial data sheet - ST0815
- 2.2 - DURAGRID phenolic commercial data sheet - ST0615
- 2.3 - Drawing A-0918081 rev.A
- 2.4 - Drawing A-0918082 rev.A
- 2.5 - Drawing A-0918083 rev.A

3. TEST REPORTS:

- 3.1 - From Intertek Testing laboratories, USA:
 - Test report N° 3152762SAT-001 dated 28.06.2008, as per ASTM E84-05
 - Test report N° 3152762SAT-002 dated 31.05.2008 as per ASTM D635-03
 - Test report N° 100093535SAT-001 Rev. 1 dated 12.05.2010 as per ASTM E-84
 - Test report N° 102429778MID-001 dated 18 january 2016 as per ASTM B117-11
 - Test report N° 102429778SAT-003A Rev 1 and N°102429778SAT-003B Rev 1 dated 16.01.2016 as per ASTM E84-15b
 - Test report N° 102299027SAT-003A dated 25.11.2015 as per ASTM F3059
- 3.2 - From VTEC laboratories, USA:
 - Test report N° 100-3267-2 dated 24.07.2009 as per UL 94
 - Test report N° 100-3267-1 dated 24.07.2009 as per ASTM D635
 - Test report N° 100-3267-3 dated 24.07.2009 as per ISO 5659
- 3.3 - From Composite Materials Technology Center, USA :
 - Test report N°121115-02 dated 22.01.2016, 26.01.2016 as per ASTM F3059-15
 - Test report N° 061812-01 dated 11.07.2012 as per ASTM D4060

 - Test report N°050113-01 dated 06.12.2013 as per ASTMD D790, ASTM D2344, ASTM D695, ASTM D256
- 3.4 - From Smith-Emery laboratories, USA
 - Test report 31371-1 dated 14.01.2016 as per ASTM D2047

4. APPLICATION / LIMITATION:

Location	Service	DURADEK See section 1 above	DURAGRID (Custom Fiberglass) See section 1 above	DURAGRID (Phenolic Fire Resistant) See section 1 above
Machinery Spaces	Walkways or areas which may be used for escape, or access for firefighting, emergency operation or rescue	NO	NO	NO ⁽¹⁾
	Personnel walkways, ladders, platforms or access areas other than those described above	NO	NO	YES
Cargo Pumps Rooms	All personnel walkways, ladders, platforms or access areas	NO	NO	NO
Cargo Holds	Walkways or areas which may be used for escape, or access for firefighting, emergency operation or rescue.	NO	NO	NO
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	YES	YES	YES
Cargo Tanks	All personnel walkways, ladders, platforms or access areas	YES ⁽²⁾	YES ⁽²⁾	YES ⁽²⁾
Fuel Oil Tanks	All personnel walkways, ladders, platforms or access areas	YES ⁽²⁾	YES ⁽²⁾	YES ⁽²⁾
Ballast Water Tanks	All personnel walkways, ladders, platforms or access areas	YES ⁽³⁾	YES ⁽³⁾	YES ⁽³⁾
Cofferdams, void spaces, double bottoms, pipe tunnels, etc...	All personnel walkways, ladders, platforms or access areas	YES ⁽³⁾	YES ⁽³⁾	YES ⁽³⁾
Accommodation, services and control spaces	All personnel walkways, ladders, platforms or access areas	NO	NO	NO
Lifeboat embarkation or temporary safe refuge stations in open deck areas	All personnel walkways, ladders, platforms or access areas	NO	NO	YES
Open decks or semi-enclosed areas	Walkways or areas which may be used for escape, or access for firefighting, emergency operation or rescue	NO	NO	YES
	Operational areas and access routes for deck foam firefighting systems on tank vessels.	NO	NO	YES
	Walkways or areas which may be used for escape, or access for firefighting and AFFF hoses reels, emergency operation or rescue on MODUs and production platform including safe access to tanker bows	NO	NO	YES
	Walkways or areas which may be used for escape, or access for firefighting systems, emergency operation or rescue other than those described above	NO	NO	YES
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	YES	YES	YES

- (1) If machinery space does not contain any internal combustion machinery, other potential hydrocarbon fire sources and has not more than 2.5 kg/m² of combustible storage, gratings DURAGRID (Phenolic Fire Resistant) (See section 1 above) may be used.
- (2) If these spaces are normally entered when underway, none of the gratings listed in the section 1 above can be used.
- (3) If these spaces are normally entered when underway, gratings **DURAGRID (Phenolic Fire Resistant)** (See section 1 above) may be used.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The **DURADEK** and **DURAGRID** are to be supplied by **STRONGWELL** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 - **STRONGWELL** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - **STRONGWELL** has declared to Bureau Veritas the following production site(s):

**STRONGWELL
Chatfield Division
1610 Highway 52 South
55923-9799 Chatfield (MN)
UNITED STATES OF AMERICA**

6. MARKING OF PRODUCT:

The product or packing is to be marked with manufacturer name, type, designation and fire-technical rating.

7. OTHERS:

7.1 - It is **STRONGWELL's** responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This certificate supersedes the Type Approval Certificate N° 09504/D0 BV issued on 14/09/2016 by the Society.

***** END OF CERTIFICATE *****