

## TYPE APPROVAL CERTIFICATE

**Certificate No.** : NYK34047-FG001 **Initial Approval** : 27th August, 2015.  
**Product** : FRP Grating  
**Manufacturer** : Strongwell-Chatfield Location  
1610 Highway 52 South, Chatfield, 55923 MN, United States of America

**Product Description** : Type : DURADEK, DURAGRID, DURAGRID PHENOLIC

- Fire Integrity Level :  
: DURADEK : None  
: DURAGRID : None  
: DURAGRID PHENOLIC : Level 2

" See Appendix 1 ~ 3 "

**Approval Condition** : " See Appendix 2 ~ 3 "

**THIS IS TO CERTIFY** that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows and entered in the "List of Approved Manufacturers and Type Approved Equipment".

Pt.4, Ch.4, Sec.5 of the Rules for Classification of Steel Ships.

This Certificate is valid until 26th August, 2020.

Issued at Busan, Korea on 27th August, 2015.



KOREAN REGISTER OF SHIPPING

*General Manager of  
Marine & Ocean Equipment Team*

*Note :1 The approval will be automatically suspended and the Certificate become invalid from the expiry date of the Certificate in the event that the extension has not been granted or the renewal of the Certificate is not underway.*

*2 The manufacturer should notify this Society of any modification or changes that may affect the validity of this Certificate.*

## Appendix 1

### Product Description and/or Approval Condition

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#### 1. Product Descriptions

- 1) DURADEK
  - Pultruded fiberglass grating using a fire retardant vinyl ester resin or fire retardant polyester resin.
  - I-6000 1", I-6000 1.5", T-5000 2"
- 2) DURAGRID
  - Custom pultruded fiberglass grating using a fire retardant vinyl ester or fire retardant polyester resin.
  - I, T, HD, WT, R & E Series 0000 through 8000
- 3) DURAGRID PHENOLIC
  - Pultruded fiberglass grating using a phenolic resin.
  - Duragrid Phenolic Grating I0000 to I6000
  - Grating Thickness : 38 mm to 45 mm
  - Max. unsupported span : 1120 mm

#### 2. Service and Location

Location	Service	DURADEK	DURAGRID	DURAGRID PHENOLIC
Machinery Spaces	Walkways or areas which may be used for escape, or access for fire fighting, emergency operation or rescue	NO	NO	NO*(1)
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	NO	NO	YES
Cargo Pump Rooms	All personnel walkways, catwalks, ladders, platforms or access areas	NO	NO	NO
Cargo Holds	Walkways or areas which may be used for escape, or access for fire fighting, 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, catwalks, ladders, platforms or access areas	YES *(2) (5)	YES *(2) (5)	YES *(2) (5)
Fuel Oil Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	YES *(2)	YES *(2)	YES *(2)
Ballast Water Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	YES *(3)	YES *(3)	YES
Cofferdams, void spaces,	All personnel walkways, catwalks, ladders, platforms or access areas	YES *(3)	YES *(3)	YES
Double bottoms, pipe tunnels, etc	All personnel walkways, catwalks, ladders, platforms or access areas	YES *(3)	YES *(3)	YES
Accommodation, service and control spaces	All personnel walkways, catwalks, ladders, platforms or access areas	NO	NO	NO

< To be continued >



## Appendix 2

### Product Description and/or Approval Condition

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Location	Service	DURADEK	DURAGRID	DURAGRID PHENOLIC
Lifeboat embarkation or temporary safe refuge stations in open deck areas	All personnel walkways, catwalks, ladders, platforms or access areas	NO	NO	YES *(4)
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	NO	YES* (4)
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	YES	YES	YES
*(1) If the 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 not more than 2.5 kg/m <sup>2</sup> of combustible storage, gratings of L3 integrity may be used in lieu of L1. *(2) If these spaces are normally entered when underway, gratings of L1 integrity shall be required. *(3) If these spaces are normally entered when underway, gratings of L3 integrity shall be required. *(4) Platforms and access serving deck foam fire fighting systems require gratings of L2 integrity. *(5) Electrically conductive gratings shall be required. Acceptance criteria : < 0.1 MΩ per unit length, < 1 MΩ to earth by ASTM D257-91 or equivalent.				

3. Approved Drawings : No. A-0918081 and A-0918082

#### 4. Approval Conditions

1) This approval has been granted on the basis of the test reports No. :

From Southwest Research Institute, USA:

- Test report No 01.14431.01.309 dated 18.02.2009 as per USCG PFM 2-98-2 (ASTM E119)
- Test report No 01-7520-372 dated 24.09.1996 as per ASTM D635

From Intertek Testing laboratories, USA:

- Test report No 3152762SAT-001 dated 28.05.2008 as per ASTM E84-05
- Test report No 3152762SAT-002 dated 31.05.2008 as per ASTM D635-03
- Test report No 100093535SAT-001 Rev. 1 dated 12.05.2010 as per ASTM E-84
- Test report No 101547766SAT-001C, -D, -E dated 30.05.2014 as per ASTM E84

From VTEC laboratories, USA:

- Test report No 100-3267-2 dated 24.07.2009 as per UL 94
- Test report No 100-3267-1 dated 25.07.2009 as per ASTM D635
- Test report No 100-3267-3 dated 06.08.2009 as per ISO 5659

From Microstat Laboratories, USA:

- Test Report No 2013-070 dated 07.10.2013 as per ASTM D257

From Fowler Associates, USA:

- Test Report No CHA0073 dated 04.07.2013 as per EN13463

< To be continued >

## Appendix 3

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- 2) The manufacturer should inform this Society of any changes to the product, if any.
- 3) Each product is to be supplied with its manual for installation, use and maintenance.
- 4) This approval has been granted only after evaluation in accordance with fire technical requirements and therefore does not cover the characteristics such as strength, service life and environmental properties, etc. other than specified value.
- 5) The product or packing is to be marked with manufacturer name, type designation and fire integrity rating on a suitable position.
- 6) Suitability of where gratings may be used in ship board locations to be agreed by the Administration.
- 7) Individual Product Certification is not required.

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