

# TYPE APPROVAL CERTIFICATE

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**This is to certify:**

**That the Class H Fire Wall and Bulkhead**

with type designation(s)  
**Pyroclad X1 - Bulkhead**

Issued to

**Carboline Company**  
**St. Louis MO, United States**

is found to comply with  
**DNV GL offshore standards**

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**Application :**

**Approved for use as fire retarding bulkhead of class H-0, H-60 and H-120.**

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

This Certificate is valid until **2021-12-02**.

Issued at **Høvik** on **2016-12-03**

DNV GL local station: **Houston**

for **DNV GL**

Approval Engineer: **Tomasz Werchowicz**

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**Petter Langes**  
**Head of Section**

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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.

Job Id:  
Certificate No: **TAF00000G3**

## Product description

"Pyroclad X1 - Bulkhead "

composed of minimum 4.5 mm steel bulkhead insulated on the fire exposed side (plate side). The system is composed by a primer covered by a 2 part epoxy mastic fire barrier (Pyroclad X1). The intumescent coating is reinforced at approx. 2/3 of desired thickness with high temperature fabric (HTF) with overlap or steel wire mesh (GHC) fixed with pins.

Wet density of Pyroclad X1 is 1035-1110 kg/m<sup>3</sup>.

**Table 1: H-bulkhead rating and corresponding thickness of "Pyroclad X1":**

| Rating | DFT     | Comment                                                               |
|--------|---------|-----------------------------------------------------------------------|
| H-0    | 6,5 mm  | No temperature limit                                                  |
| H-60   | 11,6 mm | Max temperature rise of 140 °C / 180 °C (avg. / single) after 60 min  |
| H-120  | 12,5 mm | Max temperature rise of 140 °C / 180 °C (avg. / single) after 120 min |

The materials are manufactured at the premises of: Carboline Company, 95 Airpark Vista Blvd. Dayton, NV 89403, USA

## Application/Limitation

The protective coating is not defined as non-combustible and should not be used in accommodation or in enclosed areas.

Minimum fabric overlap shall be not less than 50 mm.

Restricted application: Fire against insulated side.

The application of the protective coating is to be performed in accordance with the manufacturer's application manual. Alternative primers and topcoats may be used provided they have been tested and approved by the manufacture.

Each product is to be supplied with its manual for application and maintenance.

## Type Approval documentation

Pyroclad X1 Fire Barrier System Application Manual, Rev.0, dated February 2013 from Carboline Co., St. Louis, US.

Technical Notes:

- 070212 dated 2<sup>nd</sup> July 2012,
- 041013 dated 10<sup>th</sup> April 2013,

both from from Carboline Co., St. Louis, US.

Test Reports:

- No. 100515706SAT-003A, Rev.1 dated 14<sup>th</sup> June 2012,
- No. 100515706SAT-003B, Rev.1 dated 14<sup>th</sup> June 2012,
- No. 100700843SAT-004B, dated 28<sup>th</sup> February 2013,
- No. 100463890SAT-016 dated 16<sup>th</sup> June 2012,

all from from Intertek Evaluation Center, Texas, US.

## Tests carried out

Tested according to IMO FTP Code Part 3 and in compliance with IMO 2010 FTP Code Ch. 8, with the furnace temperature following the hydrocarbon curve specified in EN 1363-2.

## Marking of product

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



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### **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 Class Programme DNVGL-CP-0338, Section 4.