

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Class B Bulkhead

with type designation(s)
STACO-W-C50R

Issued to

STACO Co., Ltd.
Busan, Republic of Korea

is found to comply with

Det Norske Veritas' Interpretation of SOLAS 1974 Convention as Amended
Det Norske Veritas' Offshore Standards
Det Norske Veritas' Rules for Classification of Ships

Application :

Approved for use as a fire retarding division of class B-15.

This certificate is recognized by Transport Canada.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2019-07-02**.

Issued at **Høvik** on **2015-07-03**

for **DNV GL**

DNV GL local station: **Pusan**

Approval Engineer: **Piotr Orzechowski**

Petter Langnes
Head of Section

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.

Product description

"STACO-W-C50R"

Bulkhead panels consist of an insulation core constructed by two layers of 19.5 mm mineral wool with density of 140 kg/m³ (by Byucksan Youngdong Plant) with 10 mm air gap between the layers. The insulation core is faced on both sides with 0.6 mm steel sheet by adhesive (OCUA 970SNF).

The panels are connected together with a joint spline (34 x 3 mm steel) fitted in a M-bar (0.6 mm steel). The connection point is insulated with 48.5 mm mineral wool with density 140 kg/m³ (by Byucksan Youngdong Plant).

Total thickness of panels 50 mm.

Modified standard type

Bulkhead panels consist of an insulation core constructed by two layers of 19.5 mm mineral wool with density of 140 kg/m³ (by Byucksan Youngdong Plant) with 10 mm air gap between the layers. The insulation core is faced on both sides with 0.6 mm steel sheet by adhesive (OCUA 970SNF).

The panels are connected together with a joint spline (30 x 3 mm steel) fitted in a M-bar (0.6 mm steel). The connection point is insulated with 48.5 mm mineral wool with density 240 kg/m³ (by KCC Corporation, Korea). The air gap is supported by 3 pieces of 10 mm thick mineral wool with density 140 kg/m³ ((by Byucksan Youngdong Plant)).

Total thickness of panels 50 mm.

Cable conduit type

Bulkhead panels consist of an insulation core constructed by two layers of 15 mm mineral wool with density of 140 kg/m³ (by Byucksan Youngdong Plant) with 18 mm air gap between the layers. The insulation core is faced on both sides with 0.6 mm steel sheet by adhesive (OCUA 970SNF).

The panels are connected together with a joint spline (30 x 3 mm steel) fitted in a M-bar (0.6 mm steel). The connection point is insulated with 48.5 mm mineral wool with density 240 kg/m³ (by KCC Corporation, Korea). The air gap is supported by 6 pieces of 18 mm thick mineral wool with density 140 kg/m³ (by Byucksan Youngdong Plant) and the air gap contains the cable. Total thickness of panels 50 mm.

Sound insulated standard type

Bulkhead panels consist of an insulation core constructed by two layers of 19.5 mm mineral wool with density of 140 kg/m³ (by Byucksan Youngdong Plant) with 10 mm air gap between the layers. The insulation core is faced on both sides with 0.7 + 0.6 mm steel sheet by adhesive (OCUA 970SNF).

The panels are connected together with a joint spline (30 x 3 mm steel) fitted in a M-bar (0.6 mm steel). The connection point is insulated with 48.5 mm mineral wool with density 240 kg/m³ (by KCC Corporation, Korea). The air gap is supported by 3 pieces of 10 mm thick mineral wool with density 140 kg/m³ (by Byucksan Youngdong Plant).

Total thickness of panels 50 mm.

Sound insulated cable conduit type

Bulkhead panels consist of an insulation core constructed by two layers of 15 mm mineral wool with density of 140 kg/m³ (by Byucksan Youngdong Plant) with 18 mm air gap between the layers. The insulation core is faced on both sides with 0.7 + 0.6 mm steel sheet by adhesive (OCUA 970SNF).

The panels are connected together with a joint spline (30 x 3 mm steel) fitted in a M-bar (0.6 mm steel). The connection point is insulated with 48.5 mm mineral wool with density 240 kg/m³ (by KCC Corporation, Korea). The air gap is supported by 6 pieces of 18 mm thick mineral wool with density 140 kg/m³ (by Byucksan Youngdong Plant) and the air gap contains the cable.

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Certificate No: **TAF000001S**

Total thickness of panels 50 mm.

For further details, see the test reports and drawings listed under Type Approval documentation below.

Application/Limitation

Maximum size of panels: 600 x 2480 mm (W x H).

Any surface materials used have to be approved for smoke and toxicity and low flame-spread characteristics (IMO 2010 FTP Code parts 2 and 5) when required according to relevant rules and regulations.

Any adhesive used other than the one used during testing, has to be tested for low flame spread characteristics according to IMO 2010 FTP Code part 5.

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

Type Approval documentation

Certification in accordance with Standard for Certification No. 1.2, Type Approval, January 2013.

Test report 2006-0533 dated 19 July 2006 from Fire Insurers Laboratories of Korea (FILK), Korea,

Test report 2009-0552 dated 11 August 2009 from Fire Insurers Laboratories of Korea (FILK), Korea (Modified standard type and Cable conduit type),

Test report KOMERI-F-09T412 dated 1 October 2009 from Korea Marine Equipment Research Institute, Korea (Sound insulated standard type and Sound insulated cable conduit type).

Drawing Nos:

G-W-C50R dated 15 June 2006

G-W-C50R-1 dated 13 June 2009

G-W-C50R-2 dated 21 August 2009

all from manufacturer.

Tests carried out

Tested according to IMO FTPC Part 3 and in compliance with IMO 2010 FTP Code Ch.8.

Marking of product

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

Transport Canada Approval

Based on the procedures laid down in the Transport Canada Publication entitled "*Approval Procedures for, Life Saving Equipment and Structural Fire Protection Products (TP 14612)*", Det Norske Veritas confirms that the product listed in this certificate is in accordance with Transport Canada's requirements.

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 Standard for certification No. 1.2 Type Approval Item 4.