



TYPE APPROVAL CERTIFICATE

Certificate No:
TAF00000N1
Revision No:
1

This is to certify:

That the Fire-Restricting Materials for High Speed Craft

with type designation(s)
Fire Restricting Composite Bulkheads and Decks

Issued to
Thermal Ceramics UK Ltd
Wirral, Merseyside, United Kingdom

is found to comply with
IMO International Code of Safety for High-Speed Craft (HSC CODE)
DNV rules for classification – High speed and light craft

Application :

Approved for use as a fire restricting material in High Speed Craft.

This certificate is recognized by Transport Canada.

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

Issued at **Høvik** on **2022-07-01**

for **DNV**

This Certificate is valid until **2027-06-30**.

DNV local station: **UK & Ireland CMC & VMC**

Approval Engineer: **Helge Bjørnarå**

Helene David-Andersen
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

"Fire Restricting Composite Bulkheads and Decks", consist of a fire reinforced polymer (FRP) sandwich insulated on the exposed side with FireMaster Marine Plus Blanket secured with washers and special stainless steel pins with self-tapping screws. The insulation shall follow the contours of the stiffeners. The insulation is covered with an aluminium foil.

The approved product is described in detail below. The product is in general only approved for use on vessels built according to 2000 HSC Code or rules based on this Code (examples: yachts, navy ships, patrol boats, etc.).

The installation is to be performed according to the manufacturers Fire Protection Systems Information, reference No. FM MS 05 PW and No. FM 4.74.

The products may be manufactured at the premises of:

- Morgan Kailong (Jingmen) Thermal Ceramics Co., Ltd., Jingmen, China.
- Morgan Thermal Ceramics (Shanghai) Co., Ltd., Shanghai, China.
- Thermal Ceramics de France S.A., Saint-Marcellin-en-Forez, France.
- Murugappa Morgan Thermal Ceramics Ltd., Dist.- Gandhinagar, India.
- Murugappa Morgan Thermal Ceramics Ltd, Ranipet, India.
- Morgan Thermal Ceramics Korea, Daegu, Korea.
- Grupo Industrial Morgan SA de CV, Pachuca de Soto, Mexico.
- Thermal Ceramics, Inc., Augusta, USA.

Application/Limitation

Approved for use as a fire restricting material in High Speed Craft.

Fire hazard shall be on the insulated side.

Only the combined product (insulation and FRP structure) is approved as a fire resisting material. The product is to be installed as tested, with the below details considered being the main issues.

Insulation, foil and pins

The insulation shall be applied on the exposed side of the FRP structure (bulkhead or deck) with 20 mm FireMaster Marine Plus Blanket (manufactured by Thermal Ceramics with density 48 kg/m³) or with 25 mm FireMaster Marine Plus Blanket (manufactured by Thermal Ceramics with density 64 kg/m³). The transversal joints between the layers are to be installed in a staggered pattern, whereas the longitudinal joints shall be pressed tight together (the nominal blanket width is 610 mm and is to be compressed to a width of 580 mm to ensure this compression).

The insulation and foil shall be secured with 38 mm friction fit washers and special stainless steel pins (typically 80 mm long, 3 mm in diameter) with 5 mm self-tapping screws (penetrating 30 mm into skin/core). The pins are to be installed with a nominal spacing of 240 mm across the layers, 225 mm (deck) or 250 mm (bulkhead) along the layers, whereas pins at the joints shall have a nominal spacing of 100 mm. For bulkheads, the distance between pins in the middle row is 500 mm.

FRP structure

The insulation was tested on construction with the following specification:

- Laminate: E-glass fibres (biaxial 0/90°, 1200 g/m²) and polyester resin (thickness: 1.0 mm)
- Core: Divinycell H80/GPC1 (semi-rigid PVC core)

The sandwich bulkhead was assembled with a 50 mm Divinycell core with a 1.0 mm laminate on each side of the core.

Application of other FRP materials

The systems are in general only approved for composite cores with same materials and dimensions as tested. On a case by case basis other equivalent composites may be applied when confirmed acceptable and documented by the maker and found to be acceptable by the flag administration. The following issues are to be addressed:

1. The bulkhead shall have tensile strength, stiffness and other mechanical properties (cold conditions) equivalent or better than to that being tested
2. The materials (core, fibre, resin, etc.) shall have mechanical properties at the relevant temperature range (typically 20 °C to 250 °C) equivalent to the material used in the test. The heat distortion temperature for each material, thickness of laminate and density of the core may be applied as criteria.

The construction is to be supplied with its manual for installation/application.

Type Approval documentation

Certification in accordance with Class Programme DNV-CP-0338, September 2021.

Test report No. P604618 dated 8 February 2007 from SP, Borås, Sweden.
Test report No. P604618A dated 13 February 2007 from SP, Borås, Sweden.

Thermal Ceramics Fire Protection Systems Information, reference No. FM MS 05 PW, Rev.3 and No. FM 4.74, Rev.1.

Tests carried out

Tested according to IMO FTP Code Part 10 (IMO Res. MSC.40(64)) and in compliance with IMO 2010 FTP Code Ch. 8.

Marking of product

The installation 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 "Procedures for Approval of Life-Saving Appliances, Fire Safety Systems, Equipment and Products (TP14612)", DNV confirms that the product/s listed in this certificate is/are in accordance with Transport Canada's requirements.

Periodical assessment

DNV'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 DNV-CP-0338, Section 4.