DNV·GL

Certificate No:
TAF00000GX

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Structural Fire Protection

with type designation(s)
Firetex M90/02 - Hollow section

Issued to
Sherwin-Williams Protective & Marine Coatings
Bolton, United Kingdom

is found to comply with
DNV GL offshore standards

Application :

Approved for use as a system for fire protection of structural steel hollow sections.

This Certificate is valid until **2021-11-26**.

Issued at **Høvik** on **2016-11-27**

for **DNV GL**

DNV GL local station: **Manchester**

Approval Engineer: **Helge Bjørnarå**

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

"Firetex M90/02" – Hollow section
The system is composed by a primer (Firetex C69) covered by an epoxy based intumescent coating (Firetex M90/02). The epoxy based intumescent coating is reinforced mid depth with embedded fabric (Firetex J220).

The materials are manufactured at the following locations:

- Sherwin-Williams, Bolton, UK.

Application/Limitation

The thickness of "Firetex M90/02" system to be applied to avoid temperatures to rise on the steel substrate less than 200 °C, 250 °C, 300 °C, 350 °C, 400 °C, 450 °C, 500 °C, 538 °C, 550 °C, 600 °C, 650 °C, 700 °C and 750 °C for "hollow" sections, are given in appendix table 1-13.

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. Wet density of "Firetex M90/02" is 1000 kg/m^3.

The approval refers only to the fire resistance properties of the system.

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

Certification in accordance with Class Programme DNVGL-CP-0338, October 2015.

Initial Survey report dated 2012-04-20 from DNV Liverpool
Test report No. 315153 dated 2012-02-01 from Exova Warringtonfire
Test report No. 308082 dated 2011-09-15 from Exova Warringtonfire
Test report No. 308083 dated 2011-09-15 from Exova Warringtonfire
Test report No. 308084 dated 2011-09-15 from Exova Warringtonfire
Test report No. 309191 dated 2011-09-15 from Exova Warringtonfire
Letter 309675 CL dated 2010-09-12 from Exova Warringtonfire, UK

Tests carried out

Tested according to ISO 834-3 and IMO FTP Code Part 3 (IMO Res. A.754 (18)).

Marking of product

The product or packing is to be marked with name of manufacturer and type designation.

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.

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Table 1: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **200 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
	30	60	90	120	150	180
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]

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Table 2: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **250 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
	30	60	90	120	150	180
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]

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Table 3: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **300 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
	30	60	90	120	150	180
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]

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Table 4: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **350 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
	30	60	90	120	150	180
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]

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Table 5: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **400 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
	30	60	90	120	150	180
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]

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Table 6: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **450 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
	30	60	90	120	150	180
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]

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Table 7: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **500 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
	30	60	90	120	150	180
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]

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Table 8: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **538 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
	30	60	90	120	150	180
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]

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Table 9: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **550 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
	30	60	90	120	150	180
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]

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Table 10: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **600 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
	30	60	90	120	150	180
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]

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Table 11: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **650 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]

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Table 12: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **700 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]

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Table 13: Thickness of "FIRETEX M90/02" system for fire protection of "hollow" sections for a critical temperature rise of **750 °C:**

Hp/A	Time [min]					
	30	60	90	120	150	180
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Hp/A	Time [min]					
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The maximum thickness of protection material up to the required Hp/A [m^{-1}] shall be used.

Hp/A = Ratio between Heat perimeter and cross sectional Area of the section, [m^{-1}]