DNV·GL

Certificate No:
TAF000002J

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Structural Fire Protection

with type designation(s)
Jotachar JF750 - I sections

Issued to
Jotun A/S
SANDEFJORD, Norway

is found to comply with
Det Norske Veritas' Offshore Standards

Application :

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

This Certificate is valid until **2017-12-31**.

Issued at **Høvik** on **2015-08-26**

for **DNV GL**

DNV GL local station: **Sandefjord**

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.

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Product description

"Jotachar JF750" – I section
The system is composed by a two-pack epoxy based primer covered by a two component epoxy thick-film intumescent coating (Jotachar JF750).

The materials are manufactured at Jotun Paints (Europe) Ltd., Scunthorpe, North Lincolnshire, United Kingdom.

Application/Limitation

The thickness of "Jotachar JF750" system to be applied to avoid temperatures to rise on the steel substrate less than 200ºC, 250ºC, 300ºC, 350ºC, 400ºC, 427ºC, 450ºC, 500ºC, 538ºC, 550ºC, 600ºC, 620ºC and 650ºC for I 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.

Relative density of "Jotachar JF750" is 1.0 g/cm^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 Standard for Certification No. 1.2, Type Approval, January 2013.

Application Guide: Jotachar JF750, Rev.01-2, dated 22 November 2013 from Jotun A/S, Sandefjord, Norway

Test report No. 274544 dated 2012-10-26 from BRE Global, Watford, UK
Test report No. 274545 dated 2012-12-07 from BRE Global, Watford, UK
Test report No. 274546 dated 2013-03-13 from BRE Global, Watford, UK
Test report No. 280997 dated 2012-10-19 from BRE Global, Watford, UK
Test report No. 283092 dated 2013-03-14 from BRE Global, Watford, UK
Test report No. 13-04716 dated 2013-04-22 from Al Futtaim Exova LLC, Dubai, UAE
Statement dated 2013-07-22 from BRE Global, Watford, UK
Test report No. 295585 dated 2014-10-03 from BRE Global, Watford, UK

Test report No. 301713, Issue: 1, dated 2015-04-30 from BRE Global, Watford, UK
Assessment report No. 4786961005 dated 2015-07-02 from UL, Northbrook, Illinois, USA

Tests carried out

Tested according to BS 476: Part 20 and 21: 1987 with HC-curve according to ISO 834-3.

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 Certification Retention Surveys at any time during the validity period of this certificate and at least every year. The arrangement is to be in accordance with procedure described in Standard of Certification Note No. 1.2 item 4.

Appendix to certificate TAF000002J for Jotun A/S

Table 1: Thickness of "Jotachar JF750" system for fire protection of *I* sections for a critical temperature rise of **200°C:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
180						
185						
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210						
215						
220						
225						
230						
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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}]

Appendix to certificate TAF000002J for Jotun A/S

Table 2: Thickness of "Jotachar JF750" system for fire protection of *I* sections for a critical temperature rise of **250ºC:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
180						
185						
190						
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215						
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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}]

Appendix to certificate TAF000002J for Jotun A/S

Table 3: Thickness of "Jotachar JF750" system for fire protection of I sections for a critical temperature rise of **300ºC:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
10						
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
180						
185						
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215						
220						
225						
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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}]

Appendix to certificate TAF000002J for Jotun A/S

Table 4: Thickness of "Jotachar JF750" system for fire protection of I sections for a critical temperature rise of **350ºC:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
10						
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
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185						
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215						
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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}]

Appendix to certificate TAF000002J for Jotun A/S

Table 5: Thickness of "Jotachar JF750" system for fire protection of I sections for a critical temperature rise of **400ºC:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
180						
185						
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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}]

Appendix to certificate TAF000002J for Jotun A/S

Table 6: Thickness of "Jotachar JF750" system for fire protection of I sections for a critical temperature rise of **427ºC:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
180						
185						
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215						
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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}]

Appendix to certificate TAF000002J for Jotun A/S

Table 7: Thickness of "Jotachar JF750" system for fire protection of I sections for a critical temperature rise of **450ºC:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
180						
185						
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215						
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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}]

Appendix to certificate TAF000002J for Jotun A/S

Table 8: Thickness of "Jotachar JF750" system for fire protection of I sections for a critical temperature rise of **500ºC:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
10						
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	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}]

Appendix to certificate TAF000002J for Jotun A/S

Table 9: Thickness of "Jotachar JF750" system for fire protection of I sections for a critical temperature rise of **538ºC:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
180						
185						
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215						
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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}]

Appendix to certificate TAF000002J for Jotun A/S

Table 10: Thickness of "Jotachar JF750" system for fire protection of I sections for a critical temperature rise of **550ºC:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
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185						
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215						
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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}]

Appendix to certificate TAF000002J for Jotun A/S

Table 11: Thickness of "Jotachar JF750" system for fire protection of I sections for a critical temperature rise of **600°C:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	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}]

Appendix to certificate TAF000002J for Jotun A/S

Table 12: Thickness of "Jotachar JF750" system for fire protection of I sections for a critical temperature rise of **620°C:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	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}]

Appendix to certificate TAF000002J for Jotun A/S

Table 13: Thickness of "Jotachar JF750" system for fire protection of I sections for a critical temperature rise of **650°C:**

Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	30	60	90	120	150	180
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Hp/A	Fire resistance time in minutes, Thickness in mm					
[m^{-1}]	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}]