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European Technical Assessment

ETA 16/0588
of 01/09/16

General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: Warrington Certification	
Trade name of the construction product	**FIRETEX FX2005**
Product family to which the construction product belongs	35. Fire Protective Products Reactive Coating for the Fire Protection of Steel Elements
Manufacturer	**Sherwin-Williams Protective and Marine Coatings** **TowerWorks** **Kestor Street** **BL2 2AL** **Bolton, UK**
Manufacturing plant(s)	**Sherwin-Williams Protective and Marine Coatings** **TowerWorks** **Kestor Street** **BL2 2AL** **Bolton, UK**
This European Technical Assessment contains	32 pages including 1 Annex which form an integral part of this assessment.
	Annex B and Annex C contain confidential information and are not included in the European Technical Assessment when that assessment is publicly available.
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	ETAG 018-1 edition April 2013 and ETAG 018-2 edition November 2011 used as European Assessment Document (EAD)

General Comments

1. This European Technical Assessment is issued by Warrington Certification on the basis ETAG 018 Fire Protective Products Part 1: General and Part 2: Reactive Coatings For Fire Protection of Steel Elements, Used as European Assessment Document.

2. This European Technical Assessment is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1.

3. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

4. Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identifies as such.

SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical Description of the Product

FIRETEX FX2005 is a spray or brush/roller applied intumescent paint formulated for the fire protection of structural steel elements.

In accordance with ETAG 018-2 (foreword), FIRETEX FX2005 may be considered as a reactive coating kit that includes one or more primers and/or topcoats (Option 3).

According to the manufacturer's declaration, the product specification has been compared with Annex XVII of REACH and the ECHA Candidate List of Substances of Very High Concern to verify that that it does not contain such substances.

2 Specification Of The Intended Use In Accordance With The Relevant EAD

The intended use of FIRETEX FX2005 is to fire protect various sizes of structural steel 'I' and 'H' shaped beam and column sections for up to a fire resistance classification of R120 and structural steel rectangular/square and circular hollow column sections for up to a fire resistance classification of R60 and for design temperatures in the range of 350°C to 750°C. Table of results for additional times also form part of the evaluation.

The provisions made in this ETA are based on an assumed working life of the applied coating for the intended use of 10 years, provided that it is subject to appropriate use and maintenance according to manufacturer's instruction. The indications given on the intended working life cannot be interpreted as a guarantee given by the producer, but are to be used as a means for selecting the appropriate product in relation to the expected economically reasonable working life of the works.

FIRETEX FX2005 was subjected to the identification testing in accordance with the methods of identification defined in Table 5.3 of ETAG 018 Part 2. Tests for 'fingerprinting' have been done as described in Annex E (Thermoanalytical analyses (TG) and Infrared spectroscopy analyses (IR)).

FIRETEX FX2005 has been assessed as being compatible with the following primers:

Primers and Primer Sets				
Primer Reference	**Generic Primer Type**	**Tested Nominal Primer DFT (mm)**	**Permitted Primer Thickness Range (mm)**	
			Minimum[1]	**Maximum**
Firetex C69	Two component epoxy[2]	0.050	0.025	0.075
Steel Spec M600	Alkyd[2]	0.076	0.038	0.114
Macropoxy C400v3	Two component epoxy[2]	0.102	0.051	0.153
Zinc Clad IV E (80%)	Zinc rich epoxy[2]	0.099	0.050	0.149
Zinc Clad IV E (80%) /Macropoxy M330	(A two pack epoxy zinc rich anticorrosive primer / A two pack epoxy sealercoat)[3]	0.249 (0.095/0.154)	0.124 (0.047/0.077)[7]	0.373 (0.142/0.231)[7]
Macropoxy C400v3 / Acrolon C137v2	(A multi-functional epoxy zinc phosphate primer / Fast drying acrylic urethane gloss finish)[3]	0.230 (0.080/0.150)	0.115 (0.040/0.075)[7]	0.345 (0.120/0.225)[7]
Mordant Wash L703 / Macropoxy K267 (galvanised)[5]	(Blue mordant solution / Two pack epoxy primer)[4]	0.222 (0/0.222)	0.111	0.333
Mordant Wash L703 (galvanised)[6]	Blue mordant solution[4]	0.000	0.000	0.000

[1] Where the permitted theoretical minimum DFT is less than typical minimum dry film thickness recommended by manufacturer, the practical information given in product data sheet must be followed

[2] The generic approval is applicable to other primers from the same generic group provided the thickness is within the tolerance given. The approval does not cover galvanizes steel

[3] The approval is applicable to specific primer/primer sets. The approval does not cover galvanizes steel

[4] The approval is applicable to specific primer/primer sets. The approval covers galvanizes steel

[5] Galvanised steel plate. Galvanised steel panel was cleaned with solution referenced 'Mordant Wash L703' before primer application

[6] Galvanised steel plate. Galvanised steel panel was cleaned with solution referenced 'Mordant Wash L703' before intumescent protection application

[7] Each product should be increased/reduced following manufacturer recommendations in order to ensure compatibility

FIRETEX FX2005 has been assessed as being compatible with the following top coats:

Top Coats				
Top Coat Reference[1]	**Top Coat Description[1]**	**Tested Nominal Top Coat DFT (mm)**	**Permitted Top Coat Thickness Range (mm)**	
			Minimum	**Maximum**
FIRETEX M71V2	Sheen decorative topcoat	0.050	0.050	0.075
Acrolon C137V2 (up to Type Y exposure)	Fast drying acrylic urethane gloss finish	0.060	0.060	0.090
Acrolon C137V2 (up to Type X exposure)	Fast drying acrylic urethane gloss finish	0.120	0.120	0.180
Acrolon C237 (up to Type Y exposure)	Fast drying acrylic urethane sheen finish	0.050	0.050	0.075
Acrolon C237 (up to Type X exposure)	Fast drying acrylic urethane sheen finish	0.100	0.100	0.150

[1] The approval is limited to the specific product.

FIRETEX FX2005 has been assessed as having passed the requirements for durability according to ETAG 018 Part 2 with and without the following top coats:

Top Coat Reference[1]	**Top Coat Description**	**Approved Top Coat Colours**	**Durability Approvals Based On The Carried Out Testing**			
			Type Z_2	**Type Z_1**	**Type Y**	**Type X**
No Top Coat	-	-	✓	✓		
FIRETEX M71V2	Sheen decorative topcoat	All Colours	✓	✓	✓	
Acrolon C137V2	Fast drying acrylic urethane gloss finish	All Colours	✓	✓	✓	✓
Acrolon C237	Fast drying acrylic urethane sheen finish	All Colours	✓	✓	✓	✓

[1] The approval is limited to the specific product.

3 Performance Of The Product And References To The Methods Used For Its Assessment

Product: Reactive coating		Intended use: Fire protection of structural steel elements
Verification method	Product characteristic	Performance
MECHANICAL RESISTANCE AND STABILITY		
-	-	-
SAFETY IN CASE OF FIRE		
EN 13501-1	Reaction to fire	up to Class B-s1, d0 (classification depends on the protection system components)
EN 13501-2	Fire resistance	(R15 to R120) - IncSlow (I/H Beams and Columns) and (R15 to R60) - IncSlow (Rectangular/Square and Circular Hollow Columns) (see Annex A)
HYGIENE, HEALTH AND THE ENVIRONMENT		
Manufacturer's declaration	Release of dangerous substances	Product specification doesn't contain dangerous substances given in Annex XVII of REACH and the ECHA Candidate List of Substances of Very High Concern
SAFETY IN USE		
-	-	-
PROTECTION AGAINST NOISE		
-	-	-
ENERGY ECONOMY AND HEAT RETENTION		
-	-	-
ASPECTS OF SERVICEABILITY, DURABILITY AND IDENTIFICATION		
ETAG 018 Part 2 Clause 5.7.1 and Clause 5.7.2.2	Durability and serviceability	• Primer and top coat compatibility • Type X durability • Type Y durability • Type Z_1 durability • Type Z_2 durability
ETAG 018 Part 2 Clause 5.7.3	Identification	Thermoanalytical analyses (TG) and Infrared spectroscopy analyses (IR)

In addition to the specific clauses relating to dangerous substances contained in this European technical assessment, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

4 Assessment And Verification Of Constancy Of Performance (Hereinafter AVCP) System Applied, With References To Its Legal base

According to the decision 1999/454/EC of the European Commission Decision of date 22 June 1999 on the procedure for attesting the conformity of construction products pursuant to Article 20(2) of Council Directive 89/106/EEC as regards fire stopping, fire sealing and fire protective products, the system of assessment and verification of constancy of performance (see Annex V to the Regulation (EU) No 305/2011) given in the following table apply:

Products	Intended uses	Level or Class	System
Fire protective products (including coatings)	Fire protection of steel elements	Any	1

5 Technical Details Necessary For The Implementation Of The AVCP System, As Provided For In The Applicable EAD.

The manufacturer shall exercise permanent internal control, record and evaluate the results of factory production in accordance with the provisions laid down in the "Control Plan" related to this European Technical Assessment. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. The production control system shall ensure that the product is in conformity with this European Technical Assessment.

The manufacturer may only use verified by Technical Assessment Body initial/raw/constituent materials stated in the technical documentations related to this European Technical Assessment.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

In cases where the provisions of the European technical assessment and its "Control Plan" are no longer fulfilled the certification body shall withdraw the Certificate of Constancy and inform the relevant authorities e.g. NANDO, EOTA.

The Table 8.1 in ETAG 018 Part 2 presents an example of the properties that shall be controlled and minimum frequencies of control. The exact test method and threshold have been laid down in the factory production control plan, operated by the manufacturer and deposited at Warrington Certification.

Signatories


Responsible Officer D. Podolski* - Certification Engineer


Approved J. Yuan* - Group Chief Engineer

* For and on behalf of Warrington Certification.

Annex A - Product Performance: Fire Resistance

1 This Annex relates to the use of FIRETEX FX2005 for the fire protection of 'I' and 'H' shaped beam and column sections and rectangular/square and circular hollow column sections. The precise scope is given in Tables 1 to 24 which show the total dry film thickness of FIRETEX FX2005 (excluding primer and top coat) required to provide classifications of R15 to R120 for 'I' and 'H' shaped beam and column sections, and of R15 to R60 for rectangular/square and circular hollow column sections, for various design temperatures and section factors. Table of results for additional times also form part of this European Technical Assessment.

2 The product is approved on the basis of:

i) Approval testing in accordance with the principles of EN 13381-8.

ii) A design appraisal against this ETA adopting the differential formula analysis (variable λ approach) defined in Annex E of EN 13381-8.

3 The data presented in the tables in this Annex refers to both beams (three-sided fire exposure) and columns (surface area and four sided exposure).

4 The data shown is applicable to steel sections blast cleaned to ISO 8501-1 SA2.5 or equivalent and primed with the compatible primers and top coats listed in this ETA. The primer and top coat permitted dry film thicknesses are provided in the body of this European Technical Assessment.

5 The data for the 'I' and 'H' shaped beams and columns applies also to other shaped steel sections that have re-entrant details such as channels, angles and tees.

6. FIRETEX FX2005 has been exposed to the slowing heating regime (IncSlow) defined in Annex A of EN 13381-8 and has satisfied the requirements to provide classification according to EN 13501-2.

Tables of Results

'I/H' Section Beams and 'I/H' Section Columns

Table 1: I/H section Beams: Fire resistance period: 15 Minutes											
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
49	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
50	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
55	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
60	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
65	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
70	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
75	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
80	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
85	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
90	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
95	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
100	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
105	0.241	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
110	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
115	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
120	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
125	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
130	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
135	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
140	0.349	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
145	0.349	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
150	0.349	0.241	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
155	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
160	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
165	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
170	0.385	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
175	0.421	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
180	0.421	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
185	0.421	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
190	0.421	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
195	0.421	0.313	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
200	0.421	0.349	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
205	0.457	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
210	0.493	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
215	0.493	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
220	0.493	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
225	0.493	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
230	0.493	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
235	0.529	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
240	0.565	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
245	0.565	0.421	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
250	0.565	0.421	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
255	0.565	0.421	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
260	0.565	0.421	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
265	0.565	0.421	0.313	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
270	0.600	0.421	0.349	0.241	0.194	0.194	0.194	0.194	0.194	0.194	0.194
275	0.636	0.421	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
280	0.636	0.421	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
285	0.636	0.421	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
290	0.636	0.457	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
295	0.636	0.493	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
300	0.636	0.493	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
305	0.672	0.493	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
310	0.708	0.493	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
315	0.708	0.493	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
320	0.708	0.493	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
325	0.708	0.493	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
330	0.708	0.493	0.385	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
333	0.708	0.493	0.421	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194

Thickness is intumescent only.

Results apply to I/H-section beams with concrete slabs with 3 sided fire exposure.

Table 2: I/H section Beams: Fire resistance period: 30 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
49	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
50	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
55	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
60	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
65	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
70	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
75	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
80	0.349	0.277	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
85	0.421	0.277	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
90	0.421	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
95	0.421	0.349	0.277	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
100	0.493	0.349	0.277	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
105	0.493	0.385	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
110	0.493	0.421	0.349	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
115	0.565	0.421	0.349	0.277	0.277	0.194	0.194	0.194	0.194	0.194	0.194
120	0.565	0.421	0.349	0.277	0.277	0.277	0.194	0.194	0.194	0.194	0.194
125	0.565	0.457	0.349	0.349	0.277	0.277	0.194	0.194	0.194	0.194	0.194
130	0.636	0.493	0.421	0.349	0.277	0.277	0.194	0.194	0.194	0.194	0.194
135	0.636	0.493	0.421	0.349	0.277	0.277	0.277	0.194	0.194	0.194	0.194
140	0.636	0.493	0.421	0.349	0.277	0.277	0.277	0.194	0.194	0.194	0.194
145	0.708	0.493	0.421	0.349	0.277	0.277	0.277	0.241	0.194	0.194	0.194
150	0.708	0.565	0.421	0.349	0.349	0.277	0.277	0.277	0.194	0.194	0.194
155	0.708	0.565	0.493	0.421	0.349	0.277	0.277	0.277	0.194	0.194	0.194
160	0.744	0.565	0.493	0.421	0.349	0.349	0.277	0.277	0.194	0.194	0.194
165	0.780	0.565	0.493	0.421	0.349	0.349	0.277	0.277	0.241	0.194	0.194
170	0.780	0.636	0.493	0.421	0.349	0.349	0.277	0.277	0.277	0.194	0.194
175	0.816	0.636	0.493	0.421	0.349	0.349	0.313	0.277	0.277	0.194	0.194
180	0.852	0.636	0.565	0.493	0.385	0.349	0.349	0.277	0.277	0.194	0.194
185	0.852	0.636	0.565	0.493	0.421	0.349	0.349	0.277	0.277	0.194	0.194
190	0.888	0.708	0.565	0.493	0.421	0.349	0.349	0.313	0.277	0.194	0.194
195	0.924	0.708	0.565	0.493	0.421	0.421	0.349	0.349	0.277	0.194	0.194
200	0.924	0.708	0.565	0.493	0.421	0.421	0.349	0.349	0.277	0.194	0.194
205	0.924	0.708	0.636	0.493	0.421	0.421	0.349	0.349	0.277	0.241	0.194
210	0.996	0.780	0.636	0.565	0.421	0.421	0.349	0.349	0.277	0.277	0.194
215	0.996	0.780	0.636	0.565	0.457	0.421	0.349	0.349	0.313	0.277	0.194
220	0.996	0.780	0.636	0.565	0.493	0.421	0.421	0.349	0.349	0.277	0.194
225	1.068	0.780	0.636	0.565	0.493	0.421	0.421	0.349	0.349	0.277	0.194
230	1.068	0.852	0.708	0.565	0.493	0.421	0.421	0.349	0.349	0.277	0.194
235	1.068	0.852	0.708	0.565	0.493	0.493	0.421	0.385	0.349	0.277	0.194
240	1.104	0.852	0.708	0.636	0.493	0.493	0.421	0.421	0.349	0.277	0.194
245	1.140	0.852	0.708	0.636	0.493	0.493	0.421	0.421	0.349	0.277	0.194
250	1.140	0.888	0.708	0.636	0.529	0.493	0.421	0.421	0.349	0.277	0.194
255	1.176	0.924	0.780	0.636	0.565	0.493	0.421	0.421	0.349	0.277	0.194
260	1.212	0.924	0.780	0.636	0.565	0.493	0.493	0.421	0.349	0.277	0.194
265	1.212	0.924	0.780	0.636	0.565	0.493	0.493	0.421	0.349	0.277	0.194
270	1.248	0.960	0.780	0.708	0.565	0.565	0.493	0.421	0.421	0.313	0.194
275	1.284	0.996	0.780	0.708	0.565	0.565	0.493	0.421	0.421	0.349	0.194
280	1.284	0.996	0.852	0.708	0.565	0.565	0.493	0.457	0.421	0.349	0.194
285	1.284	0.996	0.852	0.708	0.600	0.565	0.493	0.493	0.421	0.349	0.194
290	1.356	1.032	0.852	0.708	0.636	0.565	0.493	0.493	0.421	0.349	0.194
295	1.356	1.068	0.852	0.708	0.636	0.565	0.493	0.493	0.421	0.349	0.194
300	1.356	1.068	0.852	0.780	0.636	0.565	0.493	0.493	0.421	0.349	0.194
305	1.392	1.068	0.924	0.780	0.636	0.565	0.565	0.493	0.421	0.349	0.194
310	1.428	1.068	0.924	0.780	0.636	0.636	0.565	0.493	0.421	0.349	0.194
315	1.428	1.140	0.924	0.780	0.636	0.636	0.565	0.493	0.421	0.349	0.241
320	1.464	1.140	0.924	0.780	0.636	0.636	0.565	0.493	0.457	0.349	0.241
325	1.500	1.140	0.924	0.780	0.708	0.636	0.565	0.529	0.493	0.349	0.277
330	1.500	1.140	0.996	0.852	0.708	0.636	0.565	0.565	0.493	0.349	0.277
333	1.500	1.176	0.996	0.852	0.708	0.636	0.565	0.565	0.493	0.349	0.277

Thickness is intumescent only.

Results apply to I/H-section beams with concrete slabs with 3 sided fire exposure.

Table 3: I/H section Beams: Fire resistance period: 45 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
49	0.349	0.277	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
50	0.349	0.277	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
55	0.421	0.349	0.277	0.277	0.194	0.194	0.194	0.194	0.194	0.194	0.194
60	0.457	0.349	0.349	0.277	0.277	0.194	0.194	0.194	0.194	0.194	0.194
65	0.493	0.421	0.349	0.277	0.277	0.277	0.194	0.194	0.194	0.194	0.194
70	0.565	0.421	0.349	0.349	0.277	0.277	0.194	0.194	0.194	0.194	0.194
75	0.565	0.493	0.421	0.349	0.277	0.277	0.277	0.194	0.194	0.194	0.194
80	0.636	0.493	0.421	0.349	0.349	0.277	0.277	0.277	0.194	0.194	0.194
85	0.636	0.493	0.457	0.421	0.349	0.349	0.277	0.277	0.277	0.194	0.194
90	0.708	0.565	0.493	0.421	0.349	0.349	0.277	0.277	0.277	0.194	0.194
95	0.708	0.565	0.493	0.421	0.385	0.349	0.349	0.277	0.277	0.194	0.194
100	0.780	0.636	0.565	0.493	0.421	0.349	0.349	0.349	0.277	0.194	0.194
105	0.780	0.636	0.565	0.493	0.421	0.421	0.349	0.349	0.277	0.241	0.194
110	0.852	0.672	0.565	0.493	0.421	0.421	0.349	0.349	0.349	0.277	0.194
115	0.852	0.708	0.636	0.493	0.493	0.421	0.385	0.349	0.349	0.277	0.194
120	0.924	0.708	0.636	0.565	0.493	0.421	0.421	0.349	0.349	0.277	0.194
125	0.924	0.780	0.636	0.565	0.493	0.493	0.421	0.421	0.349	0.277	0.194
130	0.996	0.780	0.708	0.565	0.493	0.493	0.421	0.421	0.349	0.277	0.194
135	0.996	0.852	0.708	0.636	0.565	0.493	0.421	0.421	0.421	0.277	0.194
140	1.068	0.852	0.744	0.636	0.565	0.529	0.493	0.421	0.421	0.349	0.277
145	1.068	0.852	0.780	0.636	0.565	0.565	0.493	0.457	0.421	0.349	0.277
150	1.140	0.924	0.780	0.708	0.600	0.565	0.493	0.493	0.421	0.349	0.277
155	1.140	0.924	0.852	0.708	0.636	0.565	0.493	0.493	0.421	0.349	0.277
160	1.212	0.996	0.852	0.708	0.636	0.600	0.565	0.493	0.457	0.349	0.277
165	1.212	0.996	0.852	0.780	0.636	0.636	0.565	0.493	0.493	0.349	0.277
170	1.284	1.032	0.924	0.780	0.708	0.636	0.565	0.565	0.493	0.421	0.277
175	1.284	1.068	0.924	0.780	0.708	0.636	0.565	0.565	0.493	0.421	0.277
180	1.356	1.068	0.924	0.780	0.708	0.672	0.565	0.565	0.493	0.421	0.313
185	1.392	1.140	0.996	0.852	0.708	0.708	0.636	0.565	0.493	0.421	0.349
190	1.428	1.140	0.996	0.852	0.780	0.708	0.636	0.565	0.565	0.421	0.349
195	1.464	1.176	1.032	0.852	0.780	0.708	0.636	0.636	0.565	0.421	0.349
200	1.500	1.212	1.068	0.924	0.780	0.780	0.636	0.636	0.565	0.421	0.349
205	1.536	1.212	1.068	0.924	0.816	0.780	0.708	0.636	0.565	0.493	0.349
210	1.572	1.284	1.104	0.924	0.852	0.780	0.708	0.636	0.565	0.493	0.349
215	1.608	1.284	1.140	0.996	0.852	0.780	0.708	0.636	0.636	0.493	0.349
220	1.644	1.356	1.140	0.996	0.852	0.852	0.708	0.708	0.636	0.493	0.349
225	1.680	1.356	1.212	0.996	0.924	0.852	0.708	0.708	0.636	0.493	0.421
230	1.716	1.356	1.212	1.068	0.924	0.852	0.780	0.708	0.636	0.493	0.421
235	1.751	1.428	1.212	1.068	0.924	0.852	0.780	0.708	0.636	0.529	0.421
240	1.787	1.428	1.284	1.068	0.924	0.924	0.780	0.744	0.708	0.565	0.421
245	1.823	1.500	1.284	1.068	0.996	0.924	0.780	0.780	0.708	0.565	0.421
250	1.859	1.500	1.284	1.140	0.996	0.924	0.852	0.780	0.708	0.565	0.421
255	1.895	1.500	1.356	1.140	0.996	0.924	0.852	0.780	0.708	0.565	0.421
260	1.931	1.572	1.356	1.140	0.996	0.960	0.852	0.780	0.708	0.565	0.421
265	1.967	1.572	1.392	1.212	1.068	0.996	0.852	0.852	0.744	0.565	0.457
270	2.003	1.644	1.428	1.212	1.068	0.996	0.852	0.852	0.780	0.636	0.493
275	2.039	1.644	1.428	1.212	1.068	0.996	0.924	0.852	0.780	0.636	0.493
280	2.075	1.644	1.464	1.248	1.104	1.032	0.924	0.852	0.780	0.636	0.493
285	2.111	1.716	1.500	1.284	1.140	1.068	0.924	0.852	0.780	0.636	0.493
290	2.147	1.716	1.500	1.284	1.140	1.068	0.924	0.924	0.780	0.636	0.493
295	2.183	1.751	1.536	1.284	1.140	1.068	0.960	0.924	0.852	0.636	0.493
300	2.219	1.787	1.572	1.356	1.176	1.104	0.996	0.924	0.852	0.672	0.493
305	2.255	1.787	1.572	1.356	1.212	1.140	0.996	0.924	0.852	0.708	0.493
310	2.291	1.859	1.608	1.356	1.212	1.140	0.996	0.924	0.852	0.708	0.529
315	2.291	1.859	1.644	1.428	1.212	1.140	0.996	0.996	0.852	0.708	0.565
320	2.363	1.895	1.644	1.428	1.284	1.176	1.068	0.996	0.924	0.708	0.565
325	2.363	1.931	1.716	1.428	1.284	1.212	1.068	0.996	0.924	0.708	0.565
330	2.435	1.931	1.716	1.428	1.284	1.212	1.068	0.996	0.924	0.708	0.565
333	2.435	2.003	1.716	1.500	1.284	1.212	1.068	0.996	0.924	0.744	0.565

Thickness is intumescent only.

Results apply to I/H-section beams with concrete slabs with 3 sided fire exposure.

Table 4: I/H section Beams: Fire resistance period: 60 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
49	0.529	0.421	0.421	0.349	0.277	0.277	0.277	0.241	0.194	0.194	0.194
50	0.565	0.493	0.421	0.349	0.277	0.277	0.277	0.277	0.194	0.194	0.194
55	0.565	0.493	0.421	0.421	0.349	0.349	0.277	0.277	0.277	0.194	0.194
60	0.636	0.565	0.493	0.421	0.349	0.349	0.349	0.277	0.277	0.194	0.194
65	0.708	0.565	0.493	0.493	0.421	0.349	0.349	0.349	0.277	0.194	0.194
70	0.780	0.636	0.565	0.493	0.421	0.421	0.349	0.349	0.277	0.277	0.194
75	0.816	0.708	0.565	0.529	0.457	0.421	0.421	0.349	0.349	0.277	0.194
80	0.852	0.708	0.636	0.565	0.493	0.493	0.421	0.421	0.349	0.277	0.194
85	0.924	0.780	0.672	0.565	0.493	0.493	0.421	0.421	0.349	0.277	0.194
90	0.996	0.852	0.708	0.636	0.565	0.493	0.493	0.421	0.421	0.349	0.277
95	0.996	0.852	0.780	0.636	0.565	0.565	0.493	0.493	0.421	0.349	0.277
100	1.068	0.924	0.780	0.708	0.636	0.565	0.493	0.493	0.421	0.349	0.277
105	1.140	0.924	0.852	0.708	0.636	0.600	0.565	0.493	0.493	0.385	0.277
110	1.212	0.996	0.852	0.780	0.636	0.636	0.565	0.565	0.493	0.421	0.277
115	1.212	1.068	0.924	0.780	0.708	0.636	0.600	0.565	0.493	0.421	0.349
120	1.284	1.068	0.924	0.852	0.708	0.708	0.636	0.565	0.493	0.421	0.349
125	1.356	1.140	0.996	0.852	0.780	0.708	0.636	0.636	0.565	0.457	0.349
130	1.428	1.176	0.996	0.924	0.780	0.744	0.708	0.636	0.565	0.493	0.349
135	1.428	1.212	1.068	0.924	0.816	0.780	0.708	0.636	0.565	0.493	0.349
140	1.500	1.284	1.068	0.996	0.852	0.780	0.708	0.708	0.636	0.493	0.385
145	1.572	1.284	1.140	0.996	0.852	0.852	0.780	0.708	0.636	0.529	0.421
150	1.608	1.356	1.176	1.068	0.924	0.852	0.780	0.708	0.636	0.565	0.421
155	1.644	1.428	1.212	1.068	0.924	0.852	0.780	0.780	0.672	0.565	0.421
160	1.716	1.428	1.248	1.140	0.996	0.924	0.852	0.780	0.708	0.565	0.421
165	1.787	1.500	1.284	1.140	0.996	0.924	0.852	0.780	0.708	0.565	0.457
170	1.823	1.536	1.356	1.212	0.996	0.996	0.852	0.852	0.708	0.636	0.493
175	1.859	1.572	1.356	1.212	1.068	0.996	0.924	0.852	0.780	0.636	0.493
180	1.931	1.644	1.428	1.248	1.068	0.996	0.924	0.852	0.780	0.636	0.493
185	1.967	1.644	1.428	1.284	1.140	1.068	0.924	0.924	0.780	0.636	0.493
190	2.003	1.716	1.500	1.284	1.140	1.068	0.996	0.924	0.852	0.708	0.493
195	2.075	1.751	1.500	1.356	1.140	1.104	0.996	0.924	0.852	0.708	0.565
200	2.147	1.787	1.572	1.356	1.212	1.140	1.032	0.996	0.852	0.708	0.565
205	2.183	1.859	1.572	1.428	1.212	1.140	1.068	0.996	0.852	0.708	0.565
210	2.219	1.859	1.644	1.428	1.284	1.212	1.068	0.996	0.924	0.780	0.565
215	2.291	1.931	1.644	1.500	1.284	1.212	1.104	1.032	0.924	0.780	0.565
220	2.363	1.967	1.716	1.500	1.284	1.212	1.140	1.068	0.924	0.780	0.600
225	2.363	2.003	1.716	1.572	1.356	1.284	1.140	1.068	0.996	0.780	0.636
230	2.435	2.075	1.787	1.572	1.356	1.284	1.212	1.104	0.996	0.852	0.636
235	2.507	2.075	1.787	1.644	1.428	1.320	1.212	1.140	0.996	0.852	0.636
240	2.543	2.147	1.859	1.644	1.428	1.356	1.212	1.140	1.032	0.852	0.636
245	2.579	2.183	1.895	1.716	1.428	1.356	1.284	1.176	1.068	0.852	0.672
250	2.651	2.219	1.931	1.716	1.500	1.428	1.284	1.212	1.068	0.924	0.708
255	2.687	2.291	1.967	1.751	1.500	1.428	1.284	1.212	1.068	0.924	0.708
260	2.723	2.291	2.003	1.787	1.572	1.428	1.356	1.212	1.140	0.924	0.708
265	2.795	2.363	2.039	1.787	1.572	1.500	1.356	1.284	1.140	0.924	0.708
270	2.867	2.399	2.075	1.859	1.572	1.500	1.356	1.284	1.140	0.996	0.708
275	2.903	2.435	2.111	1.859	1.644	1.536	1.428	1.284	1.176	0.996	0.744
280	2.938	2.507	2.147	1.931	1.644	1.572	1.428	1.356	1.212	0.996	0.780
285	3.010	2.507	2.183	1.931	1.716	1.572	1.428	1.356	1.212	0.996	0.780
290	3.046	2.579	2.219	2.003	1.716	1.644	1.500	1.356	1.212	1.032	0.780
295	3.082	2.615	2.255	2.003	1.716	1.644	1.500	1.428	1.284	1.068	0.780
300	3.154	2.651	2.291	2.075	1.787	1.644	1.500	1.428	1.284	1.068	0.816
305	3.190	2.687	2.363	2.075	1.787	1.716	1.572	1.428	1.284	1.068	0.852
310	3.262	2.723	2.363	2.111	1.823	1.716	1.572	1.500	1.320	1.068	0.852
315	3.298	2.795	2.435	2.147	1.859	1.751	1.572	1.500	1.356	1.140	0.852
320	3.370	2.795	2.435	2.147	1.859	1.787	1.644	1.500	1.356	1.140	0.852
325	3.406	2.867	2.507	2.219	1.931	1.787	1.644	1.536	1.356	1.140	0.852
330	3.442	2.903	2.507	2.219	1.931	1.859	1.644	1.572	1.428	1.140	0.888
333	3.478	2.938	2.543	2.291	1.931	1.859	1.716	1.572	1.428	1.176	0.924

Thickness is intumescent only.

Results apply to I/H-section beams with concrete slabs with 3 sided fire exposure.

Table 5: I/H section Beams: Fire resistance period: 75 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
49	0.708	0.600	0.565	0.493	0.421	0.421	0.349	0.349	0.277	0.277	0.194
50	0.708	0.636	0.565	0.493	0.421	0.421	0.349	0.349	0.277	0.277	0.194
55	0.780	0.708	0.636	0.565	0.493	0.421	0.421	0.349	0.349	0.277	0.194
60	0.852	0.708	0.636	0.565	0.493	0.493	0.421	0.421	0.349	0.277	0.277
65	0.924	0.780	0.708	0.636	0.565	0.493	0.493	0.421	0.421	0.349	0.277
70	0.996	0.852	0.780	0.708	0.565	0.565	0.493	0.493	0.421	0.349	0.277
75	1.068	0.924	0.852	0.708	0.636	0.636	0.565	0.493	0.493	0.349	0.277
80	1.140	0.996	0.852	0.780	0.708	0.636	0.565	0.565	0.493	0.421	0.349
85	1.212	1.068	0.924	0.852	0.708	0.708	0.636	0.565	0.493	0.421	0.349
90	1.284	1.104	0.996	0.852	0.780	0.708	0.636	0.600	0.565	0.457	0.349
95	1.356	1.140	1.068	0.924	0.780	0.780	0.708	0.636	0.565	0.493	0.349
100	1.428	1.212	1.068	0.960	0.852	0.780	0.708	0.636	0.636	0.493	0.421
105	1.500	1.284	1.140	0.996	0.888	0.852	0.780	0.708	0.636	0.529	0.421
110	1.572	1.356	1.212	1.068	0.924	0.852	0.780	0.708	0.672	0.565	0.421
115	1.644	1.428	1.284	1.104	0.996	0.924	0.852	0.780	0.708	0.565	0.493
120	1.716	1.464	1.284	1.140	0.996	0.924	0.852	0.780	0.708	0.636	0.493
125	1.787	1.500	1.356	1.212	1.068	0.996	0.924	0.852	0.780	0.636	0.493
130	1.859	1.572	1.428	1.248	1.068	1.068	0.924	0.852	0.780	0.636	0.493
135	1.931	1.644	1.464	1.284	1.140	1.068	0.996	0.924	0.852	0.708	0.565
140	2.003	1.716	1.500	1.356	1.176	1.140	0.996	0.924	0.852	0.708	0.565
145	2.075	1.787	1.572	1.356	1.212	1.140	1.068	0.960	0.852	0.708	0.565
150	2.147	1.823	1.644	1.428	1.284	1.212	1.068	0.996	0.924	0.780	0.600
155	2.219	1.859	1.680	1.500	1.284	1.212	1.104	0.996	0.924	0.780	0.636
160	2.291	1.931	1.716	1.500	1.356	1.284	1.140	1.068	0.996	0.780	0.636
165	2.363	2.003	1.787	1.572	1.356	1.284	1.176	1.068	0.996	0.852	0.636
170	2.435	2.075	1.859	1.644	1.428	1.356	1.212	1.140	1.032	0.852	0.708
175	2.507	2.111	1.859	1.644	1.464	1.356	1.212	1.140	1.068	0.852	0.708
180	2.579	2.147	1.931	1.716	1.500	1.428	1.284	1.212	1.068	0.924	0.708
185	2.651	2.219	2.003	1.787	1.572	1.464	1.284	1.212	1.140	0.924	0.708
190	2.723	2.291	2.075	1.787	1.572	1.500	1.356	1.248	1.140	0.924	0.780
195	2.795	2.363	2.075	1.859	1.644	1.536	1.356	1.284	1.176	0.996	0.780
200	2.867	2.435	2.147	1.895	1.644	1.572	1.428	1.284	1.212	0.996	0.780
205	2.938	2.471	2.219	1.931	1.716	1.644	1.428	1.356	1.212	0.996	0.780
210	3.010	2.507	2.255	2.003	1.751	1.644	1.500	1.356	1.284	1.068	0.852
215	3.082	2.579	2.291	2.039	1.787	1.716	1.500	1.428	1.284	1.068	0.852
220	3.154	2.651	2.363	2.075	1.859	1.716	1.572	1.428	1.320	1.068	0.852
225	3.226	2.723	2.435	2.147	1.859	1.787	1.572	1.500	1.356	1.140	0.888
230	3.298	2.759	2.435	2.147	1.931	1.787	1.644	1.500	1.356	1.140	0.924
235	3.370	2.795	2.507	2.219	1.931	1.859	1.644	1.536	1.428	1.140	0.924
240	3.442	2.867	2.579	2.291	2.003	1.859	1.716	1.572	1.428	1.212	0.924
245	3.478	2.938	2.615	2.291	2.003	1.931	1.716	1.572	1.500	1.212	0.996
250	3.550	3.010	2.651	2.363	2.075	1.931	1.787	1.644	1.500	1.212	0.996
255	3.622	3.046	2.723	2.399	2.111	2.003	1.787	1.644	1.500	1.284	0.996
260	3.694	3.082	2.795	2.435	2.147	2.003	1.823	1.716	1.572	1.284	0.996
265	3.766	3.154	2.795	2.507	2.183	2.075	1.859	1.716	1.572	1.284	1.068
270	3.838	3.226	2.867	2.543	2.219	2.111	1.895	1.751	1.644	1.356	1.068
275	3.910	3.298	2.938	2.579	2.291	2.147	1.931	1.787	1.644	1.356	1.068
280	3.982	3.334	2.974	2.651	2.291	2.183	1.931	1.787	1.644	1.356	1.068
285	4.054	3.370	3.010	2.651	2.363	2.219	2.003	1.859	1.716	1.428	1.140
290	4.090	3.442	3.082	2.723	2.363	2.255	2.003	1.859	1.716	1.428	1.140
295	4.161	3.514	3.154	2.759	2.435	2.291	2.075	1.931	1.751	1.428	1.140
300	4.233	3.586	3.154	2.795	2.471	2.327	2.075	1.931	1.787	1.500	1.176
305	4.305	3.622	3.226	2.867	2.507	2.363	2.147	1.967	1.787	1.500	1.212
310	4.377	3.658	3.298	2.903	2.543	2.399	2.147	2.003	1.859	1.500	1.212
315	4.449	3.730	3.334	2.938	2.579	2.435	2.219	2.039	1.859	1.572	1.212
320	4.521	3.802	3.370	2.974	2.615	2.507	2.219	2.075	1.895	1.572	1.248
325	4.593	3.838	3.442	3.010	2.651	2.507	2.255	2.075	1.931	1.572	1.284
330	4.629	3.910	3.514	3.082	2.723	2.579	2.291	2.147	1.931	1.644	1.284
333	-	3.946	3.514	3.082	2.723	2.579	2.291	2.147	1.967	1.644	1.284

Thickness is intumescent only.

Results apply to I/H-section beams with concrete slabs with 3 sided fire exposure.

Table 6: I/H section Beams: Fire resistance period: 90 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
49	0.924	0.780	0.708	0.636	0.565	0.493	0.421	0.421	0.421	0.349	0.277
50	0.924	0.780	0.708	0.636	0.565	0.493	0.493	0.421	0.421	0.349	0.277
55	0.996	0.852	0.780	0.708	0.636	0.565	0.493	0.493	0.421	0.349	0.277
60	1.140	0.924	0.852	0.744	0.636	0.636	0.565	0.493	0.493	0.421	0.349
65	1.212	0.996	0.924	0.780	0.708	0.708	0.636	0.565	0.493	0.421	0.349
70	1.284	1.068	0.996	0.852	0.780	0.708	0.636	0.636	0.565	0.493	0.349
75	1.392	1.176	1.068	0.924	0.852	0.780	0.708	0.636	0.600	0.493	0.421
80	1.500	1.248	1.140	0.996	0.852	0.852	0.708	0.708	0.636	0.493	0.421
85	1.572	1.356	1.212	1.068	0.924	0.852	0.780	0.708	0.708	0.565	0.457
90	1.644	1.428	1.284	1.140	0.996	0.924	0.852	0.780	0.708	0.565	0.493
95	1.787	1.500	1.356	1.176	1.068	0.996	0.852	0.852	0.780	0.636	0.493
100	1.859	1.572	1.428	1.212	1.068	1.032	0.924	0.852	0.780	0.636	0.565
105	1.931	1.644	1.500	1.284	1.140	1.068	0.996	0.924	0.852	0.708	0.565
110	2.039	1.716	1.572	1.356	1.212	1.140	0.996	0.924	0.852	0.708	0.565
115	2.147	1.787	1.644	1.428	1.284	1.212	1.068	0.996	0.924	0.780	0.636
120	2.219	1.859	1.716	1.500	1.284	1.212	1.104	1.068	0.924	0.780	0.636
125	2.291	1.931	1.787	1.536	1.356	1.284	1.140	1.068	0.996	0.816	0.636
130	2.399	2.003	1.823	1.572	1.428	1.356	1.212	1.140	1.032	0.852	0.708
135	2.507	2.075	1.895	1.644	1.500	1.356	1.212	1.140	1.068	0.852	0.708
140	2.579	2.147	1.931	1.716	1.500	1.428	1.284	1.212	1.140	0.924	0.744
145	2.651	2.219	2.003	1.787	1.572	1.500	1.356	1.284	1.140	0.924	0.780
150	2.759	2.327	2.075	1.859	1.644	1.536	1.356	1.284	1.212	0.996	0.780
155	2.867	2.399	2.147	1.895	1.716	1.572	1.428	1.356	1.212	0.996	0.852
160	2.938	2.471	2.219	1.931	1.716	1.644	1.464	1.356	1.284	1.032	0.852
165	3.010	2.543	2.291	2.003	1.787	1.716	1.500	1.428	1.284	1.068	0.852
170	3.118	2.651	2.363	2.075	1.859	1.716	1.572	1.500	1.356	1.068	0.924
175	3.226	2.723	2.435	2.147	1.931	1.787	1.572	1.500	1.356	1.140	0.924
180	3.298	2.795	2.507	2.219	1.931	1.859	1.644	1.572	1.428	1.140	0.924
185	3.370	2.867	2.579	2.255	2.003	1.859	1.716	1.572	1.428	1.212	0.996
190	3.478	2.938	2.651	2.291	2.075	1.931	1.716	1.644	1.500	1.212	0.996
195	3.586	3.010	2.723	2.363	2.111	2.003	1.787	1.680	1.536	1.284	1.032
200	3.658	3.082	2.795	2.435	2.147	2.003	1.823	1.716	1.572	1.284	1.068
205	3.730	3.154	2.867	2.507	2.219	2.075	1.859	1.787	1.608	1.320	1.068
210	3.838	3.226	2.938	2.579	2.291	2.147	1.931	1.787	1.644	1.356	1.104
215	3.910	3.298	2.974	2.615	2.327	2.183	1.931	1.859	1.680	1.356	1.140
220	4.018	3.370	3.046	2.651	2.363	2.219	2.003	1.859	1.716	1.428	1.140
225	4.090	3.442	3.118	2.723	2.435	2.291	2.039	1.931	1.787	1.428	1.176
230	4.197	3.514	3.154	2.795	2.507	2.327	2.075	1.967	1.787	1.500	1.212
235	4.269	3.586	3.226	2.867	2.507	2.363	2.147	2.003	1.859	1.500	1.212
240	4.377	3.658	3.298	2.903	2.579	2.435	2.147	2.075	1.859	1.536	1.284
245	4.449	3.730	3.370	2.938	2.651	2.471	2.219	2.075	1.931	1.572	1.284
250	4.521	3.802	3.442	3.010	2.687	2.507	2.255	2.147	1.931	1.572	1.284
255	4.629	3.874	3.514	3.082	2.723	2.579	2.291	2.147	2.003	1.644	1.356
260	-	3.946	3.586	3.154	2.795	2.615	2.363	2.219	2.003	1.644	1.356
265	-	4.018	3.658	3.190	2.867	2.651	2.363	2.255	2.075	1.716	1.356
270	-	4.090	3.730	3.226	2.867	2.723	2.435	2.291	2.075	1.716	1.428
275	-	4.161	3.802	3.298	2.938	2.795	2.471	2.363	2.147	1.751	1.428
280	-	4.233	3.838	3.370	3.010	2.795	2.507	2.363	2.147	1.787	1.464
285	-	4.305	3.910	3.442	3.046	2.867	2.579	2.435	2.219	1.787	1.500
290	-	4.377	3.982	3.478	3.082	2.938	2.579	2.435	2.219	1.859	1.500
295	-	4.449	4.018	3.514	3.154	2.938	2.651	2.507	2.291	1.859	1.536
300	-	4.521	4.090	3.586	3.226	3.010	2.687	2.543	2.327	1.895	1.572
305	-	4.593	4.161	3.658	3.226	3.046	2.723	2.579	2.363	1.931	1.572
310	-	-	4.233	3.730	3.298	3.082	2.795	2.651	2.399	1.967	1.608
315	-	-	4.305	3.766	3.370	3.154	2.795	2.651	2.435	2.003	1.644
320	-	-	4.377	3.802	3.406	3.190	2.867	2.723	2.471	2.003	1.644
325	-	-	4.449	3.874	3.442	3.226	2.903	2.723	2.507	2.075	1.680
330	-	-	4.521	3.946	3.514	3.298	2.938	2.795	2.543	2.075	1.716
333	-	-	4.521	3.982	3.550	3.298	2.974	2.795	2.579	2.111	1.716

Thickness is intumescent only.

Results apply to I/H-section beams with concrete slabs with 3 sided fire exposure.

Table 7: I/H section Beams: Fire resistance period: 105 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
49	1.140	0.924	0.852	0.780	0.636	0.636	0.565	0.565	0.493	0.421	0.349
50	1.140	0.996	0.852	0.780	0.708	0.636	0.565	0.565	0.493	0.421	0.349
55	1.284	1.068	0.960	0.852	0.780	0.708	0.636	0.636	0.565	0.457	0.349
60	1.356	1.176	1.068	0.924	0.852	0.780	0.708	0.636	0.565	0.493	0.421
65	1.500	1.284	1.140	0.996	0.888	0.852	0.780	0.708	0.636	0.565	0.421
70	1.572	1.356	1.212	1.068	0.924	0.888	0.780	0.780	0.708	0.565	0.493
75	1.716	1.464	1.284	1.140	0.996	0.924	0.852	0.852	0.708	0.636	0.493
80	1.823	1.572	1.392	1.212	1.068	0.996	0.924	0.852	0.780	0.636	0.565
85	1.931	1.644	1.500	1.284	1.140	1.068	0.996	0.924	0.852	0.708	0.565
90	2.039	1.787	1.572	1.392	1.212	1.140	1.068	0.996	0.888	0.744	0.600
95	2.147	1.859	1.644	1.500	1.284	1.212	1.068	1.032	0.924	0.780	0.636
100	2.291	1.931	1.716	1.572	1.356	1.284	1.140	1.068	0.996	0.852	0.636
105	2.363	2.075	1.823	1.644	1.428	1.356	1.212	1.140	1.032	0.852	0.708
110	2.507	2.147	1.931	1.716	1.500	1.392	1.284	1.212	1.068	0.924	0.708
115	2.615	2.219	2.003	1.787	1.572	1.428	1.356	1.248	1.140	0.924	0.780
120	2.723	2.327	2.075	1.859	1.644	1.500	1.356	1.284	1.176	0.996	0.780
125	2.831	2.435	2.147	1.931	1.716	1.572	1.428	1.356	1.212	0.996	0.852
130	2.938	2.507	2.255	2.003	1.787	1.644	1.500	1.428	1.284	1.068	0.852
135	3.046	2.615	2.327	2.075	1.823	1.716	1.572	1.464	1.320	1.104	0.924
140	3.154	2.723	2.435	2.147	1.895	1.787	1.608	1.500	1.356	1.140	0.924
145	3.262	2.795	2.507	2.219	1.931	1.823	1.644	1.572	1.428	1.212	0.960
150	3.370	2.903	2.579	2.291	2.003	1.859	1.716	1.644	1.464	1.212	0.996
155	3.514	3.010	2.651	2.363	2.075	1.931	1.787	1.644	1.500	1.284	0.996
160	3.586	3.082	2.759	2.435	2.147	2.003	1.859	1.716	1.572	1.284	1.068
165	3.730	3.154	2.831	2.507	2.219	2.075	1.859	1.787	1.608	1.356	1.068
170	3.802	3.298	2.938	2.579	2.291	2.147	1.931	1.859	1.644	1.392	1.140
175	3.946	3.370	3.010	2.651	2.363	2.183	2.003	1.859	1.716	1.428	1.140
180	4.054	3.442	3.082	2.723	2.435	2.255	2.075	1.931	1.751	1.464	1.212
185	4.161	3.586	3.154	2.795	2.507	2.291	2.111	2.003	1.787	1.500	1.212
190	4.269	3.658	3.262	2.867	2.543	2.363	2.147	2.039	1.859	1.572	1.248
195	4.377	3.730	3.334	2.974	2.615	2.435	2.219	2.075	1.895	1.572	1.284
200	4.485	3.838	3.442	3.046	2.651	2.507	2.291	2.147	1.931	1.644	1.284
205	4.593	3.946	3.514	3.118	2.723	2.543	2.327	2.219	2.003	1.644	1.356
210	-	4.018	3.586	3.190	2.795	2.615	2.363	2.255	2.039	1.716	1.356
215	-	4.125	3.658	3.298	2.867	2.651	2.435	2.291	2.075	1.716	1.428
220	-	4.233	3.766	3.370	2.938	2.723	2.507	2.363	2.147	1.787	1.428
225	-	4.305	3.838	3.442	3.010	2.795	2.579	2.399	2.147	1.823	1.500
230	-	4.377	3.910	3.514	3.082	2.867	2.579	2.435	2.219	1.859	1.500
235	-	4.485	4.018	3.586	3.154	2.903	2.651	2.507	2.291	1.895	1.536
240	-	4.593	4.090	3.658	3.190	2.974	2.723	2.579	2.291	1.931	1.572
245	-	-	4.161	3.730	3.262	3.010	2.795	2.615	2.363	2.003	1.572
250	-	-	4.233	3.802	3.298	3.082	2.831	2.651	2.435	2.003	1.644
255	-	-	4.341	3.874	3.370	3.154	2.867	2.723	2.435	2.075	1.644
260	-	-	4.413	3.946	3.442	3.226	2.938	2.759	2.507	2.075	1.716
265	-	-	4.485	4.018	3.514	3.262	3.010	2.795	2.543	2.147	1.716
270	-	-	4.593	4.090	3.586	3.334	3.046	2.867	2.579	2.147	1.751
275	-	-	-	4.161	3.658	3.370	3.082	2.938	2.651	2.219	1.787
280	-	-	-	4.233	3.730	3.442	3.154	2.974	2.687	2.255	1.823
285	-	-	-	4.305	3.766	3.514	3.226	3.010	2.723	2.291	1.859
290	-	-	-	4.377	3.838	3.586	3.262	3.082	2.795	2.327	1.859
295	-	-	-	4.449	3.874	3.622	3.298	3.118	2.831	2.363	1.931
300	-	-	-	4.521	3.946	3.694	3.370	3.154	2.867	2.399	1.931
305	-	-	-	4.593	4.018	3.730	3.442	3.226	2.938	2.435	1.967
310	-	-	-	-	4.090	3.802	3.478	3.262	2.938	2.471	2.003
315	-	-	-	-	4.161	3.874	3.514	3.298	3.010	2.507	2.039
320	-	-	-	-	4.233	3.910	3.586	3.370	3.046	2.579	2.075
325	-	-	-	-	4.269	3.982	3.658	3.442	3.082	2.579	2.075
330	-	-	-	-	4.341	4.018	3.694	3.478	3.154	2.651	2.147
333	-	-	-	-	4.377	4.090	3.730	3.514	3.154	2.651	2.147

Thickness is intumescent only.

Results apply to I/H-section beams with concrete slabs with 3 sided fire exposure.

Table 8: I/H section Beams: Fire resistance period: 120 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
49	1.320	1.140	0.996	0.924	0.780	0.780	0.708	0.636	0.565	0.493	0.421
50	1.356	1.212	1.068	0.924	0.780	0.780	0.708	0.636	0.565	0.493	0.421
55	1.500	1.284	1.140	1.032	0.924	0.852	0.780	0.708	0.636	0.565	0.421
60	1.644	1.428	1.248	1.140	0.996	0.924	0.852	0.780	0.708	0.600	0.493
65	1.787	1.536	1.356	1.212	1.068	0.996	0.924	0.852	0.780	0.636	0.493
70	1.895	1.644	1.428	1.284	1.140	1.068	0.996	0.924	0.852	0.708	0.565
75	2.003	1.787	1.572	1.428	1.212	1.140	1.068	0.996	0.852	0.780	0.565
80	2.147	1.859	1.644	1.500	1.284	1.212	1.140	1.068	0.924	0.780	0.636
85	2.291	2.003	1.787	1.572	1.356	1.284	1.212	1.140	0.996	0.852	0.672
90	2.435	2.147	1.859	1.680	1.428	1.356	1.284	1.176	1.068	0.924	0.708
95	2.579	2.219	1.967	1.787	1.536	1.428	1.356	1.212	1.140	0.924	0.780
100	2.687	2.363	2.075	1.859	1.608	1.536	1.392	1.284	1.176	0.996	0.780
105	2.831	2.471	2.147	1.931	1.716	1.608	1.464	1.356	1.212	1.068	0.852
110	2.938	2.579	2.291	2.075	1.787	1.716	1.500	1.428	1.284	1.068	0.852
115	3.082	2.723	2.363	2.147	1.859	1.787	1.572	1.500	1.356	1.140	0.924
120	3.226	2.795	2.471	2.219	1.931	1.859	1.644	1.572	1.428	1.212	0.924
125	3.370	2.938	2.579	2.327	2.003	1.931	1.716	1.644	1.464	1.212	0.996
130	3.478	3.046	2.687	2.435	2.075	2.003	1.787	1.716	1.500	1.284	0.996
135	3.622	3.154	2.795	2.507	2.147	2.075	1.859	1.787	1.572	1.356	1.068
140	3.730	3.262	2.867	2.579	2.219	2.147	1.931	1.787	1.644	1.392	1.104
145	3.874	3.370	2.974	2.687	2.327	2.219	2.003	1.859	1.716	1.428	1.140
150	4.018	3.514	3.082	2.795	2.399	2.291	2.075	1.931	1.751	1.500	1.176
155	4.125	3.622	3.190	2.867	2.507	2.363	2.147	2.003	1.787	1.536	1.212
160	4.269	3.730	3.298	2.938	2.579	2.435	2.219	2.075	1.859	1.572	1.284
165	4.377	3.838	3.370	3.046	2.651	2.507	2.291	2.147	1.931	1.644	1.284
170	4.521	3.946	3.478	3.154	2.723	2.579	2.363	2.219	2.003	1.680	1.356
175	-	4.090	3.586	3.226	2.795	2.651	2.435	2.291	2.003	1.716	1.356
180	-	4.161	3.658	3.298	2.867	2.723	2.507	2.327	2.075	1.787	1.428
185	-	4.305	3.802	3.406	2.938	2.795	2.543	2.363	2.147	1.823	1.428
190	-	4.413	3.874	3.514	3.010	2.867	2.615	2.435	2.219	1.859	1.500
195	-	4.521	3.982	3.586	3.082	2.938	2.651	2.507	2.255	1.931	1.500
200	-	4.629	4.090	3.658	3.190	3.010	2.723	2.579	2.291	1.967	1.572
205	-	-	4.161	3.766	3.262	3.082	2.795	2.651	2.363	2.003	1.572
210	-	-	4.269	3.874	3.334	3.154	2.867	2.723	2.435	2.075	1.644
215	-	-	4.377	3.946	3.406	3.226	2.938	2.759	2.507	2.111	1.680
220	-	-	4.485	4.018	3.478	3.298	3.010	2.795	2.543	2.147	1.716
225	-	-	4.557	4.125	3.586	3.370	3.082	2.867	2.579	2.219	1.751
230	-	-	-	4.233	3.658	3.442	3.154	2.938	2.651	2.255	1.787
235	-	-	-	4.305	3.730	3.514	3.226	3.010	2.723	2.291	1.823
240	-	-	-	4.377	3.802	3.586	3.298	3.082	2.759	2.363	1.859
245	-	-	-	4.485	3.874	3.658	3.334	3.154	2.795	2.399	1.895
250	-	-	-	4.593	3.946	3.730	3.406	3.190	2.867	2.435	1.931
255	-	-	-	-	4.018	3.802	3.478	3.262	2.938	2.507	1.967
260	-	-	-	-	4.090	3.874	3.514	3.298	2.974	2.507	2.003
265	-	-	-	-	4.161	3.946	3.586	3.370	3.010	2.579	2.039
270	-	-	-	-	4.233	4.018	3.658	3.442	3.082	2.651	2.075
275	-	-	-	-	4.305	4.090	3.730	3.514	3.154	2.651	2.111
280	-	-	-	-	4.413	4.161	3.802	3.586	3.226	2.723	2.147
285	-	-	-	-	4.485	4.233	3.874	3.622	3.262	2.759	2.219
290	-	-	-	-	4.557	4.305	3.946	3.658	3.298	2.795	2.219
295	-	-	-	-	4.629	4.377	4.018	3.730	3.370	2.867	2.291
300	-	-	-	-	-	4.449	4.054	3.802	3.442	2.903	2.291
305	-	-	-	-	-	4.521	4.125	3.874	3.478	2.938	2.363
310	-	-	-	-	-	4.593	4.197	3.946	3.514	3.010	2.363
315	-	-	-	-	-	-	4.233	4.018	3.586	3.046	2.435
320	-	-	-	-	-	-	4.305	4.054	3.658	3.082	2.435
325	-	-	-	-	-	-	4.377	4.090	3.694	3.154	2.507
330	-	-	-	-	-	-	4.449	4.161	3.730	3.190	2.507
333	-	-	-	-	-	-	4.485	4.233	3.802	3.226	2.543

Thickness is intumescent only.

Results apply to I/H-section beams with concrete slabs with 3 sided fire exposure.

Table 9: I/H section Columns: Fire resistance period: 15 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	650°C	700°C	750°C
49	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
50	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
55	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
60	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
65	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
70	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
75	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
80	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
85	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
90	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
95	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
100	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
105	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
110	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
115	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
120	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
125	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
130	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
135	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
140	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
145	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
150	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
155	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
160	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
165	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
170	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
175	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
180	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
185	0.493	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
190	0.493	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
195	0.493	0.362	0.275	0.200	0.200	0.200	0.200	0.200	0.200	0.200
200	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
205	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
210	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
215	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
220	0.537	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
225	0.581	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
230	0.581	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
235	0.581	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
240	0.581	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
245	0.581	0.450	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
250	0.581	0.493	0.318	0.318	0.200	0.200	0.200	0.200	0.200	0.200
255	0.581	0.493	0.318	0.318	0.200	0.200	0.200	0.200	0.200	0.200
260	0.624	0.493	0.362	0.318	0.200	0.200	0.200	0.200	0.200	0.200
265	0.668	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
270	0.668	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
275	0.668	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
280	0.668	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
285	0.668	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
290	0.668	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
295	0.712	0.537	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
300	0.755	0.581	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
305	0.755	0.581	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
310	0.755	0.581	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
315	0.755	0.581	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
320	0.755	0.581	0.406	0.318	0.275	0.200	0.200	0.200	0.200	0.200
325	0.755	0.581	0.450	0.318	0.318	0.200	0.200	0.200	0.200	0.200
330	0.755	0.581	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200
335	0.799	0.581	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200
340	0.843	0.581	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200
345	0.843	0.624	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200
350	0.843	0.668	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200
355	0.843	0.668	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200
360	0.843	0.668	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200
365	0.843	0.668	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200
370	0.843	0.668	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200
375	0.886	0.668	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200
378	0.930	0.668	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200

Thickness is intumescent only.

Results also apply to I/H-section beams exposed on all four sides up to the maximum dry film thickness of 4.653mm.

Table 10: I/H section Columns: Fire resistance period: 30 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	650°C	700°C	750°C
49	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
50	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
55	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
60	0.318	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
65	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
70	0.406	0.318	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
75	0.406	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
80	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200	0.200
85	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200	0.200	0.200
90	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200	0.200	0.200
95	0.581	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
100	0.581	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
105	0.581	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200	0.200
110	0.668	0.537	0.406	0.362	0.318	0.200	0.200	0.200	0.200	0.200
115	0.668	0.581	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200
120	0.668	0.581	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200
125	0.755	0.581	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200
130	0.755	0.668	0.493	0.406	0.318	0.318	0.275	0.200	0.200	0.200
135	0.755	0.668	0.537	0.406	0.318	0.318	0.318	0.200	0.200	0.200
140	0.843	0.668	0.581	0.493	0.406	0.318	0.318	0.200	0.200	0.200
145	0.843	0.668	0.581	0.493	0.406	0.318	0.318	0.200	0.200	0.200
150	0.843	0.755	0.581	0.493	0.406	0.362	0.318	0.200	0.200	0.200
155	0.930	0.755	0.581	0.493	0.406	0.406	0.318	0.200	0.200	0.200
160	0.930	0.755	0.668	0.493	0.406	0.406	0.318	0.200	0.200	0.200
165	0.930	0.799	0.668	0.537	0.406	0.406	0.318	0.318	0.200	0.200
170	1.018	0.843	0.668	0.581	0.406	0.406	0.318	0.318	0.200	0.200
175	1.018	0.843	0.668	0.581	0.493	0.406	0.406	0.318	0.200	0.200
180	1.018	0.843	0.712	0.581	0.493	0.406	0.406	0.318	0.200	0.200
185	1.105	0.930	0.755	0.581	0.493	0.406	0.406	0.318	0.200	0.200
190	1.105	0.930	0.755	0.581	0.493	0.493	0.406	0.318	0.200	0.200
195	1.105	0.930	0.755	0.668	0.493	0.493	0.406	0.318	0.200	0.200
200	1.192	0.930	0.755	0.668	0.493	0.493	0.406	0.318	0.200	0.200
205	1.192	1.018	0.843	0.668	0.537	0.493	0.406	0.318	0.200	0.200
210	1.192	1.018	0.843	0.668	0.581	0.493	0.406	0.318	0.200	0.200
215	1.236	1.018	0.843	0.668	0.581	0.493	0.450	0.318	0.275	0.200
220	1.280	1.018	0.843	0.712	0.581	0.493	0.493	0.406	0.318	0.200
225	1.280	1.105	0.843	0.755	0.581	0.537	0.493	0.406	0.318	0.200
230	1.323	1.105	0.930	0.755	0.581	0.581	0.493	0.406	0.318	0.200
235	1.367	1.105	0.930	0.755	0.581	0.581	0.493	0.406	0.318	0.200
240	1.367	1.149	0.930	0.755	0.624	0.581	0.493	0.406	0.318	0.200
245	1.411	1.192	0.930	0.755	0.668	0.581	0.493	0.406	0.318	0.200
250	1.454	1.192	0.974	0.843	0.668	0.581	0.493	0.406	0.318	0.200
255	1.454	1.192	1.018	0.843	0.668	0.581	0.493	0.406	0.318	0.200
260	1.498	1.236	1.018	0.843	0.668	0.581	0.537	0.406	0.318	0.200
265	1.542	1.280	1.018	0.843	0.668	0.668	0.581	0.406	0.318	0.200
270	1.542	1.280	1.018	0.843	0.668	0.668	0.581	0.406	0.318	0.200
275	1.542	1.280	1.105	0.843	0.712	0.668	0.581	0.493	0.318	0.200
280	1.629	1.367	1.105	0.930	0.755	0.668	0.581	0.493	0.318	0.200
285	1.629	1.367	1.105	0.930	0.755	0.668	0.581	0.493	0.362	0.200
290	1.629	1.367	1.105	0.930	0.755	0.668	0.581	0.493	0.406	0.200
295	1.673	1.367	1.105	0.930	0.755	0.668	0.581	0.493	0.406	0.200
300	1.717	1.454	1.192	0.930	0.755	0.668	0.581	0.493	0.406	0.200
305	1.717	1.454	1.192	0.974	0.755	0.755	0.624	0.493	0.406	0.200
310	1.760	1.454	1.192	1.018	0.755	0.755	0.668	0.493	0.406	0.200
315	1.804	1.454	1.192	1.018	0.843	0.755	0.668	0.493	0.406	0.200
320	1.804	1.542	1.192	1.018	0.843	0.755	0.668	0.493	0.406	0.200
325	1.848	1.542	1.280	1.018	0.843	0.755	0.668	0.493	0.406	0.200
330	1.891	1.542	1.280	1.018	0.843	0.755	0.668	0.581	0.406	0.200
335	1.891	1.542	1.280	1.061	0.843	0.755	0.668	0.581	0.406	0.200
340	1.891	1.629	1.280	1.105	0.843	0.755	0.668	0.581	0.406	0.200
345	1.979	1.629	1.323	1.105	0.843	0.843	0.668	0.581	0.406	0.275
350	1.979	1.629	1.367	1.105	0.930	0.843	0.712	0.581	0.406	0.275
355	1.979	1.629	1.367	1.105	0.930	0.843	0.755	0.581	0.406	0.318
360	2.022	1.717	1.367	1.105	0.930	0.843	0.755	0.581	0.450	0.318
365	2.066	1.717	1.367	1.149	0.930	0.843	0.755	0.581	0.493	0.318
370	2.066	1.717	1.454	1.192	0.930	0.843	0.755	0.581	0.493	0.318
375	2.110	1.760	1.454	1.192	0.930	0.843	0.755	0.581	0.493	0.318
378	2.154	1.760	1.454	1.192	0.930	0.843	0.755	0.581	0.493	0.318

Thickness is intumescent only.

Results also apply to I/H-section beams exposed on all four sides up to the maximum dry film thickness of 4.653mm.

Table 11: I/H section Columns: Fire resistance period: 45 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	650°C	700°C	750°C
49	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200	0.200	0.200
50	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200	0.200	0.200
55	0.581	0.493	0.406	0.318	0.200	0.200	0.200	0.200	0.200	0.200
60	0.624	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200	0.200
65	0.668	0.581	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200
70	0.755	0.581	0.493	0.406	0.318	0.318	0.200	0.200	0.200	0.200
75	0.755	0.668	0.537	0.406	0.318	0.318	0.318	0.200	0.200	0.200
80	0.843	0.668	0.581	0.493	0.406	0.318	0.318	0.200	0.200	0.200
85	0.843	0.755	0.581	0.493	0.406	0.406	0.318	0.200	0.200	0.200
90	0.930	0.755	0.668	0.493	0.406	0.406	0.318	0.318	0.200	0.200
95	1.018	0.843	0.668	0.581	0.493	0.406	0.406	0.318	0.200	0.200
100	1.018	0.843	0.755	0.581	0.493	0.406	0.406	0.318	0.200	0.200
105	1.105	0.930	0.755	0.581	0.493	0.493	0.406	0.318	0.200	0.200
110	1.105	0.930	0.755	0.668	0.493	0.493	0.406	0.318	0.318	0.200
115	1.192	0.974	0.843	0.668	0.581	0.493	0.406	0.362	0.318	0.200
120	1.236	1.018	0.843	0.668	0.581	0.493	0.493	0.406	0.318	0.200
125	1.280	1.018	0.930	0.755	0.581	0.581	0.493	0.406	0.318	0.200
130	1.367	1.105	0.930	0.755	0.581	0.581	0.493	0.406	0.318	0.200
135	1.367	1.105	0.930	0.755	0.668	0.581	0.493	0.406	0.318	0.200
140	1.454	1.192	1.018	0.843	0.668	0.581	0.493	0.406	0.318	0.200
145	1.454	1.192	1.018	0.843	0.668	0.668	0.581	0.493	0.362	0.200
150	1.542	1.280	1.061	0.843	0.712	0.668	0.581	0.493	0.406	0.200
155	1.586	1.280	1.105	0.930	0.755	0.668	0.581	0.493	0.406	0.318
160	1.629	1.367	1.105	0.930	0.755	0.668	0.581	0.493	0.406	0.318
165	1.717	1.367	1.192	0.930	0.755	0.755	0.668	0.493	0.406	0.318
170	1.717	1.454	1.192	1.018	0.843	0.755	0.668	0.493	0.406	0.318
175	1.804	1.454	1.236	1.018	0.843	0.755	0.668	0.581	0.406	0.318
180	1.804	1.542	1.280	1.018	0.843	0.755	0.668	0.581	0.450	0.318
185	1.891	1.542	1.280	1.061	0.843	0.843	0.668	0.581	0.493	0.318
190	1.891	1.586	1.367	1.105	0.930	0.843	0.755	0.581	0.493	0.318
195	1.979	1.629	1.367	1.105	0.930	0.843	0.755	0.581	0.493	0.318
200	2.022	1.629	1.367	1.105	0.930	0.843	0.755	0.624	0.493	0.362
205	2.066	1.717	1.454	1.192	0.930	0.886	0.755	0.668	0.493	0.406
210	2.154	1.717	1.454	1.192	1.018	0.930	0.755	0.668	0.493	0.406
215	2.154	1.804	1.542	1.192	1.018	0.930	0.843	0.668	0.493	0.406
220	2.241	1.804	1.542	1.280	1.018	0.930	0.843	0.668	0.581	0.406
225	2.241	1.891	1.542	1.280	1.018	0.930	0.843	0.668	0.581	0.406
230	2.328	1.891	1.629	1.280	1.105	1.018	0.843	0.712	0.581	0.406
235	2.372	1.979	1.629	1.367	1.105	1.018	0.843	0.755	0.581	0.406
240	2.416	1.979	1.673	1.367	1.105	1.018	0.930	0.755	0.581	0.406
245	2.459	2.022	1.717	1.367	1.105	1.018	0.930	0.755	0.581	0.406
250	2.503	2.066	1.717	1.454	1.192	1.105	0.930	0.755	0.581	0.450
255	2.590	2.066	1.804	1.454	1.192	1.105	0.930	0.755	0.624	0.493
260	2.590	2.154	1.804	1.454	1.192	1.105	0.974	0.799	0.668	0.493
265	2.678	2.154	1.804	1.498	1.236	1.105	1.018	0.843	0.668	0.493
270	2.678	2.241	1.891	1.542	1.280	1.192	1.018	0.843	0.668	0.493
275	2.765	2.241	1.891	1.542	1.280	1.192	1.018	0.843	0.668	0.493
280	2.765	2.328	1.935	1.542	1.280	1.192	1.018	0.843	0.668	0.493
285	2.853	2.328	1.979	1.629	1.323	1.192	1.061	0.843	0.668	0.493
290	2.896	2.372	1.979	1.629	1.367	1.236	1.105	0.886	0.668	0.493
295	2.940	2.416	2.066	1.629	1.367	1.280	1.105	0.930	0.755	0.493
300	2.984	2.459	2.066	1.717	1.367	1.280	1.105	0.930	0.755	0.493
305	3.027	2.503	2.110	1.717	1.411	1.280	1.105	0.930	0.755	0.537
310	3.071	2.503	2.154	1.717	1.454	1.280	1.149	0.930	0.755	0.581
315	3.115	2.590	2.154	1.804	1.454	1.367	1.192	0.930	0.755	0.581
320	3.202	2.590	2.197	1.804	1.454	1.367	1.192	0.974	0.755	0.581
325	3.202	2.678	2.241	1.804	1.498	1.367	1.192	1.018	0.755	0.581
330	3.290	2.678	2.241	1.848	1.542	1.367	1.192	1.018	0.799	0.581
335	3.290	2.722	2.328	1.891	1.542	1.454	1.236	1.018	0.843	0.581
340	3.377	2.765	2.328	1.891	1.542	1.454	1.280	1.018	0.843	0.581
345	3.377	2.809	2.372	1.891	1.586	1.454	1.280	1.018	0.843	0.581
350	3.464	2.853	2.416	1.979	1.629	1.454	1.280	1.061	0.843	0.581
355	3.508	2.853	2.416	1.979	1.629	1.498	1.280	1.105	0.843	0.624
360	3.552	2.940	2.459	1.979	1.629	1.542	1.323	1.105	0.843	0.668
365	3.595	2.940	2.503	2.066	1.673	1.542	1.367	1.105	0.843	0.668
370	3.639	3.027	2.503	2.066	1.717	1.542	1.367	1.105	0.886	0.668
375	3.683	3.027	2.590	2.066	1.717	1.542	1.367	1.105	0.930	0.668
378	3.727	3.027	2.590	2.066	1.717	1.586	1.367	1.105	0.930	0.668

Thickness is intumescent only.

Results also apply to I/H-section beams exposed on all four sides up to the maximum dry film thickness of 4.653mm.

Table 12: I/H section Columns: Fire resistance period: 60 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	650°C	700°C	750°C
49	0.755	0.668	0.493	0.406	0.318	0.318	0.318	0.200	0.200	0.200
50	0.755	0.668	0.493	0.406	0.318	0.318	0.318	0.200	0.200	0.200
55	0.843	0.668	0.581	0.493	0.406	0.406	0.318	0.200	0.200	0.200
60	0.930	0.755	0.668	0.493	0.406	0.406	0.318	0.318	0.200	0.200
65	1.018	0.843	0.668	0.581	0.493	0.406	0.406	0.318	0.200	0.200
70	1.061	0.930	0.755	0.581	0.493	0.493	0.406	0.318	0.275	0.200
75	1.105	0.930	0.755	0.668	0.493	0.493	0.406	0.318	0.318	0.200
80	1.192	1.018	0.843	0.668	0.581	0.493	0.493	0.406	0.318	0.200
85	1.280	1.105	0.930	0.755	0.581	0.581	0.493	0.406	0.318	0.200
90	1.367	1.149	0.930	0.755	0.668	0.581	0.493	0.406	0.318	0.200
95	1.454	1.192	1.018	0.843	0.668	0.624	0.581	0.493	0.406	0.318
100	1.542	1.280	1.018	0.843	0.712	0.668	0.581	0.493	0.406	0.318
105	1.586	1.367	1.105	0.930	0.755	0.668	0.581	0.493	0.406	0.318
110	1.629	1.367	1.149	0.930	0.755	0.755	0.668	0.493	0.406	0.318
115	1.717	1.454	1.192	1.018	0.843	0.755	0.668	0.581	0.450	0.318
120	1.804	1.542	1.280	1.018	0.843	0.755	0.668	0.581	0.493	0.318
125	1.891	1.586	1.280	1.105	0.886	0.843	0.755	0.581	0.493	0.362
130	1.979	1.629	1.367	1.105	0.930	0.843	0.755	0.581	0.493	0.406
135	2.022	1.717	1.411	1.192	0.930	0.843	0.755	0.668	0.493	0.406
140	2.066	1.804	1.454	1.192	1.018	0.930	0.843	0.668	0.581	0.406
145	2.154	1.804	1.542	1.280	1.018	0.930	0.843	0.668	0.581	0.406
150	2.241	1.891	1.542	1.280	1.018	0.974	0.843	0.712	0.581	0.406
155	2.328	1.979	1.629	1.367	1.105	1.018	0.886	0.755	0.581	0.450
160	2.416	2.022	1.629	1.367	1.105	1.018	0.930	0.755	0.581	0.493
165	2.459	2.066	1.717	1.454	1.192	1.105	0.930	0.755	0.668	0.493
170	2.503	2.154	1.760	1.454	1.192	1.105	0.974	0.843	0.668	0.493
175	2.590	2.197	1.804	1.542	1.192	1.105	1.018	0.843	0.668	0.493
180	2.678	2.241	1.891	1.542	1.280	1.192	1.018	0.843	0.668	0.493
185	2.765	2.328	1.891	1.586	1.280	1.192	1.018	0.843	0.712	0.493
190	2.853	2.416	1.979	1.629	1.367	1.192	1.105	0.930	0.755	0.581
195	2.896	2.416	1.979	1.673	1.367	1.280	1.105	0.930	0.755	0.581
200	2.940	2.503	2.066	1.717	1.367	1.280	1.105	0.930	0.755	0.581
205	3.027	2.590	2.110	1.717	1.454	1.323	1.192	0.930	0.755	0.581
210	3.115	2.590	2.154	1.804	1.454	1.367	1.192	1.018	0.799	0.581
215	3.202	2.678	2.241	1.804	1.498	1.367	1.192	1.018	0.843	0.581
220	3.246	2.765	2.241	1.891	1.542	1.411	1.280	1.018	0.843	0.668
225	3.333	2.809	2.328	1.891	1.542	1.454	1.280	1.018	0.843	0.668
230	3.377	2.853	2.328	1.979	1.629	1.454	1.280	1.105	0.843	0.668
235	3.464	2.940	2.416	1.979	1.629	1.542	1.367	1.105	0.930	0.668
240	3.552	2.984	2.459	2.066	1.629	1.542	1.367	1.105	0.930	0.668
245	3.639	3.027	2.503	2.066	1.717	1.542	1.367	1.105	0.930	0.668
250	3.683	3.115	2.547	2.154	1.717	1.629	1.411	1.192	0.930	0.712
255	3.727	3.159	2.590	2.154	1.760	1.629	1.454	1.192	0.930	0.755
260	3.814	3.202	2.678	2.197	1.804	1.629	1.454	1.192	1.018	0.755
265	3.901	3.290	2.678	2.241	1.804	1.717	1.454	1.192	1.018	0.755
270	3.989	3.333	2.765	2.285	1.891	1.717	1.542	1.280	1.018	0.755
275	4.032	3.377	2.765	2.328	1.891	1.717	1.542	1.280	1.018	0.755
280	4.076	3.464	2.853	2.328	1.891	1.804	1.542	1.280	1.061	0.755
285	4.163	3.508	2.896	2.416	1.979	1.804	1.629	1.323	1.105	0.843
290	4.251	3.552	2.940	2.416	1.979	1.804	1.629	1.367	1.105	0.843
295	4.295	3.639	2.984	2.503	2.022	1.891	1.629	1.367	1.105	0.843
300	4.382	3.683	3.027	2.503	2.066	1.891	1.673	1.367	1.105	0.843
305	4.426	3.727	3.115	2.590	2.066	1.935	1.717	1.411	1.149	0.843
310	4.513	3.814	3.115	2.590	2.154	1.979	1.717	1.454	1.192	0.843
315	4.600	3.858	3.202	2.634	2.154	1.979	1.760	1.454	1.192	0.886
320	4.644	3.901	3.202	2.678	2.154	2.022	1.804	1.454	1.192	0.930
325	4.731	3.989	3.290	2.722	2.241	2.066	1.804	1.498	1.192	0.930
330	4.775	4.032	3.333	2.765	2.241	2.066	1.804	1.542	1.236	0.930
335	4.863	4.076	3.377	2.809	2.285	2.110	1.891	1.542	1.280	0.930
340	4.950	4.163	3.421	2.853	2.328	2.154	1.891	1.542	1.280	0.930
345	4.994	4.207	3.464	2.853	2.328	2.154	1.891	1.586	1.280	0.930
350	5.037	4.251	3.508	2.940	2.416	2.197	1.935	1.629	1.280	0.974
355	5.125	4.338	3.552	2.940	2.416	2.241	1.979	1.629	1.323	1.018
360	5.212	4.382	3.639	3.027	2.416	2.241	1.979	1.629	1.367	1.018
365	5.256	4.426	3.639	3.027	2.503	2.285	2.022	1.673	1.367	1.018
370	5.343	4.513	3.727	3.071	2.503	2.328	2.066	1.717	1.367	1.018
375	5.387	4.557	3.727	3.115	2.547	2.328	2.066	1.717	1.367	1.018
378	5.431	4.600	3.770	3.115	2.590	2.328	2.066	1.717	1.411	1.018

Thickness is intumescent only.

Results also apply to I/H-section beams exposed on all four sides up to the maximum dry film thickness of 4.653mm.

Table 13: I/H section Columns: Fire resistance period: 75 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	650°C	700°C	750°C
49	1.018	0.843	0.668	0.581	0.493	0.406	0.406	0.318	0.200	0.200
50	1.018	0.843	0.755	0.581	0.493	0.450	0.406	0.318	0.200	0.200
55	1.105	0.930	0.755	0.668	0.493	0.493	0.406	0.406	0.318	0.200
60	1.280	1.018	0.843	0.712	0.581	0.581	0.493	0.406	0.318	0.200
65	1.367	1.105	0.930	0.755	0.668	0.581	0.493	0.406	0.318	0.200
70	1.454	1.192	1.018	0.843	0.668	0.668	0.581	0.493	0.406	0.318
75	1.542	1.280	1.105	0.886	0.755	0.668	0.581	0.493	0.406	0.318
80	1.629	1.367	1.149	0.930	0.755	0.755	0.668	0.493	0.406	0.318
85	1.760	1.454	1.192	1.018	0.843	0.755	0.668	0.581	0.493	0.318
90	1.891	1.542	1.280	1.061	0.843	0.843	0.668	0.581	0.493	0.406
95	1.979	1.629	1.367	1.105	0.930	0.843	0.755	0.624	0.493	0.406
100	2.066	1.717	1.454	1.192	0.930	0.930	0.755	0.668	0.537	0.406
105	2.154	1.804	1.498	1.236	1.018	0.930	0.843	0.668	0.581	0.406
110	2.241	1.891	1.542	1.280	1.061	1.018	0.843	0.755	0.581	0.493
115	2.372	1.979	1.629	1.367	1.105	1.018	0.930	0.755	0.581	0.493
120	2.459	2.066	1.717	1.411	1.192	1.105	0.930	0.755	0.668	0.493
125	2.590	2.154	1.804	1.454	1.192	1.105	1.018	0.843	0.668	0.493
130	2.678	2.241	1.848	1.542	1.280	1.192	1.018	0.843	0.668	0.537
135	2.765	2.328	1.891	1.542	1.280	1.192	1.018	0.843	0.755	0.581
140	2.853	2.416	1.979	1.629	1.367	1.280	1.105	0.930	0.755	0.581
145	2.940	2.503	2.066	1.717	1.367	1.280	1.105	0.930	0.755	0.581
150	3.071	2.547	2.154	1.717	1.454	1.367	1.192	0.974	0.799	0.581
155	3.159	2.634	2.197	1.804	1.454	1.367	1.192	1.018	0.843	0.668
160	3.290	2.722	2.241	1.891	1.542	1.411	1.280	1.018	0.843	0.668
165	3.377	2.809	2.328	1.891	1.542	1.454	1.280	1.105	0.843	0.668
170	3.464	2.853	2.416	1.979	1.629	1.498	1.323	1.105	0.930	0.668
175	3.552	2.940	2.459	2.066	1.629	1.542	1.367	1.105	0.930	0.755
180	3.639	3.027	2.503	2.066	1.717	1.586	1.367	1.192	0.930	0.755
185	3.770	3.115	2.590	2.154	1.760	1.629	1.454	1.192	1.018	0.755
190	3.858	3.202	2.678	2.197	1.804	1.673	1.454	1.192	1.018	0.755
195	3.945	3.290	2.765	2.241	1.848	1.717	1.542	1.280	1.018	0.799
200	4.076	3.377	2.809	2.328	1.891	1.760	1.542	1.280	1.061	0.843
205	4.163	3.464	2.853	2.372	1.979	1.804	1.586	1.323	1.105	0.843
210	4.251	3.552	2.940	2.416	1.979	1.804	1.629	1.367	1.105	0.843
215	4.338	3.639	3.027	2.503	2.066	1.891	1.629	1.367	1.105	0.843
220	4.426	3.727	3.071	2.503	2.066	1.891	1.717	1.411	1.192	0.930
225	4.513	3.770	3.115	2.590	2.154	1.979	1.717	1.454	1.192	0.930
230	4.644	3.858	3.202	2.678	2.154	1.979	1.804	1.454	1.192	0.930
235	4.731	3.945	3.290	2.678	2.241	2.066	1.804	1.542	1.236	0.930
240	4.819	4.032	3.333	2.765	2.241	2.066	1.804	1.542	1.280	0.974
245	4.950	4.076	3.377	2.809	2.328	2.154	1.891	1.542	1.280	1.018
250	5.037	4.163	3.464	2.853	2.328	2.154	1.891	1.629	1.280	1.018
255	5.125	4.251	3.552	2.940	2.416	2.241	1.979	1.629	1.367	1.018
260	5.212	4.338	3.595	2.940	2.416	2.241	1.979	1.629	1.367	1.018
265	5.299	4.426	3.683	3.027	2.503	2.328	2.022	1.717	1.367	1.105
270	5.387	4.513	3.727	3.115	2.503	2.328	2.066	1.717	1.411	1.105
275	5.474	4.600	3.814	3.115	2.590	2.416	2.066	1.717	1.454	1.105
280	5.605	4.688	3.901	3.202	2.590	2.416	2.154	1.804	1.454	1.105
285	-	4.731	3.945	3.246	2.678	2.459	2.154	1.804	1.454	1.149
290	-	4.819	3.989	3.290	2.678	2.503	2.241	1.804	1.542	1.192
295	-	4.906	4.076	3.377	2.765	2.547	2.241	1.891	1.542	1.192
300	-	4.994	4.120	3.377	2.765	2.590	2.285	1.891	1.542	1.192
305	-	5.037	4.207	3.464	2.853	2.634	2.328	1.935	1.586	1.192
310	-	5.125	4.251	3.508	2.853	2.678	2.328	1.979	1.629	1.280
315	-	5.212	4.338	3.552	2.940	2.678	2.416	1.979	1.629	1.280
320	-	5.299	4.382	3.639	2.940	2.765	2.416	2.022	1.629	1.280
325	-	5.387	4.469	3.683	3.027	2.765	2.459	2.066	1.673	1.280
330	-	5.431	4.513	3.727	3.027	2.853	2.503	2.066	1.717	1.323
335	-	5.518	4.600	3.770	3.115	2.853	2.503	2.110	1.717	1.367
340	-	5.605	4.644	3.814	3.115	2.940	2.590	2.154	1.760	1.367
345	-	-	4.731	3.901	3.202	2.940	2.590	2.154	1.804	1.367
350	-	-	4.775	3.945	3.202	2.984	2.634	2.197	1.804	1.367
355	-	-	4.863	3.989	3.290	3.027	2.678	2.241	1.804	1.411
360	-	-	4.906	4.076	3.290	3.071	2.678	2.241	1.848	1.454
365	-	-	4.950	4.076	3.377	3.115	2.765	2.285	1.891	1.454
370	-	-	5.037	4.163	3.377	3.159	2.765	2.328	1.891	1.454
375	-	-	5.125	4.207	3.464	3.202	2.809	2.328	1.891	1.454
378	-	-	5.125	4.251	3.464	3.202	2.853	2.328	1.935	1.498

Thickness is intumescent only.

Results also apply to I/H-section beams exposed on all four sides up to the maximum dry film thickness of 4.653mm.

Table 14: I/H section Columns: Fire resistance period: 90 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	650°C	700°C	750°C
49	1.280	1.105	0.930	0.755	0.581	0.581	0.493	0.406	0.318	0.200
50	1.367	1.105	0.930	0.755	0.624	0.581	0.493	0.406	0.318	0.275
55	1.454	1.192	1.018	0.843	0.668	0.668	0.581	0.493	0.406	0.318
60	1.629	1.280	1.105	0.930	0.755	0.668	0.581	0.493	0.406	0.318
65	1.717	1.454	1.192	1.018	0.843	0.755	0.668	0.581	0.493	0.318
70	1.891	1.542	1.280	1.018	0.843	0.843	0.668	0.581	0.493	0.406
75	1.979	1.629	1.367	1.105	0.930	0.843	0.755	0.668	0.493	0.406
80	2.154	1.717	1.454	1.192	1.018	0.930	0.843	0.668	0.581	0.406
85	2.241	1.891	1.542	1.280	1.018	0.974	0.843	0.755	0.581	0.493
90	2.416	1.979	1.629	1.367	1.105	1.018	0.930	0.755	0.624	0.493
95	2.503	2.066	1.717	1.454	1.192	1.105	0.930	0.799	0.668	0.493
100	2.634	2.154	1.804	1.498	1.236	1.105	1.018	0.843	0.668	0.581
105	2.765	2.285	1.891	1.542	1.280	1.192	1.018	0.886	0.755	0.581
110	2.896	2.416	1.979	1.629	1.367	1.280	1.105	0.930	0.755	0.581
115	3.027	2.503	2.066	1.717	1.454	1.280	1.192	0.930	0.799	0.624
120	3.159	2.590	2.154	1.804	1.454	1.367	1.192	1.018	0.843	0.668
125	3.290	2.678	2.241	1.891	1.542	1.454	1.280	1.018	0.843	0.668
130	3.421	2.853	2.328	1.935	1.629	1.454	1.280	1.105	0.930	0.668
135	3.552	2.940	2.416	1.979	1.629	1.542	1.367	1.105	0.930	0.755
140	3.683	3.027	2.503	2.066	1.717	1.586	1.367	1.192	0.930	0.755
145	3.814	3.115	2.590	2.154	1.804	1.629	1.454	1.192	1.018	0.755
150	3.901	3.202	2.678	2.241	1.804	1.717	1.498	1.280	1.018	0.843
155	4.076	3.377	2.765	2.328	1.891	1.717	1.542	1.280	1.061	0.843
160	4.163	3.464	2.853	2.372	1.979	1.804	1.629	1.367	1.105	0.843
165	4.338	3.552	2.984	2.416	2.022	1.891	1.629	1.367	1.105	0.930
170	4.426	3.639	3.071	2.503	2.066	1.891	1.717	1.411	1.192	0.930
175	4.557	3.727	3.159	2.590	2.154	1.979	1.717	1.454	1.192	0.930
180	4.688	3.901	3.246	2.678	2.197	2.022	1.804	1.498	1.236	0.974
185	4.819	3.989	3.333	2.722	2.241	2.066	1.804	1.542	1.280	1.018
190	4.950	4.076	3.421	2.765	2.328	2.154	1.891	1.542	1.280	1.018
195	5.081	4.163	3.464	2.853	2.372	2.154	1.891	1.629	1.367	1.018
200	5.212	4.251	3.552	2.940	2.416	2.241	1.979	1.629	1.367	1.105
205	5.299	4.382	3.639	3.027	2.503	2.328	2.022	1.717	1.367	1.105
210	5.431	4.513	3.727	3.115	2.547	2.328	2.066	1.717	1.454	1.105
215	5.562	4.600	3.814	3.115	2.590	2.416	2.154	1.804	1.454	1.149
220	-	4.688	3.901	3.202	2.678	2.459	2.154	1.804	1.498	1.192
225	-	4.775	3.989	3.290	2.722	2.503	2.241	1.891	1.542	1.192
230	-	4.863	4.076	3.377	2.765	2.590	2.241	1.891	1.542	1.192
235	-	4.994	4.163	3.464	2.853	2.590	2.328	1.935	1.586	1.280
240	-	5.125	4.251	3.508	2.896	2.678	2.328	1.979	1.629	1.280
245	-	5.212	4.338	3.552	2.940	2.722	2.416	1.979	1.629	1.280
250	-	5.299	4.426	3.639	3.027	2.765	2.416	2.066	1.717	1.367
255	-	5.387	4.513	3.727	3.071	2.853	2.503	2.066	1.717	1.367
260	-	5.474	4.600	3.770	3.115	2.853	2.547	2.154	1.760	1.367
265	-	5.605	4.688	3.858	3.202	2.940	2.590	2.154	1.804	1.411
270	-	-	4.775	3.901	3.246	2.984	2.634	2.241	1.804	1.454
275	-	-	4.863	3.989	3.290	3.027	2.678	2.241	1.848	1.454
280	-	-	4.950	4.076	3.377	3.115	2.722	2.285	1.891	1.454
285	-	-	5.037	4.120	3.421	3.115	2.765	2.328	1.891	1.542
290	-	-	5.125	4.163	3.464	3.202	2.853	2.372	1.979	1.542
295	-	-	5.212	4.251	3.552	3.246	2.853	2.416	1.979	1.542
300	-	-	5.299	4.338	3.552	3.290	2.940	2.416	1.979	1.586
305	-	-	5.387	4.426	3.639	3.377	2.940	2.503	2.066	1.629
310	-	-	5.474	4.469	3.683	3.377	3.027	2.503	2.066	1.629
315	-	-	5.518	4.513	3.727	3.464	3.027	2.590	2.110	1.629
320	-	-	5.605	4.600	3.814	3.508	3.115	2.590	2.154	1.717
325	-	-	-	4.688	3.858	3.552	3.115	2.634	2.154	1.717
330	-	-	-	4.731	3.901	3.639	3.202	2.678	2.197	1.717
335	-	-	-	4.819	3.989	3.639	3.202	2.678	2.241	1.760
340	-	-	-	4.863	4.032	3.727	3.290	2.765	2.241	1.804
345	-	-	-	4.950	4.076	3.770	3.333	2.765	2.285	1.804
350	-	-	-	5.037	4.163	3.814	3.377	2.853	2.328	1.804
355	-	-	-	5.081	4.207	3.901	3.421	2.853	2.328	1.848
360	-	-	-	5.125	4.251	3.901	3.464	2.896	2.416	1.891
365	-	-	-	5.212	4.295	3.989	3.508	2.940	2.416	1.891
370	-	-	-	5.299	4.338	4.032	3.552	2.984	2.459	1.935
375	-	-	-	5.343	4.426	4.076	3.595	3.027	2.503	1.979
378	-	-	-	5.387	4.426	4.076	3.639	3.027	2.503	1.979

Thickness is intumescent only.

Results also apply to I/H-section beams exposed on all four sides up to the maximum dry film thickness of 4.653mm.

Table 15: I/H section Columns: Fire resistance period: 105 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	650°C	700°C	750°C
49	1.586	1.323	1.105	0.930	0.755	0.668	0.581	0.493	0.406	0.318
50	1.629	1.367	1.105	0.930	0.755	0.668	0.624	0.493	0.406	0.318
55	1.804	1.498	1.236	1.018	0.843	0.755	0.668	0.581	0.493	0.406
60	1.979	1.629	1.367	1.105	0.930	0.843	0.755	0.668	0.493	0.406
65	2.110	1.760	1.454	1.192	1.018	0.930	0.843	0.668	0.581	0.406
70	2.241	1.891	1.542	1.280	1.105	1.018	0.843	0.755	0.581	0.493
75	2.416	2.066	1.717	1.367	1.105	1.018	0.930	0.755	0.668	0.493
80	2.590	2.154	1.804	1.454	1.192	1.105	1.018	0.843	0.668	0.581
85	2.765	2.328	1.891	1.542	1.280	1.192	1.018	0.886	0.755	0.581
90	2.940	2.416	1.979	1.629	1.367	1.280	1.105	0.930	0.755	0.581
95	3.071	2.590	2.154	1.717	1.454	1.323	1.192	1.018	0.843	0.668
100	3.202	2.678	2.241	1.804	1.542	1.367	1.236	1.018	0.843	0.668
105	3.377	2.853	2.328	1.935	1.586	1.454	1.280	1.105	0.930	0.712
110	3.552	2.940	2.416	2.022	1.629	1.542	1.367	1.105	0.930	0.755
115	3.727	3.115	2.590	2.110	1.717	1.629	1.454	1.192	1.018	0.755
120	3.858	3.202	2.678	2.197	1.804	1.673	1.454	1.280	1.018	0.843
125	4.032	3.377	2.765	2.328	1.891	1.717	1.542	1.280	1.105	0.843
130	4.163	3.464	2.853	2.416	1.979	1.804	1.629	1.367	1.105	0.886
135	4.338	3.639	2.984	2.503	2.066	1.891	1.629	1.367	1.192	0.930
140	4.513	3.727	3.115	2.590	2.110	1.935	1.717	1.454	1.192	0.930
145	4.644	3.901	3.202	2.678	2.154	1.979	1.804	1.454	1.236	1.018
150	4.819	3.989	3.290	2.765	2.241	2.066	1.848	1.542	1.280	1.018
155	4.950	4.163	3.421	2.853	2.328	2.154	1.891	1.629	1.323	1.018
160	5.125	4.251	3.552	2.940	2.416	2.241	1.979	1.629	1.367	1.105
165	5.256	4.426	3.639	3.027	2.503	2.241	2.022	1.717	1.411	1.105
170	5.431	4.513	3.727	3.115	2.547	2.328	2.066	1.717	1.454	1.149
175	5.562	4.644	3.858	3.202	2.590	2.416	2.154	1.804	1.454	1.192
180	-	4.775	3.945	3.290	2.678	2.503	2.197	1.804	1.542	1.192
185	-	4.906	4.076	3.377	2.765	2.547	2.241	1.891	1.542	1.236
190	-	5.037	4.163	3.464	2.853	2.590	2.328	1.935	1.629	1.280
195	-	5.168	4.251	3.552	2.896	2.678	2.372	1.979	1.629	1.280
200	-	5.299	4.382	3.639	2.940	2.765	2.416	2.066	1.717	1.367
205	-	5.431	4.513	3.727	3.027	2.809	2.503	2.066	1.717	1.367
210	-	5.562	4.600	3.814	3.115	2.853	2.547	2.154	1.804	1.411
215	-	-	4.688	3.901	3.202	2.940	2.590	2.154	1.804	1.454
220	-	-	4.775	3.989	3.290	3.027	2.678	2.241	1.891	1.454
225	-	-	4.906	4.076	3.333	3.071	2.722	2.285	1.891	1.498
230	-	-	4.994	4.163	3.377	3.115	2.765	2.328	1.935	1.542
235	-	-	5.125	4.251	3.464	3.202	2.853	2.416	1.979	1.542
240	-	-	5.212	4.338	3.552	3.290	2.896	2.416	2.022	1.629
245	-	-	5.299	4.426	3.639	3.333	2.940	2.503	2.066	1.629
250	-	-	5.431	4.513	3.683	3.377	3.027	2.503	2.066	1.629
255	-	-	5.518	4.600	3.727	3.464	3.071	2.590	2.154	1.717
260	-	-	-	4.644	3.814	3.552	3.115	2.590	2.154	1.717
265	-	-	-	4.731	3.901	3.595	3.202	2.678	2.241	1.760
270	-	-	-	4.819	3.989	3.639	3.246	2.722	2.241	1.804
275	-	-	-	4.906	4.032	3.727	3.290	2.765	2.328	1.804
280	-	-	-	4.994	4.076	3.814	3.377	2.809	2.328	1.848
285	-	-	-	5.081	4.163	3.858	3.421	2.853	2.372	1.891
290	-	-	-	5.168	4.251	3.901	3.464	2.940	2.416	1.891
295	-	-	-	5.256	4.338	3.989	3.552	2.940	2.459	1.935
300	-	-	-	5.343	4.382	4.032	3.595	3.027	2.503	1.979
305	-	-	-	5.431	4.426	4.076	3.639	3.027	2.547	1.979
310	-	-	-	5.518	4.513	4.163	3.727	3.115	2.590	2.066
315	-	-	-	5.562	4.600	4.251	3.770	3.159	2.590	2.066
320	-	-	-	-	4.688	4.295	3.814	3.202	2.678	2.110
325	-	-	-	-	4.731	4.338	3.901	3.246	2.678	2.154
330	-	-	-	-	4.775	4.426	3.901	3.290	2.722	2.154
335	-	-	-	-	4.863	4.513	3.989	3.333	2.765	2.197
340	-	-	-	-	4.950	4.557	4.032	3.377	2.809	2.241
345	-	-	-	-	4.994	4.600	4.076	3.421	2.853	2.241
350	-	-	-	-	5.081	4.688	4.163	3.464	2.896	2.285
355	-	-	-	-	5.125	4.731	4.207	3.552	2.940	2.328
360	-	-	-	-	5.212	4.775	4.251	3.552	2.940	2.328
365	-	-	-	-	5.299	4.863	4.338	3.639	3.027	2.372
370	-	-	-	-	5.343	4.950	4.382	3.639	3.027	2.416
375	-	-	-	-	5.387	4.994	4.426	3.727	3.071	2.416
378	-	-	-	-	5.431	5.037	4.469	3.727	3.115	2.459

Thickness is intumescent only.

Results also apply to I/H-section beams exposed on all four sides up to the maximum dry film thickness of 4.653mm.

Table 16: I/H section Columns: Fire resistance period: 120 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	650°C	700°C	750°C
49	1.891	1.586	1.280	1.105	0.843	0.843	0.755	0.581	0.493	0.406
50	1.935	1.629	1.367	1.105	0.930	0.843	0.755	0.624	0.493	0.406
55	2.154	1.804	1.454	1.192	1.018	0.930	0.843	0.668	0.581	0.493
60	2.328	1.979	1.629	1.323	1.105	1.018	0.930	0.755	0.624	0.493
65	2.503	2.110	1.717	1.454	1.192	1.105	0.930	0.843	0.668	0.537
70	2.678	2.241	1.891	1.542	1.280	1.192	1.018	0.843	0.755	0.581
75	2.853	2.416	1.979	1.629	1.367	1.280	1.105	0.930	0.755	0.581
80	3.071	2.590	2.154	1.760	1.454	1.367	1.192	1.018	0.843	0.668
85	3.246	2.765	2.241	1.891	1.542	1.454	1.280	1.018	0.843	0.668
90	3.464	2.896	2.372	1.979	1.629	1.542	1.367	1.105	0.930	0.755
95	3.639	3.027	2.503	2.066	1.717	1.586	1.411	1.192	1.018	0.755
100	3.814	3.202	2.634	2.197	1.804	1.673	1.454	1.236	1.018	0.843
105	3.989	3.377	2.765	2.328	1.891	1.717	1.542	1.280	1.105	0.843
110	4.207	3.552	2.896	2.416	1.979	1.804	1.629	1.367	1.105	0.930
115	4.382	3.683	3.027	2.503	2.066	1.891	1.717	1.454	1.192	0.930
120	4.557	3.858	3.159	2.634	2.154	1.979	1.804	1.454	1.236	0.974
125	4.775	3.989	3.290	2.765	2.241	2.066	1.848	1.542	1.280	1.018
130	4.950	4.163	3.421	2.853	2.328	2.154	1.891	1.629	1.367	1.061
135	5.125	4.338	3.552	2.940	2.416	2.241	1.979	1.629	1.367	1.105
140	5.299	4.469	3.639	3.027	2.503	2.328	2.066	1.717	1.454	1.105
145	5.518	4.644	3.814	3.159	2.590	2.416	2.154	1.804	1.454	1.192
150	-	4.775	3.901	3.290	2.678	2.503	2.197	1.804	1.542	1.192
155	-	4.950	4.076	3.377	2.765	2.590	2.241	1.891	1.586	1.280
160	-	5.081	4.163	3.464	2.853	2.678	2.328	1.979	1.629	1.280
165	-	5.256	4.295	3.595	2.940	2.722	2.416	2.022	1.717	1.367
170	-	5.387	4.426	3.683	3.027	2.809	2.503	2.066	1.717	1.367
175	-	5.562	4.557	3.814	3.115	2.853	2.590	2.154	1.804	1.411
180	-	-	4.688	3.901	3.202	2.940	2.634	2.197	1.804	1.454
185	-	-	4.819	3.989	3.290	3.027	2.678	2.241	1.891	1.498
190	-	-	4.950	4.120	3.377	3.115	2.765	2.328	1.935	1.542
195	-	-	5.037	4.207	3.464	3.202	2.853	2.372	1.979	1.542
200	-	-	5.168	4.338	3.552	3.290	2.940	2.416	2.066	1.629
205	-	-	5.299	4.426	3.639	3.377	2.984	2.503	2.066	1.629
210	-	-	5.431	4.513	3.727	3.464	3.027	2.547	2.154	1.717
215	-	-	5.562	4.644	3.814	3.508	3.115	2.590	2.154	1.717
220	-	-	-	4.731	3.858	3.595	3.202	2.678	2.241	1.760
225	-	-	-	4.863	3.945	3.683	3.290	2.722	2.285	1.804
230	-	-	-	4.950	4.032	3.727	3.333	2.765	2.328	1.848
235	-	-	-	5.037	4.120	3.814	3.377	2.853	2.372	1.891
240	-	-	-	5.125	4.207	3.901	3.464	2.896	2.416	1.891
245	-	-	-	5.256	4.295	3.989	3.552	2.940	2.503	1.979
250	-	-	-	5.343	4.382	4.076	3.639	3.027	2.503	1.979
255	-	-	-	5.474	4.469	4.163	3.683	3.071	2.590	2.022
260	-	-	-	5.562	4.513	4.251	3.727	3.115	2.590	2.066
265	-	-	-	-	4.600	4.295	3.814	3.202	2.678	2.110
270	-	-	-	-	4.688	4.382	3.901	3.246	2.722	2.154
275	-	-	-	-	4.775	4.426	3.945	3.290	2.765	2.154
280	-	-	-	-	4.863	4.513	3.989	3.377	2.809	2.241
285	-	-	-	-	4.950	4.600	4.076	3.421	2.853	2.241
290	-	-	-	-	5.037	4.688	4.163	3.464	2.896	2.285
295	-	-	-	-	5.125	4.775	4.251	3.552	2.940	2.328
300	-	-	-	-	5.212	4.863	4.295	3.595	3.027	2.372
305	-	-	-	-	5.299	4.906	4.338	3.639	3.027	2.416
310	-	-	-	-	5.387	4.994	4.426	3.727	3.115	2.416
315	-	-	-	-	5.431	5.037	4.513	3.770	3.115	2.503
320	-	-	-	-	5.518	5.125	4.557	3.814	3.202	2.503
325	-	-	-	-	5.605	5.212	4.600	3.858	3.246	2.547
330	-	-	-	-	-	5.299	4.688	3.901	3.290	2.590
335	-	-	-	-	-	5.387	4.775	3.989	3.333	2.634
340	-	-	-	-	-	5.431	4.819	4.032	3.377	2.678
345	-	-	-	-	-	5.518	4.906	4.076	3.421	2.678
350	-	-	-	-	-	5.605	4.950	4.163	3.464	2.765
355	-	-	-	-	-	-	5.037	4.207	3.508	2.765
360	-	-	-	-	-	-	5.081	4.251	3.552	2.809
365	-	-	-	-	-	-	5.168	4.338	3.595	2.853
370	-	-	-	-	-	-	5.212	4.382	3.639	2.896
375	-	-	-	-	-	-	5.299	4.426	3.727	2.940
378	-	-	-	-	-	-	5.343	4.469	3.727	2.940

Thickness is intumescent only.

Results also apply to I/H-section beams exposed on all four sides up to the maximum dry film thickness of 4.653mm.

Rectangular/Square and Circular Hollow Section Columns

Table 17: Rectangular/ Square hollow section Columns: Fire resistance period: 15 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350 °C	400 °C	450 °C	500 °C	520 °C	550 °C	600 °C	650 °C	700 °C	750 °C
60	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
65	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
70	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
75	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
80	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
85	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
90	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
95	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
100	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
105	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
110	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
115	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
120	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
125	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
130	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
135	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
140	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
145	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
150	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
155	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
160	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
165	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
170	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
175	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
180	0.615	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
185	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
190	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
195	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
200	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
205	0.730	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
210	0.730	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
215	0.730	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
220	0.730	0.538	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
225	0.730	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
230	0.806	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
235	0.806	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
240	0.806	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
245	0.806	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
250	0.845	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
255	0.883	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
260	0.883	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
265	0.883	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
270	0.883	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
275	0.922	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
280	0.960	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
285	0.960	0.691	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
290	0.960	0.730	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
295	0.960	0.730	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
300	1.037	0.730	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
305	1.037	0.730	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
310	1.037	0.730	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
315	1.037	0.730	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
320	1.037	0.768	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
325	1.113	0.806	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
330	1.113	0.806	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
335	1.113	0.806	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
340	1.113	0.806	0.615	0.462	0.462	0.462	0.462	0.462	0.462	0.462
345	1.152	0.806	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462
350	1.190	0.845	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462
354	1.190	0.883	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462

Thickness is intumescent only.

Results also apply to hollow beams exposed on all four sides up to the maximum dry film thickness of 2.329mm.

Table 18: Rectangular/ Square hollow section Columns: Fire resistance period: 30 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350 °C	400 °C	450 °C	500 °C	520 °C	550 °C	600 °C	650 °C	700 °C	750 °C
60	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
65	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
70	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
75	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
80	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
85	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
90	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
95	0.730	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
100	0.730	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
105	0.806	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
110	0.806	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
115	0.883	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
120	0.883	0.653	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
125	0.960	0.730	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
130	0.960	0.730	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
135	0.998	0.806	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462
140	1.037	0.806	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462
145	1.075	0.806	0.653	0.538	0.462	0.462	0.462	0.462	0.462	0.462
150	1.113	0.883	0.653	0.576	0.462	0.462	0.462	0.462	0.462	0.462
155	1.152	0.883	0.730	0.576	0.462	0.462	0.462	0.462	0.462	0.462
160	1.190	0.883	0.730	0.576	0.576	0.462	0.462	0.462	0.462	0.462
165	1.190	0.960	0.730	0.576	0.576	0.462	0.462	0.462	0.462	0.462
170	1.267	0.960	0.806	0.653	0.576	0.462	0.462	0.462	0.462	0.462
175	1.267	0.998	0.806	0.653	0.576	0.462	0.462	0.462	0.462	0.462
180	1.344	1.037	0.806	0.653	0.576	0.576	0.462	0.462	0.462	0.462
185	1.344	1.037	0.806	0.653	0.653	0.576	0.462	0.462	0.462	0.462
190	1.420	1.075	0.883	0.730	0.653	0.576	0.462	0.462	0.462	0.462
195	1.420	1.113	0.883	0.730	0.653	0.576	0.462	0.462	0.462	0.462
200	1.497	1.113	0.883	0.730	0.653	0.576	0.462	0.462	0.462	0.462
205	1.497	1.190	0.960	0.730	0.691	0.615	0.462	0.462	0.462	0.462
210	1.535	1.190	0.960	0.768	0.730	0.653	0.462	0.462	0.462	0.462
215	1.574	1.190	0.960	0.806	0.730	0.653	0.462	0.462	0.462	0.462
220	1.612	1.267	0.998	0.806	0.730	0.653	0.576	0.462	0.462	0.462
225	1.651	1.267	1.037	0.806	0.730	0.653	0.576	0.462	0.462	0.462
230	1.689	1.267	1.037	0.806	0.806	0.691	0.576	0.462	0.462	0.462
235	1.727	1.344	1.037	0.883	0.806	0.730	0.576	0.462	0.462	0.462
240	1.727	1.344	1.113	0.883	0.806	0.730	0.576	0.462	0.462	0.462
245	1.804	1.382	1.113	0.883	0.806	0.730	0.576	0.462	0.462	0.462
250	1.804	1.420	1.113	0.883	0.806	0.730	0.576	0.462	0.462	0.462
255	1.881	1.420	1.113	0.960	0.883	0.730	0.653	0.462	0.462	0.462
260	1.881	1.459	1.190	0.960	0.883	0.806	0.653	0.462	0.462	0.462
265	1.957	1.497	1.190	0.960	0.883	0.806	0.653	0.462	0.462	0.462
270	1.957	1.497	1.190	0.960	0.883	0.806	0.653	0.462	0.462	0.462
275	1.996	1.535	1.229	0.998	0.922	0.806	0.653	0.538	0.462	0.462
280	2.034	1.574	1.267	1.037	0.960	0.806	0.653	0.576	0.462	0.462
285	2.073	1.574	1.267	1.037	0.960	0.845	0.691	0.576	0.462	0.462
290	2.111	1.612	1.267	1.037	0.960	0.883	0.730	0.576	0.462	0.462
295	2.111	1.651	1.344	1.037	0.960	0.883	0.730	0.576	0.462	0.462
300	2.188	1.651	1.344	1.113	0.998	0.883	0.730	0.576	0.462	0.462
305	2.188	1.727	1.344	1.113	1.037	0.883	0.730	0.576	0.462	0.462
310	2.264	1.727	1.382	1.113	1.037	0.883	0.730	0.576	0.462	0.462
315	2.264	1.727	1.420	1.113	1.037	0.960	0.730	0.615	0.462	0.462
320	2.303	1.804	1.420	1.152	1.037	0.960	0.806	0.653	0.462	0.462
325	2.341	1.804	1.420	1.190	1.075	0.960	0.806	0.653	0.462	0.462
330	2.379	1.804	1.497	1.190	1.113	0.960	0.806	0.653	0.462	0.462
335	2.418	1.881	1.497	1.190	1.113	0.960	0.806	0.653	0.462	0.462
340	2.456	1.881	1.497	1.190	1.113	0.998	0.806	0.653	0.462	0.462
345	2.495	1.881	1.535	1.267	1.113	1.037	0.806	0.653	0.462	0.462
350	2.495	1.957	1.574	1.267	1.190	1.037	0.845	0.653	0.462	0.462
354	2.533	1.957	1.574	1.267	1.190	1.037	0.883	0.653	0.462	0.462

Thickness is intumescent only.

Results also apply to hollow beams exposed on all four sides up to the maximum dry film thickness of 2.329mm.

Table 19: Rectangular/ Square hollow section Columns: Fire resistance period: 45 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350 °C	400 °C	450 °C	500 °C	520 °C	550 °C	600 °C	650 °C	700 °C	750 °C
60	0.730	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
65	0.806	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462
70	0.806	0.653	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
75	0.883	0.730	0.576	0.462	0.462	0.462	0.462	0.462	0.462	0.462
80	0.960	0.730	0.653	0.462	0.462	0.462	0.462	0.462	0.462	0.462
85	1.037	0.806	0.653	0.576	0.462	0.462	0.462	0.462	0.462	0.462
90	1.075	0.883	0.730	0.576	0.576	0.462	0.462	0.462	0.462	0.462
95	1.113	0.883	0.730	0.653	0.576	0.462	0.462	0.462	0.462	0.462
100	1.190	0.960	0.806	0.653	0.576	0.576	0.462	0.462	0.462	0.462
105	1.267	0.960	0.806	0.653	0.653	0.576	0.462	0.462	0.462	0.462
110	1.305	1.037	0.883	0.730	0.653	0.576	0.462	0.462	0.462	0.462
115	1.344	1.113	0.883	0.730	0.730	0.653	0.462	0.462	0.462	0.462
120	1.420	1.113	0.960	0.806	0.730	0.653	0.576	0.462	0.462	0.462
125	1.497	1.190	0.960	0.806	0.730	0.653	0.576	0.462	0.462	0.462
130	1.535	1.190	1.037	0.845	0.806	0.730	0.576	0.462	0.462	0.462
135	1.574	1.267	1.037	0.883	0.806	0.730	0.576	0.462	0.462	0.462
140	1.651	1.344	1.113	0.883	0.845	0.730	0.653	0.462	0.462	0.462
145	1.727	1.344	1.113	0.960	0.883	0.806	0.653	0.576	0.462	0.462
150	1.766	1.420	1.190	0.960	0.883	0.806	0.653	0.576	0.462	0.462
155	1.804	1.420	1.190	1.037	0.960	0.806	0.730	0.576	0.462	0.462
160	1.881	1.497	1.267	1.037	0.960	0.883	0.730	0.576	0.462	0.462
165	1.957	1.574	1.267	1.037	0.960	0.883	0.730	0.615	0.462	0.462
170	1.996	1.574	1.344	1.113	1.037	0.922	0.768	0.653	0.462	0.462
175	2.034	1.651	1.344	1.113	1.037	0.960	0.806	0.653	0.462	0.462
180	2.111	1.651	1.420	1.190	1.113	0.960	0.806	0.653	0.462	0.462
185	2.188	1.727	1.420	1.190	1.113	0.998	0.806	0.653	0.576	0.462
190	2.226	1.766	1.497	1.190	1.113	1.037	0.883	0.730	0.576	0.462
195	2.264	1.804	1.497	1.267	1.190	1.037	0.883	0.730	0.576	0.462
200	2.341	1.881	1.535	1.267	1.190	1.075	0.883	0.730	0.576	0.462
205	2.418	1.881	1.574	1.344	1.229	1.113	0.883	0.730	0.576	0.462
210	2.456	1.957	1.612	1.344	1.267	1.113	0.960	0.806	0.653	0.462
215	2.495	1.996	1.651	1.382	1.267	1.152	0.960	0.806	0.653	0.462
220	2.571	2.034	1.689	1.420	1.344	1.190	0.960	0.806	0.653	0.462
225	2.648	2.111	1.727	1.420	1.344	1.190	1.037	0.806	0.653	0.462
230	2.686	2.111	1.766	1.497	1.344	1.267	1.037	0.845	0.653	0.462
235	2.725	2.188	1.804	1.497	1.420	1.267	1.037	0.883	0.691	0.462
240	2.802	2.226	1.842	1.535	1.420	1.267	1.037	0.883	0.730	0.462
245	2.840	2.264	1.881	1.574	1.459	1.344	1.113	0.883	0.730	0.462
250	2.878	2.303	1.881	1.574	1.497	1.344	1.113	0.883	0.730	0.462
255	2.955	2.341	1.957	1.651	1.497	1.344	1.113	0.960	0.730	0.462
260	3.032	2.418	1.957	1.651	1.574	1.420	1.152	0.960	0.730	0.462
265	3.070	2.418	2.034	1.689	1.574	1.420	1.190	0.960	0.806	0.538
270	3.108	2.495	2.034	1.727	1.574	1.420	1.190	0.960	0.806	0.576
275	3.185	2.533	2.111	1.727	1.651	1.497	1.190	1.037	0.806	0.576
280	3.224	2.571	2.111	1.804	1.651	1.497	1.267	1.037	0.806	0.576
285	3.300	2.610	2.188	1.804	1.689	1.497	1.267	1.037	0.806	0.576
290	3.339	2.648	2.188	1.842	1.727	1.535	1.267	1.037	0.845	0.576
295	3.415	2.725	2.264	1.881	1.727	1.574	1.305	1.075	0.883	0.576
300	3.454	2.725	2.264	1.881	1.766	1.574	1.344	1.113	0.883	0.576
305	3.492	2.802	2.303	1.957	1.804	1.612	1.344	1.113	0.883	0.615
310	3.569	2.840	2.341	1.957	1.804	1.651	1.344	1.113	0.883	0.653
315	3.607	2.878	2.379	1.957	1.881	1.651	1.382	1.113	0.883	0.653
320	3.684	2.917	2.418	2.034	1.881	1.689	1.420	1.190	0.922	0.653
325	3.722	2.955	2.456	2.034	1.881	1.727	1.420	1.190	0.960	0.653
330	3.799	3.032	2.495	2.073	1.957	1.727	1.420	1.190	0.960	0.653
335	3.837	3.032	2.533	2.111	1.957	1.766	1.497	1.190	0.960	0.653
340	3.876	3.108	2.571	2.111	1.996	1.804	1.497	1.229	0.960	0.653
345	3.953	3.147	2.571	2.188	2.034	1.804	1.497	1.267	0.998	0.691
350	3.991	3.185	2.648	2.188	2.034	1.842	1.535	1.267	1.037	0.730
354	4.029	3.224	2.648	2.226	2.073	1.881	1.574	1.267	1.037	0.730

Thickness is intumescent only.

Results also apply to hollow beams exposed on all four sides up to the maximum dry film thickness of 2.329mm.

Table 20: Rectangular/ Square hollow section Columns: Fire resistance period: 60 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350 °C	400 °C	450 °C	500 °C	520 °C	550 °C	600 °C	650 °C	700 °C	750 °C
60	1.037	0.806	0.730	0.576	0.576	0.462	0.462	0.462	0.462	0.462
65	1.113	0.883	0.730	0.653	0.576	0.462	0.462	0.462	0.462	0.462
70	1.190	0.960	0.806	0.653	0.653	0.576	0.462	0.462	0.462	0.462
75	1.267	1.037	0.883	0.730	0.653	0.576	0.462	0.462	0.462	0.462
80	1.344	1.113	0.883	0.806	0.730	0.653	0.576	0.462	0.462	0.462
85	1.420	1.152	0.960	0.806	0.768	0.691	0.576	0.462	0.462	0.462
90	1.497	1.190	1.037	0.883	0.806	0.730	0.615	0.462	0.462	0.462
95	1.574	1.267	1.113	0.883	0.883	0.806	0.653	0.576	0.462	0.462
100	1.651	1.344	1.113	0.960	0.883	0.806	0.653	0.576	0.462	0.462
105	1.727	1.420	1.190	1.037	0.960	0.883	0.730	0.576	0.462	0.462
110	1.804	1.497	1.267	1.037	0.960	0.883	0.730	0.653	0.462	0.462
115	1.919	1.574	1.305	1.113	1.037	0.960	0.806	0.653	0.462	0.462
120	1.996	1.651	1.344	1.152	1.075	0.960	0.806	0.653	0.576	0.462
125	2.073	1.689	1.420	1.190	1.113	1.037	0.883	0.730	0.576	0.462
130	2.149	1.727	1.497	1.267	1.190	1.037	0.883	0.730	0.576	0.462
135	2.264	1.804	1.535	1.267	1.190	1.113	0.883	0.768	0.653	0.462
140	2.341	1.881	1.574	1.344	1.267	1.113	0.960	0.806	0.653	0.462
145	2.418	1.957	1.651	1.420	1.267	1.190	0.960	0.806	0.653	0.462
150	2.495	2.034	1.727	1.420	1.344	1.190	1.037	0.883	0.691	0.462
155	2.571	2.111	1.727	1.497	1.382	1.267	1.037	0.883	0.730	0.462
160	2.648	2.149	1.804	1.497	1.420	1.267	1.113	0.883	0.730	0.538
165	2.725	2.188	1.881	1.574	1.497	1.344	1.113	0.960	0.730	0.576
170	2.802	2.264	1.919	1.651	1.497	1.344	1.113	0.960	0.806	0.576
175	2.878	2.341	1.957	1.651	1.574	1.420	1.190	0.960	0.806	0.576
180	2.955	2.418	2.034	1.727	1.574	1.420	1.190	1.037	0.806	0.576
185	3.032	2.495	2.111	1.766	1.651	1.497	1.267	1.037	0.883	0.653
190	3.108	2.533	2.111	1.804	1.689	1.497	1.267	1.037	0.883	0.653
195	3.185	2.610	2.188	1.881	1.727	1.574	1.305	1.113	0.883	0.653
200	3.262	2.648	2.264	1.881	1.766	1.574	1.344	1.113	0.883	0.653
205	3.377	2.725	2.303	1.957	1.804	1.651	1.344	1.152	0.960	0.653
210	3.454	2.802	2.341	1.996	1.881	1.651	1.420	1.190	0.960	0.730
215	3.530	2.878	2.418	2.034	1.881	1.727	1.420	1.190	0.960	0.730
220	3.607	2.917	2.456	2.111	1.957	1.727	1.497	1.229	1.037	0.730
225	3.684	2.993	2.495	2.111	1.957	1.804	1.497	1.267	1.037	0.730
230	3.761	3.032	2.571	2.188	2.034	1.804	1.535	1.267	1.037	0.768
235	3.837	3.108	2.648	2.188	2.073	1.881	1.574	1.344	1.075	0.806
240	3.914	3.185	2.686	2.264	2.111	1.881	1.574	1.344	1.113	0.806
245	3.991	3.262	2.725	2.303	2.149	1.957	1.651	1.344	1.113	0.806
250	4.068	3.300	2.802	2.341	2.188	1.957	1.651	1.420	1.113	0.806
255	4.144	3.377	2.840	2.418	2.264	2.034	1.689	1.420	1.190	0.845
260	4.221	3.415	2.878	2.418	2.264	2.034	1.727	1.420	1.190	0.883
265	4.298	3.492	2.955	2.495	2.341	2.111	1.727	1.497	1.190	0.883
270	4.375	3.569	2.993	2.533	2.341	2.111	1.804	1.497	1.229	0.883
275	4.451	3.646	3.032	2.571	2.418	2.188	1.804	1.497	1.267	0.883
280	4.528	3.684	3.108	2.648	2.456	2.188	1.881	1.574	1.267	0.922
285	4.605	3.761	3.185	2.648	2.495	2.264	1.881	1.574	1.267	0.960
290	4.681	3.799	3.185	2.725	2.533	2.264	1.919	1.574	1.305	0.960
295	4.758	3.876	3.262	2.763	2.571	2.341	1.957	1.651	1.344	0.960
300	4.835	3.953	3.339	2.802	2.610	2.341	1.957	1.651	1.344	0.960
305	4.912	3.991	3.377	2.840	2.648	2.418	2.034	1.689	1.344	0.998
310	4.988	4.068	3.415	2.878	2.725	2.418	2.034	1.727	1.420	1.037
315	-	4.106	3.492	2.955	2.725	2.495	2.073	1.727	1.420	1.037
320	-	4.183	3.530	2.955	2.802	2.495	2.111	1.766	1.420	1.037
325	-	4.259	3.569	3.032	2.802	2.571	2.111	1.804	1.459	1.037
330	-	4.298	3.646	3.070	2.878	2.571	2.188	1.804	1.497	1.113
335	-	4.375	3.684	3.108	2.878	2.648	2.188	1.842	1.497	1.113
340	-	4.451	3.722	3.185	2.955	2.648	2.226	1.881	1.497	1.113
345	-	4.490	3.799	3.185	2.993	2.686	2.264	1.881	1.574	1.113
350	-	4.566	3.837	3.262	3.032	2.725	2.264	1.919	1.574	1.113
354	-	4.605	3.876	3.262	3.070	2.763	2.341	1.957	1.574	1.152

Thickness is intumescent only.

Results also apply to hollow beams exposed on all four sides up to the maximum dry film thickness of 2.329mm.

Table 21: Circular hollow section Columns: Fire resistance period: 15 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350 °C	400 °C	450 °C	500 °C	520 °C	550 °C	600 °C	650 °C	700 °C	750 °C
38	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
40	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
45	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
50	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
55	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
60	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
65	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
70	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
75	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
80	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
85	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
90	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
95	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
100	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
105	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
110	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
115	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
120	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
125	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
130	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
135	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
140	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
145	0.660	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
150	0.698	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
155	0.698	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
160	0.698	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
165	0.775	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
170	0.775	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
175	0.775	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
180	0.814	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
185	0.852	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
190	0.852	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
195	0.852	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
200	0.891	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
205	0.929	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
210	0.929	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
215	0.968	0.698	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
220	1.006	0.698	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
225	1.006	0.698	0.506	0.396	0.396	0.396	0.396	0.396	0.396	0.396
230	1.006	0.698	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396
235	1.045	0.698	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396
240	1.083	0.737	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396
245	1.083	0.775	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396
250	1.122	0.775	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396
255	1.160	0.775	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396
260	1.160	0.775	0.583	0.396	0.396	0.396	0.396	0.396	0.396	0.396
265	1.160	0.814	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396
270	1.199	0.852	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396
275	1.237	0.852	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396
280	1.237	0.852	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396
285	1.237	0.852	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396
290	1.276	0.891	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396
295	1.314	0.929	0.660	0.396	0.396	0.396	0.396	0.396	0.396	0.396
300	1.314	0.929	0.698	0.506	0.396	0.396	0.396	0.396	0.396	0.396
305	1.353	0.929	0.698	0.544	0.396	0.396	0.396	0.396	0.396	0.396
310	1.391	0.929	0.698	0.544	0.396	0.396	0.396	0.396	0.396	0.396
315	1.391	0.929	0.698	0.544	0.396	0.396	0.396	0.396	0.396	0.396
320	1.391	0.968	0.698	0.544	0.396	0.396	0.396	0.396	0.396	0.396
325	1.430	1.006	0.698	0.544	0.396	0.396	0.396	0.396	0.396	0.396
330	1.468	1.006	0.698	0.544	0.396	0.396	0.396	0.396	0.396	0.396
335	1.468	1.006	0.775	0.544	0.506	0.396	0.396	0.396	0.396	0.396
340	1.507	1.006	0.775	0.544	0.544	0.396	0.396	0.396	0.396	0.396
345	1.507	1.045	0.775	0.544	0.544	0.396	0.396	0.396	0.396	0.396
350	1.545	1.083	0.775	0.583	0.544	0.396	0.396	0.396	0.396	0.396
353	1.545	1.083	0.775	0.621	0.544	0.396	0.396	0.396	0.396	0.396

Thickness is intumescent only.

Results also apply to hollow beams with surface area exposure up to the maximum dry film thickness of 2.329mm.

Table 22: Circular hollow section Columns: Fire resistance period: 30 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350 °C	400 °C	450 °C	500 °C	520 °C	550 °C	600 °C	650 °C	700 °C	750 °C
38	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
40	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
45	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
50	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
55	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
60	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
65	0.698	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
70	0.698	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
75	0.775	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
80	0.852	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
85	0.852	0.621	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396
90	0.929	0.698	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396
95	1.006	0.698	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396
100	1.006	0.775	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396
105	1.083	0.775	0.621	0.544	0.396	0.396	0.396	0.396	0.396	0.396
110	1.122	0.852	0.660	0.544	0.396	0.396	0.396	0.396	0.396	0.396
115	1.160	0.852	0.698	0.544	0.544	0.396	0.396	0.396	0.396	0.396
120	1.237	0.929	0.698	0.621	0.544	0.396	0.396	0.396	0.396	0.396
125	1.276	0.929	0.775	0.621	0.544	0.396	0.396	0.396	0.396	0.396
130	1.314	1.006	0.775	0.621	0.621	0.544	0.396	0.396	0.396	0.396
135	1.391	1.006	0.775	0.660	0.621	0.544	0.396	0.396	0.396	0.396
140	1.430	1.083	0.852	0.698	0.621	0.544	0.396	0.396	0.396	0.396
145	1.468	1.083	0.852	0.698	0.621	0.583	0.396	0.396	0.396	0.396
150	1.545	1.160	0.891	0.698	0.698	0.621	0.396	0.396	0.396	0.396
155	1.545	1.160	0.929	0.775	0.698	0.621	0.544	0.396	0.396	0.396
160	1.622	1.237	0.929	0.775	0.698	0.621	0.544	0.396	0.396	0.396
165	1.699	1.237	1.006	0.775	0.775	0.660	0.544	0.396	0.396	0.396
170	1.699	1.276	1.006	0.852	0.775	0.698	0.544	0.396	0.396	0.396
175	1.776	1.314	1.006	0.852	0.775	0.698	0.583	0.396	0.396	0.396
180	1.815	1.353	1.083	0.852	0.775	0.698	0.621	0.396	0.396	0.396
185	1.853	1.391	1.083	0.929	0.852	0.737	0.621	0.506	0.396	0.396
190	1.930	1.391	1.122	0.929	0.852	0.775	0.621	0.544	0.396	0.396
195	1.969	1.468	1.160	0.929	0.852	0.775	0.621	0.544	0.396	0.396
200	2.007	1.468	1.160	0.968	0.891	0.775	0.660	0.544	0.396	0.396
205	2.084	1.545	1.237	1.006	0.929	0.814	0.698	0.544	0.396	0.396
210	2.084	1.545	1.237	1.006	0.929	0.852	0.698	0.544	0.396	0.396
215	2.161	1.622	1.237	1.006	0.929	0.852	0.698	0.621	0.396	0.396
220	2.200	1.622	1.314	1.083	1.006	0.852	0.698	0.621	0.396	0.396
225	2.238	1.699	1.314	1.083	1.006	0.891	0.775	0.621	0.396	0.396
230	2.315	1.699	1.353	1.083	1.006	0.929	0.775	0.621	0.396	0.396
235	2.354	1.776	1.391	1.160	1.045	0.929	0.775	0.621	0.544	0.396
240	2.392	1.776	1.391	1.160	1.083	0.929	0.775	0.621	0.544	0.396
245	2.469	1.815	1.430	1.160	1.083	0.968	0.775	0.698	0.544	0.396
250	2.508	1.853	1.468	1.199	1.083	1.006	0.852	0.698	0.544	0.396
255	2.546	1.892	1.468	1.237	1.160	1.006	0.852	0.698	0.544	0.396
260	2.585	1.930	1.545	1.237	1.160	1.006	0.852	0.698	0.544	0.396
265	2.623	1.930	1.545	1.237	1.160	1.045	0.852	0.698	0.544	0.396
270	2.700	2.007	1.545	1.314	1.160	1.083	0.852	0.698	0.583	0.396
275	2.739	2.007	1.622	1.314	1.237	1.083	0.929	0.775	0.621	0.396
280	2.777	2.084	1.622	1.314	1.237	1.083	0.929	0.775	0.621	0.396
285	2.854	2.084	1.661	1.391	1.237	1.122	0.929	0.775	0.621	0.396
290	2.893	2.161	1.699	1.391	1.276	1.160	0.929	0.775	0.621	0.396
295	2.931	2.161	1.699	1.391	1.314	1.160	0.929	0.775	0.621	0.396
300	2.970	2.238	1.738	1.430	1.314	1.160	1.006	0.775	0.621	0.396
305	3.008	2.238	1.776	1.468	1.314	1.199	1.006	0.852	0.660	0.396
310	3.085	2.277	1.776	1.468	1.391	1.237	1.006	0.852	0.698	0.396
315	3.124	2.315	1.853	1.468	1.391	1.237	1.006	0.852	0.698	0.396
320	3.162	2.354	1.853	1.545	1.391	1.237	1.006	0.852	0.698	0.396
325	3.201	2.392	1.853	1.545	1.391	1.237	1.083	0.852	0.698	0.396
330	3.239	2.392	1.930	1.545	1.468	1.314	1.083	0.852	0.698	0.396
335	3.316	2.469	1.930	1.584	1.468	1.314	1.083	0.929	0.698	0.396
340	3.355	2.469	1.969	1.622	1.468	1.314	1.083	0.929	0.698	0.396
345	3.393	2.546	2.007	1.622	1.507	1.314	1.083	0.929	0.737	0.396
350	3.432	2.546	2.007	1.622	1.545	1.391	1.160	0.929	0.775	0.396
353	3.470	2.585	2.007	1.661	1.545	1.391	1.160	0.929	0.775	0.506

Thickness is intumescent only.

Results also apply to hollow beams with surface area exposure up to the maximum dry film thickness of 2.329mm.

Table 23: Circular hollow section Columns: Fire resistance period: 45 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350 °C	400 °C	450 °C	500 °C	520 °C	550 °C	600 °C	650 °C	700 °C	750 °C
38	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
40	0.698	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
45	0.775	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
50	0.852	0.621	0.544	0.396	0.396	0.396	0.396	0.396	0.396	0.396
55	0.929	0.698	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396
60	1.006	0.775	0.621	0.544	0.396	0.396	0.396	0.396	0.396	0.396
65	1.083	0.852	0.698	0.544	0.544	0.396	0.396	0.396	0.396	0.396
70	1.160	0.929	0.775	0.621	0.544	0.544	0.396	0.396	0.396	0.396
75	1.237	1.006	0.775	0.621	0.621	0.544	0.396	0.396	0.396	0.396
80	1.314	1.006	0.852	0.698	0.621	0.621	0.396	0.396	0.396	0.396
85	1.430	1.083	0.929	0.775	0.698	0.621	0.544	0.396	0.396	0.396
90	1.507	1.160	0.929	0.775	0.698	0.698	0.544	0.396	0.396	0.396
95	1.622	1.237	1.006	0.852	0.775	0.698	0.621	0.506	0.396	0.396
100	1.699	1.314	1.083	0.852	0.775	0.737	0.621	0.544	0.396	0.396
105	1.776	1.353	1.083	0.929	0.852	0.775	0.621	0.544	0.396	0.396
110	1.853	1.391	1.160	0.929	0.891	0.775	0.698	0.583	0.396	0.396
115	1.930	1.468	1.237	1.006	0.929	0.852	0.698	0.621	0.396	0.396
120	2.007	1.545	1.237	1.045	1.006	0.852	0.775	0.621	0.544	0.396
125	2.084	1.622	1.314	1.083	1.006	0.929	0.775	0.660	0.544	0.396
130	2.161	1.699	1.391	1.160	1.083	0.929	0.775	0.698	0.544	0.396
135	2.238	1.699	1.391	1.160	1.083	1.006	0.852	0.698	0.621	0.396
140	2.315	1.776	1.468	1.237	1.160	1.006	0.852	0.737	0.621	0.396
145	2.392	1.853	1.545	1.237	1.160	1.083	0.929	0.775	0.621	0.396
150	2.469	1.930	1.545	1.314	1.237	1.083	0.929	0.775	0.621	0.396
155	2.585	2.007	1.622	1.314	1.237	1.160	0.929	0.814	0.698	0.506
160	2.662	2.046	1.699	1.391	1.314	1.160	1.006	0.852	0.698	0.544
165	2.739	2.084	1.699	1.391	1.314	1.199	1.006	0.852	0.698	0.544
170	2.816	2.161	1.776	1.468	1.391	1.237	1.083	0.891	0.737	0.544
175	2.893	2.238	1.853	1.507	1.391	1.237	1.083	0.929	0.775	0.544
180	2.970	2.315	1.853	1.545	1.468	1.314	1.083	0.929	0.775	0.583
185	3.085	2.354	1.930	1.622	1.468	1.314	1.160	0.968	0.775	0.621
190	3.162	2.392	2.007	1.622	1.545	1.391	1.160	1.006	0.852	0.621
195	3.239	2.469	2.007	1.699	1.545	1.391	1.199	1.006	0.852	0.621
200	3.316	2.546	2.084	1.699	1.622	1.468	1.237	1.045	0.852	0.621
205	3.393	2.623	2.161	1.776	1.622	1.468	1.237	1.083	0.852	0.660
210	3.470	2.662	2.161	1.776	1.699	1.545	1.314	1.083	0.929	0.698
215	3.547	2.700	2.238	1.853	1.699	1.545	1.314	1.122	0.929	0.698
220	3.624	2.777	2.315	1.853	1.776	1.584	1.353	1.160	0.929	0.698
225	3.701	2.854	2.315	1.930	1.776	1.622	1.391	1.160	0.968	0.698
230	3.778	2.931	2.392	1.969	1.853	1.661	1.391	1.199	1.006	0.737
235	3.855	2.970	2.469	2.007	1.853	1.699	1.468	1.237	1.006	0.775
240	3.932	3.008	2.469	2.046	1.930	1.699	1.468	1.237	1.006	0.775
245	4.009	3.085	2.546	2.084	1.930	1.776	1.468	1.237	1.045	0.775
250	4.086	3.162	2.623	2.161	2.007	1.776	1.545	1.314	1.083	0.775
255	4.163	3.239	2.623	2.161	2.007	1.853	1.545	1.314	1.083	0.814
260	4.240	3.239	2.700	2.238	2.084	1.853	1.584	1.314	1.083	0.852
265	4.317	3.316	2.739	2.238	2.084	1.930	1.622	1.391	1.160	0.852
270	4.394	3.393	2.777	2.315	2.161	1.930	1.622	1.391	1.160	0.852
275	4.471	3.470	2.854	2.315	2.161	1.969	1.699	1.391	1.160	0.852
280	4.548	3.509	2.893	2.392	2.238	2.007	1.699	1.468	1.199	0.891
285	4.625	3.547	2.931	2.392	2.238	2.007	1.699	1.468	1.237	0.929
290	4.740	3.624	3.008	2.469	2.315	2.084	1.776	1.468	1.237	0.929
295	4.817	3.701	3.008	2.469	2.315	2.084	1.776	1.545	1.237	0.929
300	4.894	3.778	3.085	2.546	2.354	2.161	1.815	1.545	1.276	0.929
305	4.971	3.778	3.162	2.546	2.392	2.161	1.853	1.545	1.314	0.968
310	-	3.855	3.162	2.623	2.431	2.200	1.853	1.622	1.314	1.006
315	-	3.932	3.239	2.662	2.469	2.238	1.930	1.622	1.314	1.006
320	-	4.009	3.278	2.700	2.508	2.277	1.930	1.622	1.353	1.006
325	-	4.047	3.316	2.739	2.546	2.315	1.930	1.661	1.391	1.006
330	-	4.086	3.393	2.777	2.585	2.315	2.007	1.699	1.391	1.045
335	-	4.163	3.432	2.816	2.623	2.392	2.007	1.699	1.391	1.083
340	-	4.240	3.470	2.854	2.662	2.392	2.046	1.738	1.430	1.083
345	-	4.278	3.547	2.893	2.700	2.469	2.084	1.776	1.468	1.083
350	-	4.317	3.547	2.931	2.700	2.469	2.084	1.776	1.468	1.083
353	-	4.394	3.624	2.931	2.777	2.469	2.123	1.776	1.468	1.122

Thickness is intumescent only.

Results also apply to hollow beams with surface area exposure up to the maximum dry film thickness of 2.329mm.

Table 24: Circular hollow section Columns: Fire resistance period: 60 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350 °C	400 °C	450 °C	500 °C	520 °C	550 °C	600 °C	650 °C	700 °C	750 °C
38	0.929	0.737	0.621	0.396	0.396	0.396	0.396	0.396	0.396	0.396
40	0.968	0.775	0.621	0.544	0.396	0.396	0.396	0.396	0.396	0.396
45	1.083	0.852	0.698	0.621	0.544	0.506	0.396	0.396	0.396	0.396
50	1.237	0.968	0.775	0.660	0.621	0.544	0.396	0.396	0.396	0.396
55	1.314	1.083	0.852	0.698	0.698	0.621	0.544	0.396	0.396	0.396
60	1.468	1.160	0.929	0.775	0.737	0.698	0.544	0.396	0.396	0.396
65	1.545	1.237	1.006	0.852	0.775	0.698	0.621	0.544	0.396	0.396
70	1.699	1.353	1.083	0.929	0.852	0.775	0.698	0.544	0.396	0.396
75	1.776	1.468	1.160	1.006	0.929	0.852	0.698	0.621	0.544	0.396
80	1.930	1.545	1.237	1.083	1.006	0.891	0.775	0.621	0.544	0.396
85	2.046	1.622	1.314	1.083	1.006	0.929	0.852	0.698	0.583	0.396
90	2.161	1.738	1.391	1.160	1.083	1.006	0.852	0.737	0.621	0.396
95	2.277	1.853	1.468	1.237	1.160	1.083	0.929	0.775	0.621	0.396
100	2.392	1.930	1.545	1.314	1.237	1.083	0.929	0.814	0.698	0.544
105	2.508	2.007	1.622	1.391	1.314	1.160	1.006	0.852	0.698	0.544
110	2.623	2.084	1.699	1.468	1.314	1.237	1.083	0.929	0.775	0.583
115	2.777	2.238	1.776	1.468	1.391	1.276	1.083	0.929	0.775	0.621
120	2.854	2.315	1.853	1.545	1.468	1.314	1.160	1.006	0.852	0.621
125	3.008	2.392	1.930	1.622	1.545	1.391	1.160	1.006	0.852	0.660
130	3.085	2.469	2.007	1.699	1.584	1.468	1.237	1.083	0.852	0.698
135	3.239	2.585	2.084	1.776	1.622	1.468	1.314	1.083	0.929	0.698
140	3.316	2.700	2.161	1.853	1.699	1.545	1.314	1.160	0.929	0.737
145	3.470	2.777	2.238	1.853	1.776	1.622	1.391	1.160	1.006	0.775
150	3.547	2.854	2.315	1.930	1.815	1.622	1.430	1.237	1.006	0.775
155	3.701	2.931	2.392	2.007	1.853	1.699	1.468	1.237	1.083	0.814
160	3.778	3.047	2.469	2.084	1.930	1.776	1.545	1.314	1.083	0.852
165	3.932	3.162	2.546	2.161	2.007	1.815	1.545	1.314	1.122	0.852
170	4.009	3.239	2.623	2.200	2.084	1.853	1.622	1.391	1.160	0.891
175	4.163	3.316	2.700	2.238	2.084	1.930	1.661	1.391	1.160	0.929
180	4.278	3.393	2.777	2.315	2.161	2.007	1.699	1.468	1.237	0.929
185	4.394	3.509	2.854	2.392	2.238	2.007	1.776	1.468	1.237	0.968
190	4.471	3.624	2.931	2.469	2.315	2.084	1.776	1.545	1.314	1.006
195	4.625	3.701	3.008	2.546	2.315	2.161	1.853	1.545	1.314	1.006
200	4.702	3.778	3.085	2.546	2.392	2.161	1.892	1.622	1.353	1.045
205	4.817	3.855	3.162	2.623	2.469	2.238	1.930	1.622	1.391	1.083
210	4.933	3.971	3.239	2.700	2.546	2.315	2.007	1.699	1.391	1.083
215	-	4.086	3.316	2.777	2.585	2.354	2.007	1.699	1.468	1.122
220	-	4.163	3.393	2.854	2.623	2.392	2.084	1.776	1.468	1.160
225	-	4.240	3.470	2.893	2.700	2.469	2.084	1.776	1.507	1.160
230	-	4.317	3.547	2.931	2.777	2.508	2.161	1.853	1.545	1.160
235	-	4.432	3.624	3.008	2.816	2.546	2.200	1.853	1.545	1.237
240	-	4.509	3.701	3.085	2.854	2.623	2.238	1.930	1.622	1.237
245	-	4.625	3.778	3.162	2.931	2.662	2.315	1.930	1.622	1.237
250	-	4.702	3.855	3.201	3.008	2.700	2.315	2.007	1.699	1.314
255	-	4.779	3.894	3.239	3.047	2.777	2.392	2.007	1.699	1.314
260	-	4.856	3.971	3.316	3.085	2.816	2.431	2.084	1.738	1.314
265	-	4.971	4.047	3.393	3.162	2.854	2.469	2.084	1.776	1.391
270	-	-	4.124	3.470	3.239	2.931	2.546	2.161	1.776	1.391
275	-	-	4.201	3.509	3.239	2.970	2.546	2.161	1.853	1.391
280	-	-	4.278	3.547	3.316	3.008	2.623	2.238	1.853	1.430
285	-	-	4.355	3.624	3.393	3.085	2.662	2.238	1.892	1.468
290	-	-	4.394	3.701	3.432	3.124	2.700	2.315	1.930	1.468
295	-	-	4.471	3.740	3.470	3.162	2.739	2.315	1.969	1.507
300	-	-	4.548	3.778	3.547	3.239	2.777	2.392	2.007	1.545
305	-	-	4.625	3.855	3.624	3.278	2.854	2.392	2.007	1.545
310	-	-	4.702	3.932	3.663	3.316	2.854	2.469	2.046	1.584
315	-	-	4.779	4.009	3.701	3.393	2.931	2.469	2.084	1.622
320	-	-	4.856	4.047	3.778	3.432	2.970	2.546	2.123	1.622
325	-	-	4.933	4.086	3.855	3.470	3.008	2.546	2.161	1.661
330	-	-	-	4.163	3.894	3.547	3.047	2.623	2.161	1.699
335	-	-	-	4.240	3.932	3.586	3.085	2.623	2.238	1.699
340	-	-	-	4.278	4.009	3.624	3.162	2.700	2.238	1.738
345	-	-	-	4.317	4.047	3.701	3.162	2.700	2.277	1.776
350	-	-	-	4.394	4.086	3.740	3.239	2.739	2.315	1.776
353	-	-	-	4.432	4.163	3.778	3.239	2.777	2.315	1.776

Thickness is intumescent only.

Results also apply to hollow beams with surface area exposure up to the maximum dry film thickness of 2.329mm.