Warrington Certification Ltd
Holmesfield Road
Warrington
WA1 2DS
United Kingdom

T : +44 (0) 1925 646 669
W: www.warringtoncertification.com
E: etass@exova.com

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European Technical Assessment

ETA 16/0160
of 13/06/16

General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: Warrington Certification Limited	
Trade name of the construction product	**CON-RFB (HS)**
Product family to which the construction product belongs	35. Fire Protective Products Reactive Coating for the Fire Protection of Steel Elements
Manufacturer	**Contego International Inc.** **1013 Arthur Street,** **Rochester, IN 46975,** **The United States of America**
Manufacturing plant(s)	**Contego International Inc.** **7991 West,** **1400 North Silver Lake, IN 46982,** **The United States of America**
This European Technical Assessment contains	21 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 Limited 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

CON-RFB (HS) 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), CON-RFB (HS) 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 CON-RFB (HS) 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 for design temperatures in the range of 350°C to 650°C.

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.

CON-RFB (HS) has been assessed as being compatible with the following primers:

Primers				
Primer Reference	**Generic Primer Type[1]**	**Tested Nominal Primer DFT (mm)**	**Permitted Primer Thickness Range (mm)**	
			Minimum[2]	**Maximum**
Intergard® 251	Zinc rich epoxy	0.060	0.030	0.090
Pilot QD	Short oil alkyd	0.060	0.030	0.090

[1] 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.
[2] 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.

CON-RFB (HS) has been assessed as being compatible with the following top coat:

Top Coat				
Top Coat Reference[1]	**Top Coat Description[1]**	**Tested Nominal Top Coat DFT (mm)**	**Permitted Top Coat Thickness Range (mm)**	
			Minimum	**Maximum**
Pilot WF RAL5005	Water borne acrylic emulsion	0.850	0.850	1.275

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

CON-RFB (HS) has been assessed as having passed the requirements for durability according to ETAG 018 Part 2 with and without the following top coat:

Top Coat Reference[1]	Top Coat Description[1]	Approved Top Coat Colours	Durability Approvals Based On The Carried Out Testing			
			Type Z_2	Type Z_1	Type Y	Type X
Pilot WF RAL5005	Water borne acrylic emulsion	All Colours	✓	-	-	-
No Top Coat	-	-	✓	-	-	-

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

CON-RFB (HS) 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)).

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	Class B – s1, d0
EN 13501-2	Fire resistance	R30 to R120 (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 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.

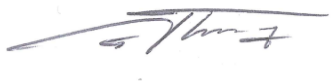
The manufacturer may only use verified by Technical Assessment Body initial/raw/constituent materials stated in the technical documentations related to this European Technical Assessment.

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 Limited.

Signatories


Responsible Officer D. Podolski* - Certification Engineer


Approved J. Yuan* - Group Chief Engineer

* For and on behalf of Warrington Certification Limited.

Annex A - Product Performance: Fire Resistance

1. This Annex relates to the use of CON-RFB (HS) for the fire protection of 'I' and 'H' shaped beam and column sections. The precise scope is given in Tables of Results which show the total dry film thickness of CON-RFB (HS) (excluding primer and top coat) required to provide classifications of R30 to R120 for 'I' and 'H' shaped beam and column sections for various design temperatures and section factors. A summary of the salient features of the testing and assessment are shown in this Annex.

2. The product is approved on the basis of:

   i) Approval testing in accordance with the principles of EN 13381-8:2013.

   ii) A design appraisal against this ETA adopting the graphical analysis defined in Annex E of EN 13381-8:2013.

3. The data presented in the tables in this Annex refers to both beams (three-sided fire exposure) and columns (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 thickness are provided in the body of this European Technical Assessment.

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

Tables of Results

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

Table 1: I/H-Beam Sections 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	600°C	620°C	650°C
30	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
35	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
40	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
45	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
50	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
55	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
60	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
65	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
70	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
75	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
80	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
85	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
90	0.818	0.443	0.291	0.291	0.291	0.291	0.291	0.291
95	0.835	0.456	0.299	0.291	0.291	0.291	0.291	0.291
100	0.852	0.469	0.307	0.291	0.291	0.291	0.291	0.291
105	0.869	0.482	0.315	0.295	0.291	0.291	0.291	0.291
110	0.886	0.494	0.323	0.302	0.291	0.291	0.291	0.291
115	0.903	0.507	0.332	0.309	0.291	0.291	0.291	0.291
120	0.920	0.520	0.340	0.316	0.291	0.291	0.291	0.291
125	0.936	0.532	0.348	0.323	0.291	0.291	0.291	0.291
130	0.953	0.545	0.357	0.331	0.296	0.291	0.291	0.291
135	0.970	0.558	0.365	0.338	0.302	0.291	0.291	0.291
140	0.987	0.570	0.373	0.345	0.308	0.291	0.291	0.291
145	1.004	0.583	0.382	0.352	0.314	0.291	0.291	0.291
150	1.021	0.596	0.390	0.359	0.320	0.291	0.291	0.291
155	1.038	0.608	0.398	0.367	0.327	0.291	0.291	0.291
160	1.055	0.621	0.407	0.374	0.333	0.291	0.291	0.291
165	1.072	0.638	0.415	0.381	0.339	0.293	0.291	0.291
170	1.089	0.655	0.423	0.388	0.345	0.298	0.291	0.291
175	1.106	0.672	0.432	0.395	0.351	0.303	0.291	0.291
180	1.122	0.690	0.440	0.403	0.357	0.308	0.291	0.291
185	1.139	0.707	0.448	0.410	0.364	0.314	0.291	0.291
190	1.156	0.724	0.457	0.417	0.370	0.319	0.295	0.291
195	1.173	0.741	0.465	0.424	0.376	0.325	0.300	0.291
200	1.190	0.758	0.473	0.431	0.382	0.330	0.305	0.291
205	1.207	0.775	0.482	0.439	0.388	0.336	0.310	0.291
210	1.224	0.792	0.490	0.446	0.394	0.341	0.316	0.291
215	1.241	0.809	0.498	0.453	0.400	0.347	0.321	0.291
220	1.258	0.827	0.507	0.460	0.407	0.352	0.326	0.291
225	1.275	0.844	0.515	0.467	0.413	0.358	0.332	0.291
230	1.292	0.861	0.523	0.475	0.419	0.363	0.337	0.291
235	1.308	0.878	0.532	0.482	0.425	0.369	0.342	0.291
240	1.325	0.895	0.540	0.489	0.431	0.374	0.348	0.294
245	1.342	0.912	0.548	0.496	0.437	0.380	0.353	0.299
250	1.359	0.929	0.557	0.504	0.443	0.385	0.359	0.304
255	1.376	0.946	0.565	0.511	0.450	0.391	0.364	0.309
260	1.393	0.964	0.573	0.518	0.456	0.396	0.369	0.314
265	1.410	0.981	0.582	0.525	0.462	0.402	0.375	0.320
270	1.427	0.998	0.590	0.532	0.468	0.407	0.380	0.325
275	1.444	1.015	0.598	0.540	0.474	0.413	0.385	0.330
280	1.461	1.032	0.607	0.547	0.480	0.419	0.391	0.335
285	1.478	1.049	0.615	0.554	0.486	0.424	0.396	0.341
290	1.494	1.066	0.628	0.561	0.493	0.430	0.401	0.346
295	1.511	1.083	0.646	0.568	0.499	0.435	0.407	0.351
300	1.528	1.100	0.664	0.576	0.505	0.441	0.412	0.356
305	1.545	1.118	0.682	0.583	0.511	0.446	0.417	0.362
310	1.562	1.135	0.700	0.590	0.517	0.452	0.423	0.367
315	1.579	1.152	0.719	0.597	0.523	0.457	0.428	0.372
320	1.596	1.169	0.737	0.604	0.530	0.463	0.433	0.378
325	1.613	1.186	0.755	0.612	0.536	0.468	0.439	0.383
330	1.630	1.203	0.773	0.619	0.542	0.474	0.444	0.388
335	1.647	1.220	0.791	0.634	0.548	0.479	0.449	0.393
340	1.664	1.237	0.810	0.651	0.554	0.485	0.455	0.399
345	1.681	1.255	0.828	0.667	0.560	0.490	0.460	0.404
350	1.697	1.272	0.846	0.684	0.566	0.496	0.465	0.409
355	1.718	1.289	0.864	0.701	0.573	0.501	0.471	0.414
360	1.748	1.306	0.882	0.717	0.579	0.507	0.476	0.420
365	1.779	1.323	0.900	0.734	0.585	0.512	0.481	0.425

Thickness is intumescent only.

Table 2: I/H-Beam Sections 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	600°C	620°C	650°C
30	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
35	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
40	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
45	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
50	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
55	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
60	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
65	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
70	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
75	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
80	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
85	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
90	1.397	0.889	0.566	0.483	0.411	0.342	0.322	0.291
95	1.443	0.913	0.584	0.496	0.418	0.349	0.329	0.298
100	1.489	0.937	0.602	0.509	0.425	0.356	0.336	0.305
105	1.535	0.961	0.620	0.522	0.432	0.363	0.343	0.312
110	1.580	0.984	0.639	0.535	0.438	0.370	0.350	0.318
115	1.625	1.008	0.659	0.548	0.445	0.377	0.357	0.325
120	1.670	1.031	0.679	0.560	0.452	0.384	0.364	0.332
125	1.713	1.055	0.698	0.573	0.459	0.391	0.371	0.339
130	1.737	1.078	0.718	0.586	0.465	0.398	0.378	0.346
135	1.760	1.102	0.738	0.599	0.472	0.405	0.385	0.353
140	1.784	1.125	0.757	0.612	0.479	0.413	0.392	0.360
145	1.808	1.149	0.777	0.627	0.486	0.420	0.399	0.367
150	1.831	1.173	0.797	0.646	0.492	0.427	0.406	0.374
155	1.855	1.196	0.816	0.666	0.499	0.434	0.414	0.381
160	1.879	1.220	0.836	0.685	0.506	0.441	0.421	0.388
165	1.903	1.243	0.856	0.705	0.512	0.448	0.428	0.395
170	1.926	1.267	0.875	0.724	0.519	0.455	0.435	0.402
175	1.950	1.290	0.895	0.744	0.526	0.462	0.442	0.409
180	1.974	1.314	0.915	0.763	0.533	0.470	0.449	0.416
185	1.997	1.337	0.934	0.783	0.539	0.477	0.456	0.423
190	2.021	1.361	0.954	0.802	0.546	0.484	0.463	0.430
195	2.045	1.384	0.974	0.822	0.553	0.491	0.470	0.437
200	2.068	1.408	0.993	0.841	0.559	0.498	0.477	0.444
205	2.092	1.432	1.013	0.861	0.566	0.505	0.484	0.451
210	2.116	1.455	1.032	0.880	0.573	0.512	0.491	0.458
215	2.139	1.479	1.052	0.900	0.580	0.520	0.499	0.465
220	2.163	1.502	1.072	0.919	0.586	0.527	0.506	0.472
225	2.187	1.526	1.091	0.939	0.593	0.534	0.513	0.479
230	2.211	1.549	1.111	0.958	0.600	0.541	0.520	0.486
235	2.234	1.573	1.131	0.977	0.607	0.548	0.527	0.493
240	2.258	1.596	1.150	0.997	0.613	0.555	0.534	0.500
245	2.282	1.620	1.170	1.016	0.620	0.562	0.541	0.507
250	2.305	1.643	1.190	1.036	0.642	0.569	0.548	0.514
255	2.329	1.667	1.209	1.055	0.664	0.577	0.555	0.521
260	2.370	1.691	1.229	1.075	0.686	0.584	0.562	0.528
265	2.412	1.715	1.249	1.094	0.708	0.591	0.569	0.535
270	2.453	1.741	1.268	1.114	0.730	0.598	0.577	0.542
275	2.495	1.767	1.288	1.133	0.752	0.605	0.584	0.549
280	2.536	1.793	1.308	1.153	0.774	0.612	0.591	0.556
285	2.578	1.819	1.327	1.172	0.796	0.619	0.598	0.563
290	2.620	1.846	1.347	1.192	0.819	0.637	0.605	0.570
295	2.661	1.872	1.367	1.211	0.841	0.656	0.612	0.577
300	2.703	1.898	1.386	1.231	0.863	0.675	0.619	0.584
305	2.745	1.924	1.406	1.250	0.885	0.694	0.635	0.591
310	2.786	1.950	1.426	1.270	0.907	0.714	0.653	0.598
315	2.828	1.977	1.445	1.289	0.929	0.733	0.671	0.605
320	2.870	2.003	1.465	1.309	0.951	0.752	0.688	0.612
325	2.911	2.029	1.485	1.328	0.973	0.771	0.706	0.619
330	2.953	2.055	1.504	1.347	0.995	0.790	0.724	0.633
335	2.995	2.081	1.524	1.367	1.017	0.809	0.742	0.649
340	3.036	2.108	1.544	1.386	1.039	0.828	0.759	0.665
345	3.078	2.134	1.563	1.406	1.061	0.847	0.777	0.681
350	3.120	2.160	1.583	1.425	1.083	0.866	0.795	0.696
355	3.161	2.186	1.603	1.445	1.105	0.885	0.812	0.712
360	3.203	2.212	1.622	1.464	1.128	0.904	0.830	0.728
365	3.245	2.239	1.642	1.484	1.150	0.923	0.848	0.744

Thickness is intumescent only.

Table 3: I/H-Beam Sections 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	600°C	620°C	650°C
30	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
35	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
40	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
45	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
50	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
55	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
60	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
65	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
70	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
75	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
80	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
85	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
90	1.875	1.372	0.978	0.804	0.613	0.525	0.496	0.458
95	1.918	1.423	1.012	0.831	0.633	0.537	0.507	0.467
100	1.961	1.474	1.046	0.858	0.653	0.549	0.518	0.476
105	2.004	1.525	1.080	0.885	0.673	0.561	0.529	0.485
110	2.047	1.576	1.114	0.911	0.694	0.574	0.540	0.493
115	2.091	1.627	1.149	0.937	0.714	0.587	0.551	0.502
120	2.134	1.678	1.183	0.964	0.734	0.599	0.562	0.510
125	2.178	1.722	1.217	0.990	0.755	0.612	0.572	0.519
130	2.221	1.753	1.251	1.016	0.775	0.627	0.583	0.528
135	2.264	1.784	1.286	1.042	0.795	0.646	0.594	0.536
140	2.308	1.816	1.320	1.069	0.816	0.666	0.605	0.545
145	2.351	1.847	1.354	1.095	0.836	0.685	0.616	0.553
150	2.393	1.878	1.389	1.121	0.857	0.704	0.633	0.562
155	2.436	1.910	1.423	1.147	0.877	0.723	0.651	0.570
160	2.479	1.941	1.457	1.174	0.897	0.742	0.670	0.579
165	2.522	1.972	1.491	1.200	0.918	0.761	0.689	0.587
170	2.565	2.003	1.526	1.226	0.938	0.780	0.708	0.596
175	2.607	2.035	1.560	1.252	0.958	0.799	0.726	0.605
180	2.650	2.066	1.594	1.279	0.979	0.819	0.745	0.613
185	2.693	2.097	1.629	1.305	0.999	0.838	0.764	0.624
190	2.736	2.128	1.663	1.331	1.019	0.857	0.783	0.642
195	2.778	2.160	1.697	1.358	1.040	0.876	0.801	0.661
200	2.821	2.191	1.724	1.384	1.060	0.895	0.820	0.680
205	2.864	2.222	1.746	1.410	1.080	0.914	0.839	0.699
210	2.907	2.254	1.769	1.436	1.101	0.933	0.858	0.717
215	2.949	2.285	1.791	1.463	1.121	0.952	0.877	0.736
220	2.992	2.316	1.814	1.489	1.141	0.972	0.895	0.755
225	3.035	2.358	1.836	1.515	1.162	0.991	0.914	0.773
230	3.078	2.409	1.858	1.541	1.182	1.010	0.933	0.792
235	3.121	2.460	1.881	1.568	1.202	1.029	0.952	0.811
240	3.163	2.511	1.903	1.594	1.223	1.048	0.970	0.829
245	3.206	2.562	1.926	1.620	1.243	1.067	0.989	0.848
250	3.249	2.613	1.948	1.646	1.263	1.086	1.008	0.867
255	3.292	2.664	1.970	1.673	1.284	1.105	1.027	0.885
260	3.334	2.715	1.993	1.699	1.304	1.125	1.046	0.904
265	3.377	2.766	2.015	1.726	1.324	1.144	1.064	0.923
270	3.420	2.817	2.038	1.754	1.345	1.163	1.083	0.942
275	3.463	2.868	2.060	1.782	1.365	1.182	1.102	0.960
280	3.505	2.919	2.082	1.809	1.385	1.201	1.121	0.979
285	3.548	2.970	2.105	1.837	1.406	1.220	1.139	0.998
290	3.591	3.021	2.127	1.865	1.426	1.239	1.158	1.016
295	3.634	3.072	2.150	1.892	1.446	1.258	1.177	1.035
300	3.677	3.123	2.172	1.920	1.467	1.278	1.196	1.054
305	3.719	3.174	2.194	1.948	1.487	1.297	1.214	1.072
310	-	3.225	2.217	1.976	1.507	1.316	1.233	1.091
315	-	3.276	2.239	2.003	1.528	1.335	1.252	1.110
320	-	3.327	2.262	2.031	1.548	1.354	1.271	1.129
325	-	3.378	2.284	2.059	1.568	1.373	1.290	1.147
330	-	3.429	2.306	2.086	1.589	1.392	1.308	1.166
335	-	3.480	2.329	2.114	1.609	1.411	1.327	1.185
340	-	3.531	2.415	2.142	1.629	1.431	1.346	1.203
345	-	3.582	2.505	2.170	1.650	1.450	1.365	1.222
350	-	3.633	2.595	2.197	1.670	1.469	1.383	1.241
355	-	3.684	2.685	2.225	1.690	1.488	1.402	1.259
360	-	-	2.775	2.253	1.712	1.507	1.421	1.278
365	-	-	2.864	2.281	1.760	1.526	1.440	1.297

Thickness is intumescent only.

Table 4: I/H-Beam Sections 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	600°C	620°C	650°C
30	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
35	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
40	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
45	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
50	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
55	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
60	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
65	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
70	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
75	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
80	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
85	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
90	2.230	1.817	1.417	1.202	0.966	0.782	0.723	0.635
95	2.287	1.867	1.474	1.251	1.001	0.804	0.743	0.654
100	2.344	1.917	1.531	1.300	1.036	0.826	0.763	0.673
105	2.401	1.967	1.588	1.349	1.071	0.848	0.783	0.692
110	2.458	2.016	1.646	1.398	1.106	0.871	0.803	0.711
115	2.515	2.066	1.704	1.448	1.140	0.893	0.822	0.730
120	2.572	2.116	1.746	1.497	1.175	0.916	0.842	0.750
125	2.629	2.166	1.786	1.546	1.210	0.938	0.861	0.769
130	2.686	2.216	1.826	1.595	1.245	0.961	0.881	0.788
135	2.743	2.266	1.865	1.644	1.279	0.984	0.901	0.808
140	2.800	2.315	1.905	1.693	1.314	1.006	0.920	0.827
145	2.857	2.386	1.945	1.730	1.349	1.029	0.940	0.846
150	2.914	2.466	1.985	1.760	1.384	1.051	0.960	0.866
155	2.971	2.545	2.025	1.790	1.418	1.074	0.979	0.885
160	3.028	2.625	2.065	1.820	1.453	1.096	0.999	0.904
165	3.085	2.704	2.105	1.850	1.488	1.119	1.019	0.924
170	3.142	2.784	2.144	1.880	1.523	1.141	1.038	0.943
175	3.199	2.863	2.184	1.910	1.557	1.164	1.058	0.962
180	3.256	2.943	2.224	1.940	1.592	1.187	1.078	0.982
185	3.313	3.022	2.264	1.970	1.627	1.209	1.097	1.001
190	3.370	3.102	2.304	2.000	1.662	1.232	1.117	1.020
195	3.427	3.181	2.350	2.030	1.696	1.254	1.137	1.039
200	3.484	3.261	2.408	2.060	1.724	1.277	1.156	1.059
205	3.541	3.340	2.466	2.090	1.746	1.299	1.176	1.078
210	3.598	3.420	2.524	2.121	1.769	1.322	1.195	1.097
215	3.655	3.499	2.582	2.151	1.792	1.344	1.215	1.117
220	3.712	3.579	2.640	2.181	1.814	1.367	1.235	1.136
225	-	3.658	2.698	2.211	1.837	1.390	1.254	1.155
230	-	-	2.756	2.241	1.859	1.412	1.274	1.175
235	-	-	2.814	2.271	1.882	1.435	1.294	1.194
240	-	-	2.872	2.301	1.905	1.457	1.313	1.213
245	-	-	2.930	2.332	1.927	1.480	1.333	1.233
250	-	-	2.988	2.404	1.950	1.502	1.353	1.252
255	-	-	3.046	2.476	1.972	1.525	1.372	1.271
260	-	-	3.104	2.548	1.995	1.547	1.392	1.290
265	-	-	3.162	2.620	2.018	1.570	1.412	1.310
270	-	-	3.220	2.692	2.040	1.593	1.431	1.329
275	-	-	3.278	2.764	2.063	1.615	1.451	1.348
280	-	-	3.336	2.836	2.085	1.638	1.471	1.368
285	-	-	3.394	2.908	2.108	1.660	1.490	1.387
290	-	-	3.452	2.980	2.131	1.683	1.510	1.406
295	-	-	3.510	3.052	2.153	1.705	1.529	1.426
300	-	-	3.568	3.124	2.176	1.741	1.549	1.445
305	-	-	3.626	3.197	2.198	1.781	1.569	1.464
310	-	-	3.684	3.269	2.221	1.821	1.588	1.484
315	-	-	-	3.341	2.244	1.860	1.608	1.503
320	-	-	-	3.413	2.266	1.900	1.628	1.522
325	-	-	-	3.485	2.289	1.940	1.647	1.541
330	-	-	-	3.557	2.311	1.979	1.667	1.561
335	-	-	-	3.629	2.357	2.019	1.687	1.580
340	-	-	-	3.701	2.508	2.059	1.706	1.599
345	-	-	-	-	2.660	2.098	1.759	1.619
350	-	-	-	-	2.811	2.138	1.819	1.638
355	-	-	-	-	2.962	2.178	1.879	1.657
360	-	-	-	-	3.113	2.217	1.940	1.677
365	-	-	-	-	3.265	2.257	2.000	1.696

Thickness is intumescent only.

Table 5: I/H-Beam Sections 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	600°C	620°C	650°C
30	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
35	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
40	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
45	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
50	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
55	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
60	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
65	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
70	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
75	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
80	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
85	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
90	-	2.135	1.808	1.589	1.326	1.101	1.017	0.914
95	-	2.206	1.866	1.674	1.381	1.141	1.052	0.942
100	-	2.277	1.924	1.737	1.436	1.181	1.087	0.970
105	-	2.348	1.982	1.783	1.491	1.221	1.122	0.998
110	-	2.419	2.039	1.830	1.545	1.261	1.157	1.026
115	-	2.490	2.096	1.876	1.599	1.301	1.192	1.054
120	-	2.561	2.154	1.922	1.654	1.341	1.228	1.082
125	-	2.632	2.211	1.969	1.708	1.381	1.263	1.109
130	-	2.703	2.269	2.015	1.746	1.421	1.298	1.137
135	-	2.774	2.326	2.061	1.784	1.461	1.333	1.165
140	-	2.845	2.455	2.108	1.821	1.501	1.368	1.193
145	-	2.916	2.588	2.154	1.859	1.541	1.403	1.221
150	-	2.987	2.721	2.200	1.896	1.581	1.439	1.249
155	-	3.058	2.854	2.247	1.934	1.621	1.474	1.276
160	-	3.129	2.987	2.293	1.971	1.661	1.509	1.304
165	-	3.200	3.120	2.350	2.009	1.701	1.544	1.332
170	-	3.271	3.253	2.447	2.047	1.734	1.579	1.360
175	-	3.386	3.386	2.544	2.084	1.764	1.615	1.388
180	-	3.519	3.519	2.641	2.122	1.795	1.650	1.416
185	-	3.652	3.652	2.738	2.159	1.826	1.685	1.443
190	-	-	-	2.835	2.197	1.857	1.718	1.471
195	-	-	-	2.933	2.234	1.888	1.746	1.499
200	-	-	-	3.030	2.272	1.918	1.774	1.527
205	-	-	-	3.127	2.309	1.949	1.802	1.555
210	-	-	-	3.224	2.369	1.980	1.830	1.582
215	-	-	-	3.321	2.457	2.011	1.858	1.610
220	-	-	-	3.418	2.545	2.042	1.886	1.638
225	-	-	-	3.515	2.633	2.072	1.914	1.666
230	-	-	-	3.612	2.721	2.103	1.942	1.694
235	-	-	-	3.709	2.809	2.134	1.970	1.722
240	-	-	-	-	2.897	2.165	1.998	1.751
245	-	-	-	-	2.985	2.196	2.026	1.780
250	-	-	-	-	3.073	2.226	2.054	1.808
255	-	-	-	-	3.161	2.257	2.082	1.837
260	-	-	-	-	3.249	2.288	2.110	1.866
265	-	-	-	-	3.337	2.319	2.138	1.895
270	-	-	-	-	3.425	2.400	2.166	1.923
275	-	-	-	-	3.513	2.511	2.194	1.952
280	-	-	-	-	3.601	2.621	2.222	1.981
285	-	-	-	-	3.689	2.731	2.250	2.010
290	-	-	-	-	-	2.842	2.278	2.039
295	-	-	-	-	-	2.952	2.306	2.067
300	-	-	-	-	-	3.063	2.355	2.096
305	-	-	-	-	-	3.173	2.512	2.125
310	-	-	-	-	-	3.283	2.669	2.154
315	-	-	-	-	-	3.394	2.827	2.182
320	-	-	-	-	-	3.504	2.984	2.211
325	-	-	-	-	-	3.615	3.141	2.240
330	-	-	-	-	-	3.725	3.298	2.269
335	-	-	-	-	-	-	3.455	2.298
340	-	-	-	-	-	-	3.612	2.326
345	-	-	-	-	-	-	-	2.588
350	-	-	-	-	-	-	-	2.884
355	-	-	-	-	-	-	-	3.179
360	-	-	-	-	-	-	-	3.475
365	-	-	-	-	-	-	-	-

Thickness is intumescent only.

Table 6: I/H-Beam Sections 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	600°C	620°C	650°C
30	-	-	2.123	1.915	1.695	1.415	1.320	1.190
35	-	-	2.123	1.915	1.695	1.415	1.320	1.190
40	-	-	2.123	1.915	1.695	1.415	1.320	1.190
45	-	-	2.123	1.915	1.695	1.415	1.320	1.190
50	-	-	2.123	1.915	1.695	1.415	1.320	1.190
55	-	-	2.123	1.915	1.695	1.415	1.320	1.190
60	-	-	2.123	1.915	1.695	1.415	1.320	1.190
65	-	-	2.123	1.915	1.695	1.415	1.320	1.190
70	-	-	2.123	1.915	1.695	1.415	1.320	1.190
75	-	-	2.123	1.915	1.695	1.415	1.320	1.190
80	-	-	2.123	1.915	1.695	1.415	1.320	1.190
85	-	-	2.123	1.915	1.695	1.415	1.320	1.190
90	-	-	2.123	1.915	1.695	1.415	1.320	1.190
95	-	-	2.196	1.977	1.747	1.473	1.372	1.233
100	-	-	2.269	2.039	1.799	1.531	1.424	1.276
105	-	-	2.342	2.101	1.851	1.589	1.476	1.319
110	-	-	2.415	2.164	1.904	1.647	1.528	1.363
115	-	-	2.488	2.226	1.956	1.705	1.580	1.407
120	-	-	2.561	2.288	2.008	1.751	1.632	1.451
125	-	-	2.634	2.386	2.061	1.797	1.683	1.495
130	-	-	2.707	2.552	2.113	1.843	1.731	1.538
135	-	-	2.780	2.718	2.165	1.888	1.774	1.582
140	-	-	2.884	2.884	2.218	1.934	1.818	1.626
145	-	-	3.050	3.050	2.270	1.980	1.861	1.670
150	-	-	3.216	3.216	2.322	2.025	1.905	1.713
155	-	-	3.383	3.383	2.449	2.071	1.948	1.758
160	-	-	3.549	3.549	2.588	2.117	1.991	1.802
165	-	-	3.715	3.715	2.728	2.163	2.035	1.846
170	-	-	-	-	2.867	2.208	2.078	1.890
175	-	-	-	-	3.007	2.254	2.121	1.934
180	-	-	-	-	3.146	2.300	2.165	1.978
185	-	-	-	-	3.286	2.372	2.208	2.023
190	-	-	-	-	3.425	2.497	2.251	2.067
195	-	-	-	-	3.565	2.623	2.295	2.111
200	-	-	-	-	3.704	2.748	2.353	2.155
205	-	-	-	-	-	2.874	2.477	2.199
210	-	-	-	-	-	2.999	2.601	2.243
215	-	-	-	-	-	3.125	2.725	2.288
220	-	-	-	-	-	3.250	2.849	2.335
225	-	-	-	-	-	3.376	2.973	2.453
230	-	-	-	-	-	3.501	3.096	2.570
235	-	-	-	-	-	3.627	3.220	2.688
240	-	-	-	-	-	-	3.344	2.805
245	-	-	-	-	-	-	3.468	2.923
250	-	-	-	-	-	-	3.592	3.041
255	-	-	-	-	-	-	3.716	3.158
260	-	-	-	-	-	-	-	3.276
265	-	-	-	-	-	-	-	3.394
270	-	-	-	-	-	-	-	3.511
275	-	-	-	-	-	-	-	3.629
280	-	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-	-

Thickness is intumescent only.

Table 7: I/H-Beam Sections 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	600°C	620°C	650°C
30	-	-	-	2.205	1.949	1.725	1.650	1.476
35	-	-	-	2.205	1.949	1.725	1.650	1.476
40	-	-	-	2.205	1.949	1.725	1.650	1.476
45	-	-	-	2.205	1.949	1.725	1.650	1.476
50	-	-	-	2.205	1.949	1.725	1.650	1.476
55	-	-	-	2.205	1.949	1.725	1.650	1.476
60	-	-	-	2.205	1.949	1.725	1.650	1.476
65	-	-	-	2.205	1.949	1.725	1.650	1.476
70	-	-	-	2.205	1.949	1.725	1.650	1.476
75	-	-	-	2.205	1.949	1.725	1.650	1.476
80	-	-	-	2.205	1.949	1.725	1.650	1.476
85	-	-	-	2.205	1.949	1.725	1.650	1.476
90	-	-	-	2.205	1.949	1.725	1.650	1.476
95	-	-	-	2.276	2.016	1.786	1.697	1.534
100	-	-	-	2.347	2.083	1.847	1.752	1.592
105	-	-	-	2.418	2.150	1.908	1.811	1.650
110	-	-	-	2.489	2.218	1.968	1.870	1.708
115	-	-	-	2.560	2.285	2.029	1.929	1.771
120	-	-	-	2.631	2.352	2.090	1.987	1.835
125	-	-	-	2.702	2.419	2.151	2.046	1.899
130	-	-	-	2.773	2.486	2.211	2.105	1.963
135	-	-	-	2.844	2.553	2.272	2.163	2.027
140	-	-	-	2.915	2.620	2.337	2.222	2.090
145	-	-	-	2.986	2.687	2.497	2.281	2.154
150	-	-	-	3.057	2.754	2.656	2.354	2.218
155	-	-	-	3.128	2.821	2.816	2.503	2.282
160	-	-	-	3.199	2.976	2.976	2.651	2.361
165	-	-	-	3.270	3.135	3.135	2.800	2.487
170	-	-	-	3.341	3.295	3.295	2.948	2.614
175	-	-	-	3.455	3.455	3.455	3.096	2.740
180	-	-	-	3.615	3.615	3.615	3.245	2.867
185	-	-	-	-	-	-	3.393	2.993
190	-	-	-	-	-	-	3.542	3.120
195	-	-	-	-	-	-	3.690	3.246
200	-	-	-	-	-	-	-	3.373
205	-	-	-	-	-	-	-	3.499
210	-	-	-	-	-	-	-	3.626
215	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-
225	-	-	-	-	-	-	-	-
230	-	-	-	-	-	-	-	-
235	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-
245	-	-	-	-	-	-	-	-
250	-	-	-	-	-	-	-	-
255	-	-	-	-	-	-	-	-
260	-	-	-	-	-	-	-	-
265	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-
275	-	-	-	-	-	-	-	-
280	-	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-	-

Thickness is intumescent only.

Table 8: I/H-Column Sections 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	600°C	650°C
30	0.855	0.453	0.291	0.275	0.275	0.275	0.275
35	0.855	0.453	0.291	0.275	0.275	0.275	0.275
40	0.855	0.453	0.291	0.275	0.275	0.275	0.275
45	0.855	0.453	0.291	0.275	0.275	0.275	0.275
50	0.855	0.453	0.291	0.275	0.275	0.275	0.275
55	0.855	0.453	0.291	0.275	0.275	0.275	0.275
60	0.855	0.453	0.291	0.275	0.275	0.275	0.275
65	0.855	0.453	0.291	0.275	0.275	0.275	0.275
70	0.855	0.453	0.291	0.275	0.275	0.275	0.275
75	0.855	0.453	0.291	0.275	0.275	0.275	0.275
80	0.855	0.453	0.291	0.275	0.275	0.275	0.275
85	0.855	0.453	0.291	0.275	0.275	0.275	0.275
90	0.855	0.453	0.291	0.275	0.275	0.275	0.275
95	0.874	0.466	0.299	0.276	0.275	0.275	0.275
100	0.893	0.479	0.307	0.284	0.275	0.275	0.275
105	0.912	0.492	0.315	0.292	0.275	0.275	0.275
110	0.930	0.505	0.324	0.300	0.275	0.275	0.275
115	0.948	0.518	0.332	0.308	0.278	0.275	0.275
120	0.967	0.531	0.341	0.315	0.284	0.275	0.275
125	0.985	0.543	0.349	0.322	0.290	0.275	0.275
130	1.004	0.556	0.357	0.330	0.296	0.275	0.275
135	1.022	0.569	0.366	0.337	0.302	0.275	0.275
140	1.041	0.582	0.374	0.344	0.308	0.275	0.275
145	1.059	0.595	0.383	0.351	0.314	0.275	0.275
150	1.078	0.608	0.391	0.359	0.320	0.275	0.275
155	1.096	0.621	0.400	0.366	0.327	0.277	0.275
160	1.114	0.639	0.408	0.373	0.333	0.283	0.275
165	1.133	0.657	0.417	0.381	0.339	0.289	0.275
170	1.151	0.675	0.425	0.388	0.345	0.295	0.275
175	1.170	0.693	0.434	0.395	0.351	0.301	0.275
180	1.188	0.711	0.442	0.403	0.358	0.307	0.275
185	1.207	0.729	0.451	0.410	0.364	0.313	0.275
190	1.225	0.747	0.459	0.417	0.370	0.318	0.275
195	1.244	0.765	0.467	0.424	0.376	0.324	0.275
200	1.262	0.783	0.476	0.432	0.383	0.329	0.275
205	1.280	0.801	0.484	0.439	0.389	0.335	0.275
210	1.299	0.819	0.493	0.446	0.395	0.340	0.275
215	1.317	0.837	0.501	0.454	0.401	0.346	0.275
220	1.336	0.855	0.510	0.461	0.408	0.352	0.275
225	1.354	0.873	0.518	0.468	0.414	0.357	0.275
230	1.373	0.891	0.527	0.476	0.420	0.363	0.275
235	1.391	0.909	0.535	0.483	0.426	0.368	0.275
240	1.409	0.927	0.544	0.490	0.432	0.374	0.275
245	1.428	0.945	0.552	0.497	0.439	0.380	0.277
250	1.446	0.963	0.560	0.505	0.445	0.385	0.283
255	1.465	0.981	0.569	0.512	0.451	0.391	0.289
260	1.483	0.999	0.577	0.519	0.457	0.396	0.295
265	1.502	1.018	0.586	0.527	0.464	0.402	0.301
270	1.520	1.036	0.594	0.534	0.470	0.408	0.307
275	1.539	1.054	0.603	0.541	0.476	0.413	0.313
280	1.557	1.072	0.611	0.549	0.482	0.419	0.319
285	1.575	1.090	0.620	0.556	0.488	0.424	0.326
290	1.594	1.108	0.638	0.563	0.495	0.430	0.332
295	1.612	1.126	0.658	0.570	0.501	0.436	0.338
300	1.631	1.144	0.677	0.578	0.507	0.441	0.344
305	1.649	1.162	0.696	0.585	0.513	0.447	0.351
310	1.668	1.180	0.715	0.592	0.520	0.452	0.357
315	1.686	1.198	0.735	0.600	0.526	0.458	0.363
320	1.705	1.216	0.754	0.607	0.532	0.464	0.369
325	1.732	1.234	0.773	0.614	0.538	0.469	0.376
330	1.764	1.252	0.792	0.624	0.544	0.475	0.382
335	1.795	1.270	0.812	0.642	0.551	0.480	0.388
340	1.827	1.288	0.831	0.659	0.557	0.486	0.394
345	1.859	1.306	0.850	0.677	0.563	0.492	0.401
350	1.890	1.324	0.869	0.695	0.569	0.497	0.407
355	1.922	1.342	0.889	0.713	0.576	0.503	0.413
360	1.954	1.360	0.908	0.730	0.582	0.508	0.419
365	1.985	1.378	0.927	0.748	0.588	0.514	0.425

Thickness is intumescent only.
The results can be applied to beams exposed on all four sides up to the maximum dry film thickness of 3.729mm.

Table 9: I/H-Column Sections 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	600°C	650°C
30	1.490	0.925	0.518	0.495	0.411	0.342	0.280
35	1.490	0.925	0.518	0.495	0.411	0.342	0.280
40	1.490	0.925	0.518	0.495	0.411	0.342	0.280
45	1.490	0.925	0.518	0.495	0.411	0.342	0.280
50	1.490	0.925	0.518	0.495	0.411	0.342	0.280
55	1.490	0.925	0.518	0.495	0.411	0.342	0.280
60	1.490	0.925	0.518	0.495	0.411	0.342	0.280
65	1.490	0.925	0.518	0.495	0.411	0.342	0.280
70	1.490	0.925	0.518	0.495	0.411	0.342	0.280
75	1.490	0.925	0.518	0.495	0.411	0.342	0.280
80	1.490	0.925	0.518	0.495	0.411	0.342	0.280
85	1.490	0.925	0.518	0.495	0.411	0.342	0.280
90	1.490	0.925	0.518	0.495	0.411	0.342	0.280
95	1.544	0.953	0.554	0.507	0.418	0.349	0.288
100	1.598	0.981	0.590	0.519	0.425	0.356	0.296
105	1.652	1.009	0.626	0.531	0.432	0.363	0.304
110	1.706	1.037	0.647	0.543	0.439	0.370	0.312
115	1.738	1.065	0.667	0.556	0.447	0.377	0.320
120	1.768	1.094	0.688	0.568	0.454	0.384	0.328
125	1.798	1.122	0.708	0.580	0.461	0.392	0.336
130	1.829	1.150	0.729	0.593	0.468	0.399	0.343
135	1.859	1.178	0.749	0.605	0.475	0.406	0.351
140	1.889	1.206	0.770	0.617	0.482	0.413	0.359
145	1.919	1.235	0.790	0.636	0.489	0.420	0.367
150	1.949	1.263	0.811	0.656	0.496	0.428	0.374
155	1.979	1.291	0.831	0.677	0.503	0.435	0.382
160	2.010	1.319	0.851	0.697	0.510	0.442	0.390
165	2.040	1.347	0.872	0.718	0.518	0.449	0.398
170	2.070	1.376	0.892	0.738	0.525	0.456	0.405
175	2.100	1.404	0.913	0.758	0.532	0.464	0.413
180	2.130	1.432	0.933	0.779	0.539	0.471	0.421
185	2.160	1.460	0.954	0.799	0.546	0.478	0.429
190	2.191	1.488	0.974	0.819	0.553	0.485	0.436
195	2.221	1.517	0.995	0.840	0.560	0.492	0.444
200	2.251	1.545	1.015	0.860	0.567	0.500	0.452
205	2.281	1.573	1.036	0.880	0.574	0.507	0.460
210	2.311	1.601	1.056	0.901	0.581	0.514	0.468
215	2.346	1.630	1.076	0.921	0.588	0.521	0.475
220	2.388	1.658	1.097	0.941	0.596	0.528	0.483
225	2.429	1.686	1.117	0.962	0.603	0.536	0.491
230	2.471	1.714	1.138	0.982	0.610	0.543	0.499
235	2.513	1.738	1.158	1.003	0.617	0.550	0.506
240	2.555	1.762	1.179	1.023	0.633	0.557	0.514
245	2.596	1.786	1.199	1.043	0.656	0.564	0.522
250	2.638	1.810	1.220	1.064	0.679	0.572	0.530
255	2.680	1.834	1.240	1.084	0.701	0.579	0.537
260	2.722	1.858	1.261	1.104	0.724	0.586	0.545
265	2.763	1.882	1.281	1.125	0.747	0.593	0.553
270	2.805	1.906	1.301	1.145	0.770	0.600	0.561
275	2.847	1.930	1.322	1.165	0.793	0.608	0.568
280	2.889	1.955	1.342	1.186	0.816	0.615	0.576
285	2.930	1.979	1.363	1.206	0.839	0.626	0.584
290	2.972	2.003	1.383	1.226	0.861	0.646	0.592
295	3.014	2.027	1.404	1.247	0.884	0.667	0.600
300	3.056	2.051	1.424	1.267	0.907	0.687	0.607
305	3.097	2.075	1.445	1.287	0.930	0.707	0.615
310	3.139	2.099	1.465	1.308	0.953	0.728	0.626
315	3.181	2.123	1.485	1.328	0.976	0.748	0.642
320	3.222	2.147	1.506	1.349	0.999	0.769	0.658
325	3.264	2.171	1.526	1.369	1.021	0.789	0.675
330	3.306	2.196	1.547	1.389	1.044	0.809	0.691
335	3.348	2.220	1.567	1.410	1.067	0.830	0.707
340	3.389	2.244	1.588	1.430	1.090	0.850	0.723
345	3.431	2.268	1.608	1.450	1.113	0.871	0.740
350	3.473	2.292	1.629	1.471	1.136	0.891	0.756
355	3.515	2.316	1.649	1.491	1.159	0.911	0.772
360	3.556	2.361	1.670	1.511	1.181	0.932	0.789
365	3.598	2.436	1.690	1.532	1.204	0.952	0.805

Thickness is intumescent only.
The results can be applied to beams exposed on all four sides up to the maximum dry film thickness of 3.729mm.

Table 10: I/H-Column Sections 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	600°C	650°C
30	1.975	1.457	1.014	0.831	0.622	0.521	0.464
35	1.975	1.457	1.014	0.831	0.622	0.521	0.464
40	1.975	1.457	1.014	0.831	0.622	0.521	0.464
45	1.975	1.457	1.014	0.831	0.622	0.521	0.464
50	1.975	1.457	1.014	0.831	0.622	0.521	0.464
55	1.975	1.457	1.014	0.831	0.622	0.521	0.464
60	1.975	1.457	1.014	0.831	0.622	0.521	0.464
65	1.975	1.457	1.014	0.831	0.622	0.521	0.464
70	1.975	1.457	1.014	0.831	0.622	0.521	0.464
75	1.975	1.457	1.014	0.831	0.622	0.521	0.464
80	1.975	1.457	1.014	0.831	0.622	0.521	0.464
85	1.975	1.457	1.014	0.831	0.622	0.521	0.464
90	1.975	1.457	1.014	0.831	0.622	0.521	0.464
95	2.027	1.514	1.052	0.861	0.643	0.535	0.476
100	2.079	1.571	1.090	0.891	0.664	0.549	0.488
105	2.131	1.628	1.128	0.921	0.685	0.563	0.500
110	2.184	1.685	1.167	0.952	0.706	0.577	0.512
115	2.236	1.732	1.206	0.982	0.727	0.590	0.524
120	2.288	1.770	1.245	1.012	0.748	0.604	0.536
125	2.344	1.808	1.284	1.042	0.769	0.618	0.548
130	2.414	1.847	1.323	1.072	0.790	0.637	0.560
135	2.484	1.885	1.361	1.102	0.811	0.657	0.572
140	2.553	1.923	1.400	1.132	0.833	0.677	0.584
145	2.623	1.962	1.439	1.162	0.854	0.697	0.596
150	2.693	2.000	1.478	1.193	0.875	0.717	0.608
155	2.763	2.038	1.517	1.223	0.896	0.737	0.620
160	2.832	2.076	1.555	1.253	0.917	0.757	0.638
165	2.902	2.115	1.594	1.283	0.938	0.777	0.656
170	2.972	2.153	1.633	1.313	0.959	0.797	0.674
175	3.042	2.191	1.672	1.343	0.980	0.817	0.692
180	3.111	2.230	1.710	1.373	1.001	0.837	0.710
185	3.181	2.268	1.737	1.404	1.022	0.857	0.728
190	3.251	2.306	1.764	1.434	1.044	0.877	0.746
195	3.321	2.351	1.790	1.464	1.065	0.897	0.764
200	3.390	2.405	1.817	1.494	1.086	0.917	0.782
205	3.460	2.459	1.844	1.524	1.107	0.937	0.800
210	3.530	2.513	1.870	1.554	1.128	0.957	0.818
215	3.600	2.568	1.897	1.584	1.149	0.977	0.836
220	3.669	2.622	1.923	1.614	1.170	0.997	0.854
225	3.739	2.676	1.950	1.645	1.191	1.017	0.872
230	3.809	2.730	1.977	1.675	1.212	1.037	0.890
235	3.879	2.785	2.003	1.705	1.234	1.057	0.909
240	3.948	2.839	2.030	1.731	1.255	1.077	0.927
245	4.018	2.893	2.056	1.757	1.276	1.097	0.945
250	4.088	2.947	2.083	1.783	1.297	1.117	0.963
255	4.158	3.002	2.110	1.809	1.318	1.137	0.981
260	4.228	3.056	2.136	1.835	1.339	1.157	0.999
265	4.298	3.110	2.163	1.861	1.360	1.177	1.017
270	4.368	3.164	2.189	1.887	1.381	1.197	1.035
275	-	3.219	2.216	1.912	1.402	1.217	1.053
280	-	3.273	2.243	1.938	1.424	1.237	1.071
285	-	3.327	2.269	1.964	1.445	1.257	1.089
290	-	3.381	2.296	1.990	1.466	1.277	1.107
295	-	3.435	2.323	2.016	1.487	1.297	1.125
300	-	3.490	2.391	2.042	1.508	1.317	1.143
305	-	3.544	2.475	2.067	1.529	1.337	1.162
310	-	3.598	2.559	2.093	1.550	1.357	1.180
315	-	3.652	2.643	2.119	1.571	1.377	1.198
320	-	3.707	2.727	2.145	1.592	1.397	1.216
325	-	3.761	2.811	2.171	1.614	1.417	1.234
330	-	3.815	2.895	2.197	1.635	1.437	1.252
335	-	3.869	2.979	2.223	1.656	1.457	1.270
340	-	3.924	3.063	2.248	1.677	1.477	1.288
345	-	3.978	3.148	2.274	1.698	1.497	1.306
350	-	4.032	3.232	2.300	1.734	1.517	1.324
355	-	4.086	3.316	2.326	1.791	1.537	1.342
360	-	4.140	3.400	2.428	1.848	1.557	1.360
365	-	4.194	3.484	2.544	1.905	1.577	1.378

Thickness is intumescent only.
The results can be applied to beams exposed on all four sides up to the maximum dry film thickness of 3.729mm.

Table 11: I/H-Column Sections 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	600°C	650°C
30	-	1.907	1.510	1.255	1.002	0.807	0.685
35	-	1.907	1.510	1.255	1.002	0.807	0.685
40	-	1.907	1.510	1.255	1.002	0.807	0.685
45	-	1.907	1.510	1.255	1.002	0.807	0.685
50	-	1.907	1.510	1.255	1.002	0.807	0.685
55	-	1.907	1.510	1.255	1.002	0.807	0.685
60	-	1.907	1.510	1.255	1.002	0.807	0.685
65	-	1.907	1.510	1.255	1.002	0.807	0.685
70	-	1.907	1.510	1.255	1.002	0.807	0.685
75	-	1.907	1.510	1.255	1.002	0.807	0.685
80	-	1.907	1.510	1.255	1.002	0.807	0.685
85	-	1.907	1.510	1.255	1.002	0.807	0.685
90	-	1.907	1.510	1.255	1.002	0.807	0.685
95	-	1.966	1.565	1.310	1.041	0.833	0.704
100	-	2.025	1.620	1.365	1.080	0.859	0.723
105	-	2.084	1.675	1.420	1.119	0.885	0.742
110	-	2.143	1.726	1.474	1.158	0.911	0.762
115	-	2.201	1.772	1.528	1.197	0.938	0.781
120	-	2.260	1.818	1.582	1.236	0.964	0.801
125	-	2.319	1.864	1.637	1.275	0.991	0.820
130	-	2.472	1.910	1.691	1.315	1.017	0.839
135	-	2.648	1.956	1.733	1.354	1.044	0.859
140	-	2.824	2.002	1.769	1.393	1.070	0.878
145	-	3.001	2.047	1.805	1.432	1.097	0.898
150	-	3.177	2.093	1.840	1.471	1.123	0.917
155	-	3.353	2.139	1.876	1.510	1.150	0.937
160	-	3.530	2.185	1.912	1.549	1.176	0.956
165	-	3.706	2.231	1.948	1.589	1.203	0.975
170	-	3.882	2.277	1.984	1.628	1.229	0.995
175	-	4.059	2.323	2.019	1.667	1.256	1.014
180	-	4.236	2.401	2.055	1.706	1.282	1.034
185	-	4.413	2.485	2.091	1.735	1.308	1.053
190	-	-	2.570	2.127	1.764	1.335	1.073
195	-	-	2.654	2.162	1.792	1.361	1.092
200	-	-	2.738	2.198	1.820	1.388	1.111
205	-	-	2.823	2.234	1.849	1.414	1.131
210	-	-	2.907	2.270	1.877	1.441	1.150
215	-	-	2.991	2.305	1.905	1.467	1.170
220	-	-	3.076	2.352	1.934	1.494	1.189
225	-	-	3.160	2.423	1.962	1.520	1.208
230	-	-	3.245	2.494	1.990	1.547	1.228
235	-	-	3.329	2.565	2.019	1.573	1.247
240	-	-	3.413	2.636	2.047	1.600	1.267
245	-	-	3.498	2.707	2.075	1.626	1.286
250	-	-	3.582	2.778	2.104	1.653	1.306
255	-	-	3.666	2.849	2.132	1.679	1.325
260	-	-	3.751	2.920	2.160	1.705	1.344
265	-	-	3.835	2.991	2.189	1.737	1.364
270	-	-	3.919	3.062	2.217	1.770	1.383
275	-	-	4.004	3.133	2.245	1.803	1.403
280	-	-	4.089	3.204	2.273	1.836	1.422
285	-	-	4.174	3.275	2.302	1.868	1.442
290	-	-	4.259	3.346	2.330	1.901	1.461
295	-	-	4.344	3.416	2.445	1.934	1.480
300	-	-	4.429	3.487	2.560	1.967	1.500
305	-	-	-	3.558	2.675	2.000	1.519
310	-	-	-	3.629	2.790	2.032	1.539
315	-	-	-	3.700	2.905	2.065	1.558
320	-	-	-	3.771	3.020	2.098	1.577
325	-	-	-	3.842	3.135	2.131	1.597
330	-	-	-	3.913	3.250	2.164	1.616
335	-	-	-	3.984	3.365	2.196	1.636
340	-	-	-	4.055	3.480	2.229	1.655
345	-	-	-	4.126	3.594	2.262	1.675
350	-	-	-	4.197	3.709	2.295	1.694
355	-	-	-	4.268	3.824	2.328	1.724
360	-	-	-	4.339	3.939	2.559	1.802
365	-	-	-	4.410	4.054	2.806	1.881

Thickness is intumescent only.
The results can be applied to beams exposed on all four sides up to the maximum dry film thickness of 3.729mm.

Table 12: I/H-Column Sections 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	600°C	650°C
30	-	-	1.883	1.692	1.381	1.135	0.981
35	-	-	1.883	1.692	1.381	1.135	0.981
40	-	-	1.883	1.692	1.381	1.135	0.981
45	-	-	1.883	1.692	1.381	1.135	0.981
50	-	-	1.883	1.692	1.381	1.135	0.981
55	-	-	1.883	1.692	1.381	1.135	0.981
60	-	-	1.883	1.692	1.381	1.135	0.981
65	-	-	1.883	1.692	1.381	1.135	0.981
70	-	-	1.883	1.692	1.381	1.135	0.981
75	-	-	1.883	1.692	1.381	1.135	0.981
80	-	-	1.883	1.692	1.381	1.135	0.981
85	-	-	1.883	1.692	1.381	1.135	0.981
90	-	-	1.883	1.692	1.381	1.135	0.981
95	-	-	1.947	1.746	1.442	1.181	1.012
100	-	-	2.011	1.800	1.503	1.227	1.043
105	-	-	2.075	1.854	1.564	1.273	1.074
110	-	-	2.139	1.908	1.625	1.319	1.105
115	-	-	2.204	1.961	1.686	1.365	1.136
120	-	-	2.268	2.015	1.737	1.411	1.166
125	-	-	2.332	2.068	1.781	1.457	1.197
130	-	-	2.396	2.122	1.826	1.504	1.228
135	-	-	2.460	2.176	1.870	1.550	1.259
140	-	-	2.524	2.229	1.915	1.596	1.290
145	-	-	2.588	2.283	1.959	1.642	1.321
150	-	-	2.652	2.346	2.004	1.688	1.351
155	-	-	2.716	2.482	2.048	1.730	1.382
160	-	-	2.780	2.617	2.092	1.767	1.413
165	-	-	2.844	2.753	2.137	1.805	1.444
170	-	-	2.908	2.889	2.181	1.842	1.475
175	-	-	3.024	3.024	2.226	1.880	1.506
180	-	-	3.160	3.160	2.270	1.918	1.537
185	-	-	3.295	3.295	2.315	1.955	1.567
190	-	-	3.431	3.431	2.409	1.993	1.598
195	-	-	3.566	3.566	2.529	2.030	1.629
200	-	-	3.702	3.702	2.649	2.068	1.660
205	-	-	3.838	3.838	2.769	2.105	1.691
210	-	-	3.973	3.973	2.889	2.143	1.723
215	-	-	4.108	4.108	3.008	2.181	1.758
220	-	-	4.243	4.243	3.128	2.218	1.793
225	-	-	4.378	4.378	3.248	2.256	1.828
230	-	-	-	-	3.368	2.293	1.864
235	-	-	-	-	3.488	2.333	1.899
240	-	-	-	-	3.608	2.457	1.934
245	-	-	-	-	3.728	2.581	1.969
250	-	-	-	-	3.848	2.705	2.004
255	-	-	-	-	3.968	2.829	2.039
260	-	-	-	-	4.088	2.953	2.074
265	-	-	-	-	4.208	3.077	2.109
270	-	-	-	-	4.328	3.201	2.144
275	-	-	-	-	-	3.326	2.180
280	-	-	-	-	-	3.450	2.215
285	-	-	-	-	-	3.574	2.250
290	-	-	-	-	-	3.698	2.285
295	-	-	-	-	-	3.822	2.320
300	-	-	-	-	-	3.946	2.469
305	-	-	-	-	-	4.070	2.664
310	-	-	-	-	-	4.194	2.859
315	-	-	-	-	-	4.318	3.054
320	-	-	-	-	-	-	3.249
325	-	-	-	-	-	-	3.444
330	-	-	-	-	-	-	3.639
335	-	-	-	-	-	-	3.834
340	-	-	-	-	-	-	4.029
345	-	-	-	-	-	-	4.224
350	-	-	-	-	-	-	4.419
355	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-

Thickness is intumescent only.
The results can be applied to beams exposed on all four sides up to the maximum dry film thickness of 3.729mm.

Table 13: I/H-Column Sections 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	600°C	650°C
30	-	-	2.236	1.995	1.754	1.477	1.265
35	-	-	2.306	2.066	1.815	1.543	1.312
40	-	-	2.236	1.995	1.754	1.477	1.265
45	-	-	2.306	2.066	1.815	1.543	1.312
50	-	-	2.236	1.995	1.754	1.477	1.265
55	-	-	2.306	2.066	1.815	1.543	1.312
60	-	-	2.236	1.995	1.754	1.477	1.265
65	-	-	2.306	2.066	1.815	1.543	1.312
70	-	-	2.236	1.995	1.754	1.477	1.265
75	-	-	2.306	2.066	1.815	1.543	1.312
80	-	-	2.236	1.995	1.754	1.477	1.265
85	-	-	2.306	2.066	1.815	1.543	1.312
90	-	-	2.236	1.995	1.754	1.477	1.265
95	-	-	2.306	2.066	1.815	1.543	1.312
100	-	-	2.376	2.137	1.876	1.609	1.359
105	-	-	2.446	2.208	1.937	1.675	1.406
110	-	-	2.516	2.279	1.997	1.736	1.453
115	-	-	2.586	2.350	2.057	1.789	1.500
120	-	-	2.656	2.421	2.117	1.843	1.547
125	-	-	2.726	2.492	2.177	1.897	1.594
130	-	-	2.796	2.563	2.237	1.950	1.641
135	-	-	2.866	2.634	2.297	2.004	1.687
140	-	-	2.936	2.705	2.414	2.058	1.740
145	-	-	3.006	2.776	2.601	2.112	1.797
150	-	-	3.076	2.847	2.788	2.165	1.854
155	-	-	3.146	2.975	2.975	2.219	1.911
160	-	-	3.216	3.162	3.162	2.273	1.969
165	-	-	3.349	3.349	3.349	2.326	2.026
170	-	-	3.536	3.536	3.536	2.483	2.083
175	-	-	3.723	3.723	3.723	2.647	2.140
180	-	-	3.910	3.910	3.910	2.811	2.198
185	-	-	4.097	4.097	4.097	2.975	2.255
190	-	-	4.284	4.284	4.284	3.139	2.312
195	-	-	-	-	-	3.303	2.428
200	-	-	-	-	-	3.467	2.571
205	-	-	-	-	-	3.631	2.714
210	-	-	-	-	-	3.795	2.857
215	-	-	-	-	-	3.959	3.000
220	-	-	-	-	-	4.123	3.142
225	-	-	-	-	-	4.287	3.285
230	-	-	-	-	-	-	3.428
235	-	-	-	-	-	-	3.571
240	-	-	-	-	-	-	3.714
245	-	-	-	-	-	-	3.857
250	-	-	-	-	-	-	3.999
255	-	-	-	-	-	-	4.141
260	-	-	-	-	-	-	4.283
265	-	-	-	-	-	-	4.425
270	-	-	-	-	-	-	-
275	-	-	-	-	-	-	-
280	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-

Thickness is intumescent only.
The results can be applied to beams exposed on all four sides up to the maximum dry film thickness of 3.729mm.

Table 14: I/H-Column Sections 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	600°C	650°C
30	-	-	-	-	2.039	1.805	1.362
35	-	-	-	-	2.039	1.805	1.362
40	-	-	-	-	2.039	1.805	1.362
45	-	-	-	-	2.039	1.805	1.362
50	-	-	-	-	2.039	1.805	1.362
55	-	-	-	-	2.039	1.805	1.362
60	-	-	-	-	2.039	1.805	1.362
65	-	-	-	-	2.039	1.805	1.362
70	-	-	-	-	2.039	1.805	1.362
75	-	-	-	-	2.039	1.805	1.362
80	-	-	-	-	2.039	1.805	1.362
85	-	-	-	-	2.039	1.805	1.362
90	-	-	-	-	2.039	1.805	1.362
95	-	-	-	-	2.115	1.875	1.491
100	-	-	-	-	2.191	1.945	1.620
105	-	-	-	-	2.267	2.015	1.749
110	-	-	-	-	2.343	2.085	1.829
115	-	-	-	-	2.419	2.154	1.908
120	-	-	-	-	2.495	2.224	1.988
125	-	-	-	-	2.571	2.294	2.068
130	-	-	-	-	2.647	2.364	2.147
135	-	-	-	-	2.723	2.434	2.227
140	-	-	-	-	2.799	2.504	2.307
145	-	-	-	-	2.875	2.574	2.439
150	-	-	-	-	2.951	2.644	2.593
155	-	-	-	-	3.027	2.747	2.747
160	-	-	-	-	3.103	2.901	2.901
165	-	-	-	-	3.179	3.055	3.055
170	-	-	-	-	3.255	3.209	3.209
175	-	-	-	-	3.363	3.363	3.363
180	-	-	-	-	3.517	3.517	3.517
185	-	-	-	-	3.671	3.671	3.671
190	-	-	-	-	3.825	3.825	3.825
195	-	-	-	-	3.979	3.979	3.979
200	-	-	-	-	4.133	4.133	4.133
205	-	-	-	-	4.287	4.287	4.287
210	-	-	-	-	-	-	-
215	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-
225	-	-	-	-	-	-	-
230	-	-	-	-	-	-	-
235	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-
245	-	-	-	-	-	-	-
250	-	-	-	-	-	-	-
255	-	-	-	-	-	-	-
260	-	-	-	-	-	-	-
265	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-
275	-	-	-	-	-	-	-
280	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-

Thickness is intumescent only.
The results can be applied to beams exposed on all four sides up to the maximum dry film thickness of 3.729mm.