



CERTIFICATE OF APPROVAL

No CF 5351

This is to certify that, in accordance with
TS00 General Requirements for Certification of Fire Protection Products
The undermentioned products of

AL JAZEERA FACTORY FOR PAINTS CO.

Old Industrial Area, Ammara Street, Khamis Mushayt 61961, PO
Box 1900, Kingdom of Saudi Arabia

Tel: +966 7 221 1111 \ +966 7 2382589 Fax: +966 7 2382728

Email: info@al-jazeerapaints.com

Have been assessed against the requirements of the Technical Schedule(s)
denoted below and are approved for use subject to the conditions
appended hereto:

CERTIFIED PRODUCT
Al-Jazeera Firedamp W3

TECHNICAL SCHEDULE
TS 15 INTUMESCENT
COATINGS FOR
STEELWORK

Signed and sealed for and on behalf of Warringtonfire Testing and Certification Limited

Paul Duggan
Certification Manager



Issued: 12th December 2016
Revised: 4th April 2019
Valid to: 11th December 2021

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CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

Al-Jazeera Firedamp W3

1. This approval relates to the use of Al-Jazeera Firedamp W3 for the fire protection of I/H-shaped and hollow sections. The precise scope is given in Tables 1 to 21 which show the total dry film thickness of Al-Jazeera Firedamp W3 (excluding primer and top sealer) required to provide fire resistance periods in accordance with BS476: Part 21: 1987 up to 150 minutes for I/H beams, up to 240 minutes for I/H columns and up to 90 minutes for Circular and Rectangular/Square hollow columns.
2. The products are approved on the basis of:
 - i) Initial type testing
 - ii) A design appraisal against TS15
 - iii) Certification of quality management system to ISO 9001
 - iv) Inspection and surveillance of factory production control
 - v) Audit testing
3. The data referring to three-sided fire exposure of beams relate to beams supporting concrete floor slabs. Separate consideration is required where this is not the case.
4. The data shown is applicable to steel sections blast cleaned to ISO 8501-1 Sa 2.5 or equivalent and primed with a suitable and compatible primer. Specifications of surface preparations and primers is available from AL JAZEERA FACTORY FOR PAINTS CO. whose responsibility is to ensure that Al-Jazeera Firedamp W3 is compatible for use in respect of both ambient and fire conditions. The total dry film thickness of primer not exceed that tested.
5. The data shown is applicable to Al-Jazeera Firedamp W3 applied by spray or brush or roller to horizontal, vertical, flexural and compression steel members supporting loads up to the maximum design loads specified in BS449: Part 2.
6. The approval relates to ongoing production. Product and/or its immediate packaging is identified with the manufacturers' name, the product name or number, the CERTIFIRE name or name and mark, together with the CERTIFIRE certificate number and application where appropriate.
7. The data shown in the tables is based on assessments which comply with the criteria for acceptability now incorporated within the CERTIFIRE scheme.
8. Tables relating to I/H-sections also apply to structural sections with re-entrant details including channels, angles and Tees.
9. This certification is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.



CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

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	700°C	750°C
30	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
35	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
40	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
45	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
50	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
55	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
60	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
65	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
70	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
75	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
80	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
85	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
90	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
95	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
100	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
105	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
110	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
115	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
120	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
125	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
130	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
135	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
140	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
145	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
150	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
155	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
160	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
165	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
170	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
175	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
180	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
185	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
190	0.658	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
195	0.673	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
200	0.689	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
205	0.704	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
210	0.719	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
215	0.734	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
220	0.754	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
225	0.803	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
230	0.853	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
235	0.903	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
240	0.953	0.654	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
245	1.003	0.666	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
250	1.053	0.678	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
255	1.103	0.690	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
260	1.153	0.702	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
265	1.203	0.714	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
270	1.253	0.726	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
275	1.303	0.739	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
280	1.353	0.756	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
285	1.403	0.793	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
290	1.453	0.830	0.653	0.651	0.651	0.651	0.651	0.651	0.651	0.651
295	1.503	0.867	0.663	0.651	0.651	0.651	0.651	0.651	0.651	0.651
300	1.552	0.904	0.674	0.651	0.651	0.651	0.651	0.651	0.651	0.651
305	1.602	0.941	0.684	0.651	0.651	0.651	0.651	0.651	0.651	0.651
310	1.652	0.978	0.694	0.651	0.651	0.651	0.651	0.651	0.651	0.651
315	1.702	1.015	0.705	0.651	0.651	0.651	0.651	0.651	0.651	0.651
320	1.752	1.051	0.715	0.651	0.651	0.651	0.651	0.651	0.651	0.651
325	1.802	1.088	0.725	0.651	0.651	0.651	0.651	0.651	0.651	0.651
330	1.852	1.125	0.736	0.651	0.651	0.651	0.651	0.651	0.651	0.651
335	1.902	1.162	0.746	0.651	0.651	0.651	0.651	0.651	0.651	0.651
340	1.952	1.199	0.773	0.651	0.651	0.651	0.651	0.651	0.651	0.651
345	2.002	1.236	0.805	0.651	0.651	0.651	0.651	0.651	0.651	0.651
350	2.052	1.273	0.837	0.656	0.651	0.651	0.651	0.651	0.651	0.651
355	2.102	1.309	0.869	0.666	0.651	0.651	0.651	0.651	0.651	0.651
360	2.152	1.346	0.902	0.675	0.651	0.651	0.651	0.651	0.651	0.651
365	2.202	1.383	0.934	0.685	0.651	0.651	0.651	0.651	0.651	0.651
370	2.252	1.420	0.966	0.694	0.651	0.651	0.651	0.651	0.651	0.651
375	2.301	1.457	0.998	0.704	0.651	0.651	0.651	0.651	0.651	0.651
380	2.351	1.494	1.030	0.713	0.651	0.651	0.651	0.651	0.651	0.651
385	2.401	1.531	1.062	0.723	0.651	0.651	0.651	0.651	0.651	0.651
390	2.451	1.568	1.094	0.732	0.651	0.651	0.651	0.651	0.651	0.651

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

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AL JAZEERA FACTORY FOR PAINTS CO.

Section Factor up to m ⁻¹	Table 2: I/H-Beam Sections 45 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
35	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
40	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
45	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
50	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
55	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
60	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
65	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
70	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
75	0.663	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
80	0.704	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
85	0.745	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
90	0.784	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
95	0.823	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
100	0.861	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
105	0.900	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
110	0.939	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
115	0.978	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
120	1.017	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
125	1.055	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
130	1.094	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
135	1.133	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
140	1.172	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
145	1.211	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
150	1.249	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
155	1.288	0.664	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
160	1.327	0.682	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
165	1.366	0.699	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
170	1.405	0.717	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
175	1.444	0.735	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
180	1.482	0.763	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
185	1.521	0.813	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
190	1.560	0.863	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
195	1.599	0.913	0.655	0.651	0.651	0.651	0.651	0.651	0.651	0.651
200	1.638	0.964	0.669	0.651	0.651	0.651	0.651	0.651	0.651	0.651
205	1.676	1.014	0.683	0.651	0.651	0.651	0.651	0.651	0.651	0.651
210	1.715	1.064	0.697	0.651	0.651	0.651	0.651	0.651	0.651	0.651
215	1.754	1.114	0.711	0.651	0.651	0.651	0.651	0.651	0.651	0.651
220	1.793	1.164	0.725	0.651	0.651	0.651	0.651	0.651	0.651	0.651
225	1.832	1.215	0.739	0.651	0.651	0.651	0.651	0.651	0.651	0.651
230	1.870	1.265	0.767	0.659	0.651	0.651	0.651	0.651	0.651	0.651
235	1.909	1.315	0.820	0.671	0.651	0.651	0.651	0.651	0.651	0.651
240	1.948	1.365	0.872	0.683	0.651	0.651	0.651	0.651	0.651	0.651
245	1.987	1.415	0.925	0.696	0.651	0.651	0.651	0.651	0.651	0.651
250	2.026	1.466	0.978	0.708	0.651	0.651	0.651	0.651	0.651	0.651
255	2.064	1.516	1.031	0.720	0.651	0.651	0.651	0.651	0.651	0.651
260	2.103	1.566	1.083	0.732	0.653	0.651	0.651	0.651	0.651	0.651
265	2.142	1.616	1.136	0.744	0.663	0.651	0.651	0.651	0.651	0.651
270	2.181	1.666	1.189	0.781	0.674	0.651	0.651	0.651	0.651	0.651
275	2.220	1.717	1.242	0.829	0.685	0.651	0.651	0.651	0.651	0.651
280	2.258	1.767	1.295	0.877	0.696	0.651	0.651	0.651	0.651	0.651
285	2.297	1.817	1.347	0.925	0.707	0.651	0.651	0.651	0.651	0.651
290	2.336	1.867	1.400	0.973	0.718	0.651	0.651	0.651	0.651	0.651
295	2.375	1.917	1.453	1.021	0.728	0.660	0.651	0.651	0.651	0.651
300	2.414	1.968	1.506	1.069	0.739	0.670	0.651	0.651	0.651	0.651
305	2.452	2.018	1.558	1.116	0.756	0.680	0.655	0.651	0.651	0.651
310	-	2.068	1.611	1.164	0.799	0.690	0.665	0.651	0.651	0.651
315	-	2.118	1.664	1.212	0.842	0.700	0.675	0.651	0.651	0.651
320	-	2.168	1.717	1.260	0.885	0.710	0.685	0.651	0.651	0.651
325	-	2.219	1.770	1.308	0.927	0.720	0.694	0.651	0.651	0.651
330	-	2.269	1.822	1.356	0.970	0.730	0.704	0.659	0.651	0.651
335	-	2.319	1.875	1.403	1.013	0.740	0.714	0.668	0.651	0.651
340	-	2.369	1.928	1.451	1.055	0.755	0.723	0.677	0.651	0.651
345	-	2.419	1.981	1.499	1.098	0.792	0.733	0.686	0.651	0.651
350	-	2.470	2.033	1.547	1.141	0.829	0.743	0.695	0.651	0.651
355	-	-	2.086	1.595	1.184	0.865	0.763	0.705	0.651	0.651
360	-	-	2.139	1.643	1.226	0.902	0.798	0.714	0.651	0.651
365	-	-	2.192	1.691	1.269	0.939	0.832	0.723	0.651	0.651
370	-	-	2.244	1.738	1.312	0.976	0.866	0.732	0.651	0.651
375	-	-	2.297	1.786	1.355	1.013	0.901	0.741	0.651	0.651
380	-	-	2.350	1.834	1.397	1.049	0.935	0.757	0.651	0.651
385	-	-	2.403	1.882	1.440	1.086	0.969	0.789	0.651	0.651
390	-	-	2.456	1.930	1.483	1.123	1.004	0.820	0.651	0.651

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

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AL JAZEERA FACTORY FOR PAINTS CO.

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	700°C	750°C
30	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
35	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
40	0.660	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
45	0.721	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
50	0.772	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
55	0.815	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
60	0.857	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
65	0.900	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
70	0.943	0.688	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
75	0.986	0.724	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
80	1.028	0.763	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
85	1.071	0.803	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
90	1.114	0.844	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
95	1.157	0.885	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
100	1.200	0.926	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
105	1.242	0.966	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
110	1.285	1.007	0.674	0.651	0.651	0.651	0.651	0.651	0.651	0.651
115	1.328	1.048	0.698	0.651	0.651	0.651	0.651	0.651	0.651	0.651
120	1.371	1.089	0.722	0.651	0.651	0.651	0.651	0.651	0.651	0.651
125	1.414	1.129	0.746	0.651	0.651	0.651	0.651	0.651	0.651	0.651
130	1.456	1.170	0.789	0.651	0.651	0.651	0.651	0.651	0.651	0.651
135	1.499	1.211	0.833	0.651	0.651	0.651	0.651	0.651	0.651	0.651
140	1.542	1.252	0.876	0.651	0.651	0.651	0.651	0.651	0.651	0.651
145	1.585	1.292	0.920	0.651	0.651	0.651	0.651	0.651	0.651	0.651
150	1.627	1.333	0.963	0.651	0.651	0.651	0.651	0.651	0.651	0.651
155	1.670	1.374	1.007	0.651	0.651	0.651	0.651	0.651	0.651	0.651
160	1.713	1.415	1.051	0.651	0.651	0.651	0.651	0.651	0.651	0.651
165	1.756	1.455	1.094	0.651	0.651	0.651	0.651	0.651	0.651	0.651
170	1.799	1.496	1.138	0.651	0.651	0.651	0.651	0.651	0.651	0.651
175	1.841	1.537	1.182	0.665	0.651	0.651	0.651	0.651	0.651	0.651
180	1.884	1.578	1.225	0.681	0.651	0.651	0.651	0.651	0.651	0.651
185	1.927	1.618	1.269	0.696	0.651	0.651	0.651	0.651	0.651	0.651
190	1.970	1.659	1.313	0.712	0.651	0.651	0.651	0.651	0.651	0.651
195	2.013	1.700	1.356	0.727	0.651	0.651	0.651	0.651	0.651	0.651
200	2.055	1.741	1.400	0.742	0.663	0.651	0.651	0.651	0.651	0.651
205	2.098	1.781	1.444	0.786	0.677	0.651	0.651	0.651	0.651	0.651
210	2.141	1.822	1.487	0.847	0.690	0.651	0.651	0.651	0.651	0.651
215	2.184	1.863	1.531	0.907	0.704	0.651	0.651	0.651	0.651	0.651
220	2.226	1.904	1.575	0.968	0.717	0.651	0.651	0.651	0.651	0.651
225	2.269	1.944	1.618	1.029	0.731	0.661	0.651	0.651	0.651	0.651
230	2.312	1.985	1.662	1.089	0.744	0.673	0.651	0.651	0.651	0.651
235	2.355	2.026	1.705	1.150	0.793	0.685	0.660	0.651	0.651	0.651
240	2.398	2.067	1.749	1.210	0.853	0.698	0.672	0.651	0.651	0.651
245	2.440	2.107	1.793	1.271	0.914	0.710	0.684	0.651	0.651	0.651
250	2.483	2.148	1.836	1.332	0.974	0.722	0.695	0.659	0.651	0.651
255	-	2.189	1.880	1.392	1.035	0.735	0.707	0.671	0.651	0.651
260	-	2.230	1.924	1.453	1.096	0.747	0.719	0.682	0.651	0.651
265	-	2.270	1.967	1.514	1.156	0.800	0.731	0.693	0.651	0.651
270	-	2.311	2.011	1.574	1.217	0.858	0.743	0.704	0.651	0.651
275	-	2.352	2.055	1.635	1.278	0.915	0.779	0.716	0.658	0.651
280	-	2.393	2.098	1.695	1.338	0.972	0.834	0.727	0.668	0.651
285	-	2.433	2.142	1.756	1.399	1.029	0.888	0.738	0.679	0.651
290	-	2.474	2.186	1.817	1.460	1.087	0.943	0.755	0.689	0.651
295	-	-	2.229	1.877	1.520	1.144	0.998	0.806	0.700	0.651
300	-	-	2.273	1.938	1.581	1.201	1.053	0.857	0.711	0.651
305	-	-	2.316	1.999	1.641	1.258	1.107	0.907	0.721	0.651
310	-	-	2.360	2.059	1.702	1.316	1.162	0.958	0.732	0.661
315	-	-	2.404	2.120	1.763	1.373	1.217	1.009	0.742	0.671
320	-	-	2.447	2.180	1.823	1.430	1.272	1.060	0.767	0.681
325	-	-	-	2.241	1.884	1.487	1.327	1.111	0.809	0.690
330	-	-	-	2.302	1.945	1.544	1.381	1.162	0.852	0.700
335	-	-	-	2.362	2.005	1.602	1.436	1.213	0.894	0.710
340	-	-	-	2.423	2.066	1.659	1.491	1.264	0.936	0.720
345	-	-	-	2.483	2.126	1.716	1.546	1.315	0.979	0.730
350	-	-	-	-	2.187	1.773	1.601	1.366	1.021	0.740
355	-	-	-	-	2.248	1.831	1.655	1.417	1.063	0.754
360	-	-	-	-	2.308	1.888	1.710	1.468	1.106	0.788
365	-	-	-	-	2.369	1.945	1.765	1.519	1.148	0.822
370	-	-	-	-	2.430	2.002	1.820	1.570	1.190	0.856
375	-	-	-	-	-	2.060	1.875	1.621	1.233	0.890
380	-	-	-	-	-	2.117	1.929	1.672	1.275	0.924
385	-	-	-	-	-	2.174	1.984	1.723	1.317	0.958
390	-	-	-	-	-	2.231	2.039	1.774	1.360	0.992

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

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Issued: 12th December 2016
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CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

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	700°C	750°C
30	0.820	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
35	0.937	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
40	1.053	0.673	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
45	1.170	0.710	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
50	1.286	0.747	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
55	1.402	0.792	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
60	1.519	0.837	0.670	0.651	0.651	0.651	0.651	0.651	0.651	0.651
65	1.635	0.882	0.704	0.651	0.651	0.651	0.651	0.651	0.651	0.651
70	1.752	0.927	0.739	0.651	0.651	0.651	0.651	0.651	0.651	0.651
75	1.868	0.972	0.779	0.651	0.651	0.651	0.651	0.651	0.651	0.651
80	1.984	1.017	0.821	0.651	0.651	0.651	0.651	0.651	0.651	0.651
85	2.101	1.062	0.864	0.653	0.651	0.651	0.651	0.651	0.651	0.651
90	2.217	1.107	0.906	0.680	0.651	0.651	0.651	0.651	0.651	0.651
95	2.334	1.152	0.948	0.707	0.651	0.651	0.651	0.651	0.651	0.651
100	2.450	1.197	0.991	0.734	0.651	0.651	0.651	0.651	0.651	0.651
105	-	1.242	1.033	0.769	0.651	0.651	0.651	0.651	0.651	0.651
110	-	1.286	1.075	0.812	0.651	0.651	0.651	0.651	0.651	0.651
115	-	1.331	1.118	0.855	0.651	0.651	0.651	0.651	0.651	0.651
120	-	1.376	1.160	0.898	0.651	0.651	0.651	0.651	0.651	0.651
125	-	1.421	1.202	0.941	0.651	0.651	0.651	0.651	0.651	0.651
130	-	1.466	1.245	0.985	0.651	0.651	0.651	0.651	0.651	0.651
135	-	1.511	1.287	1.028	0.656	0.651	0.651	0.651	0.651	0.651
140	-	1.556	1.329	1.071	0.674	0.651	0.651	0.651	0.651	0.651
145	-	1.601	1.372	1.114	0.692	0.651	0.651	0.651	0.651	0.651
150	-	1.646	1.414	1.157	0.710	0.651	0.651	0.651	0.651	0.651
155	-	1.691	1.456	1.200	0.729	0.651	0.651	0.651	0.651	0.651
160	-	1.736	1.498	1.243	0.747	0.651	0.651	0.651	0.651	0.651
165	-	1.781	1.541	1.287	0.798	0.651	0.651	0.651	0.651	0.651
170	-	1.826	1.583	1.330	0.851	0.651	0.651	0.651	0.651	0.651
175	-	1.871	1.625	1.373	0.905	0.651	0.651	0.651	0.651	0.651
180	-	1.916	1.668	1.416	0.959	0.656	0.651	0.651	0.651	0.651
185	-	1.960	1.710	1.459	1.012	0.671	0.651	0.651	0.651	0.651
190	-	2.005	1.752	1.502	1.066	0.685	0.659	0.651	0.651	0.651
195	-	2.050	1.795	1.545	1.120	0.700	0.673	0.651	0.651	0.651
200	-	2.095	1.837	1.589	1.173	0.715	0.687	0.651	0.651	0.651
205	-	2.140	1.879	1.632	1.227	0.729	0.701	0.663	0.651	0.651
210	-	2.185	1.922	1.675	1.280	0.744	0.715	0.677	0.651	0.651
215	-	2.230	1.964	1.718	1.334	0.796	0.729	0.690	0.651	0.651
220	-	2.275	2.006	1.761	1.388	0.863	0.744	0.703	0.651	0.651
225	-	2.320	2.049	1.804	1.441	0.930	0.794	0.717	0.658	0.651
230	-	2.365	2.091	1.847	1.495	0.997	0.861	0.730	0.670	0.651
235	-	2.410	2.133	1.890	1.549	1.063	0.928	0.743	0.682	0.651
240	-	2.455	2.176	1.934	1.602	1.130	0.995	0.791	0.695	0.651
245	-	-	2.218	1.977	1.656	1.197	1.062	0.859	0.707	0.651
250	-	-	2.260	2.020	1.709	1.264	1.129	0.926	0.719	0.659
255	-	-	2.303	2.063	1.763	1.330	1.196	0.994	0.731	0.670
260	-	-	2.345	2.106	1.817	1.397	1.263	1.061	0.743	0.681
265	-	-	2.387	2.149	1.870	1.464	1.330	1.128	0.789	0.693
270	-	-	2.430	2.192	1.924	1.531	1.397	1.196	0.855	0.704
275	-	-	2.472	2.236	1.978	1.598	1.464	1.263	0.920	0.715
280	-	-	-	2.279	2.031	1.664	1.531	1.331	0.985	0.727
285	-	-	-	2.322	2.085	1.731	1.597	1.398	1.051	0.738
290	-	-	-	2.365	2.139	1.798	1.664	1.466	1.116	0.755
295	-	-	-	2.408	2.192	1.865	1.731	1.533	1.181	0.810
300	-	-	-	2.451	2.246	1.931	1.798	1.601	1.247	0.865
305	-	-	-	-	2.299	1.998	1.865	1.668	1.312	0.920
310	-	-	-	-	2.353	2.065	1.932	1.736	1.378	0.974
315	-	-	-	-	2.407	2.132	1.999	1.803	1.443	1.029
320	-	-	-	-	2.460	2.199	2.066	1.871	1.508	1.084
325	-	-	-	-	-	2.265	2.133	1.938	1.574	1.138
330	-	-	-	-	-	2.332	2.200	2.006	1.639	1.193
335	-	-	-	-	-	2.399	2.267	2.073	1.704	1.248
340	-	-	-	-	-	2.466	2.334	2.141	1.770	1.303
345	-	-	-	-	-	-	2.401	2.208	1.835	1.357
350	-	-	-	-	-	-	2.468	2.276	1.900	1.412
355	-	-	-	-	-	-	-	2.343	1.966	1.467
360	-	-	-	-	-	-	-	2.411	2.031	1.522
365	-	-	-	-	-	-	-	2.478	2.097	1.576
370	-	-	-	-	-	-	-	-	2.162	1.631
375	-	-	-	-	-	-	-	-	2.227	1.686
380	-	-	-	-	-	-	-	-	2.293	1.740
385	-	-	-	-	-	-	-	-	2.358	1.795
390	-	-	-	-	-	-	-	-	2.423	1.850

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

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CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

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	700°C	750°C
30	1.247	0.858	0.651	0.651	0.651	0.651	0.651	0.651	0.651	0.651
35	1.492	0.947	0.670	0.651	0.651	0.651	0.651	0.651	0.651	0.651
40	1.738	1.035	0.696	0.651	0.651	0.651	0.651	0.651	0.651	0.651
45	1.983	1.124	0.722	0.651	0.651	0.651	0.651	0.651	0.651	0.651
50	2.228	1.212	0.749	0.651	0.651	0.651	0.651	0.651	0.651	0.651
55	2.473	1.301	0.795	0.676	0.651	0.651	0.651	0.651	0.651	0.651
60	-	1.389	0.841	0.708	0.651	0.651	0.651	0.651	0.651	0.651
65	-	1.478	0.887	0.741	0.651	0.651	0.651	0.651	0.651	0.651
70	-	1.566	0.933	0.782	0.651	0.651	0.651	0.651	0.651	0.651
75	-	1.655	0.979	0.825	0.666	0.651	0.651	0.651	0.651	0.651
80	-	1.743	1.025	0.869	0.694	0.651	0.651	0.651	0.651	0.651
85	-	1.832	1.071	0.912	0.722	0.651	0.651	0.651	0.651	0.651
90	-	1.920	1.117	0.956	0.751	0.651	0.651	0.651	0.651	0.651
95	-	2.009	1.163	0.999	0.794	0.651	0.651	0.651	0.651	0.651
100	-	2.097	1.209	1.043	0.838	0.651	0.651	0.651	0.651	0.651
105	-	2.186	1.255	1.086	0.881	0.651	0.651	0.651	0.651	0.651
110	-	2.274	1.301	1.130	0.925	0.660	0.651	0.651	0.651	0.651
115	-	2.363	1.347	1.173	0.968	0.681	0.651	0.651	0.651	0.651
120	-	2.451	1.393	1.216	1.012	0.702	0.651	0.651	0.651	0.651
125	-	-	1.439	1.260	1.055	0.724	0.651	0.651	0.651	0.651
130	-	-	1.485	1.303	1.099	0.745	0.651	0.651	0.651	0.651
135	-	-	1.531	1.347	1.142	0.790	0.663	0.651	0.651	0.651
140	-	-	1.577	1.390	1.186	0.839	0.681	0.651	0.651	0.651
145	-	-	1.623	1.434	1.229	0.888	0.699	0.651	0.651	0.651
150	-	-	1.669	1.477	1.273	0.937	0.717	0.651	0.651	0.651
155	-	-	1.715	1.521	1.316	0.985	0.736	0.651	0.651	0.651
160	-	-	1.761	1.564	1.360	1.034	0.766	0.651	0.651	0.651
165	-	-	1.807	1.608	1.403	1.083	0.822	0.651	0.651	0.651
170	-	-	1.853	1.651	1.447	1.132	0.878	0.654	0.651	0.651
175	-	-	1.899	1.695	1.490	1.181	0.935	0.670	0.651	0.651
180	-	-	1.945	1.738	1.534	1.230	0.991	0.685	0.651	0.651
185	-	-	1.991	1.781	1.577	1.279	1.047	0.701	0.651	0.651
190	-	-	2.037	1.825	1.620	1.328	1.103	0.716	0.656	0.651
195	-	-	2.083	1.868	1.664	1.377	1.159	0.731	0.670	0.651
200	-	-	2.129	1.912	1.707	1.426	1.216	0.747	0.684	0.651
205	-	-	2.175	1.955	1.751	1.475	1.272	0.814	0.698	0.651
210	-	-	2.221	1.999	1.794	1.524	1.328	0.886	0.712	0.658
215	-	-	2.267	2.042	1.838	1.572	1.384	0.959	0.726	0.671
220	-	-	2.313	2.086	1.881	1.621	1.440	1.031	0.740	0.684
225	-	-	2.359	2.129	1.925	1.670	1.497	1.103	0.781	0.697
230	-	-	2.405	2.173	1.968	1.719	1.553	1.175	0.853	0.710
235	-	-	2.451	2.216	2.012	1.768	1.609	1.248	0.924	0.723
240	-	-	-	2.260	2.055	1.817	1.665	1.320	0.996	0.736
245	-	-	-	2.303	2.099	1.866	1.721	1.392	1.067	0.754
250	-	-	-	2.346	2.142	1.915	1.778	1.464	1.139	0.825
255	-	-	-	2.390	2.186	1.964	1.834	1.537	1.211	0.897
260	-	-	-	2.433	2.229	2.013	1.890	1.609	1.282	0.968
265	-	-	-	2.477	2.273	2.062	1.946	1.681	1.354	1.039
270	-	-	-	-	2.316	2.111	2.002	1.753	1.425	1.110
275	-	-	-	-	2.360	2.160	2.059	1.825	1.497	1.181
280	-	-	-	-	2.403	2.208	2.115	1.898	1.568	1.252
285	-	-	-	-	2.447	2.257	2.171	1.970	1.640	1.323
290	-	-	-	-	-	2.306	2.227	2.042	1.711	1.394
295	-	-	-	-	-	2.355	2.283	2.114	1.783	1.465
300	-	-	-	-	-	2.404	2.340	2.187	1.854	1.536
305	-	-	-	-	-	2.453	2.396	2.259	1.926	1.607
310	-	-	-	-	-	-	2.452	2.331	1.997	1.678
315	-	-	-	-	-	-	-	2.403	2.069	1.750
320	-	-	-	-	-	-	-	2.476	2.141	1.821
325	-	-	-	-	-	-	-	-	2.212	1.892
330	-	-	-	-	-	-	-	-	2.284	1.963
335	-	-	-	-	-	-	-	-	2.355	2.034
340	-	-	-	-	-	-	-	-	2.427	2.105
345	-	-	-	-	-	-	-	-	-	2.176
350	-	-	-	-	-	-	-	-	-	2.247
355	-	-	-	-	-	-	-	-	-	2.318
360	-	-	-	-	-	-	-	-	-	2.389
365	-	-	-	-	-	-	-	-	-	2.460
370	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-

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



CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

Table 6: 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	700°C	750°C
30	-	1.640	1.259	0.933	0.700	0.651	0.651	0.651	0.651	0.651
35	-	1.880	1.394	1.010	0.721	0.651	0.651	0.651	0.651	0.651
40	-	2.120	1.530	1.087	0.742	0.651	0.651	0.651	0.651	0.651
45	-	2.360	1.665	1.164	0.784	0.662	0.651	0.651	0.651	0.651
50	-	-	1.800	1.241	0.835	0.691	0.651	0.651	0.651	0.651
55	-	-	1.935	1.318	0.886	0.720	0.678	0.651	0.651	0.651
60	-	-	2.070	1.395	0.936	0.748	0.708	0.651	0.651	0.651
65	-	-	2.206	1.472	0.987	0.793	0.739	0.664	0.651	0.651
70	-	-	2.341	1.548	1.038	0.838	0.779	0.694	0.651	0.651
75	-	-	2.476	1.625	1.089	0.883	0.823	0.725	0.651	0.651
80	-	-	-	1.702	1.140	0.928	0.868	0.759	0.651	0.651
85	-	-	-	1.779	1.190	0.973	0.912	0.803	0.651	0.651
90	-	-	-	1.856	1.241	1.018	0.957	0.847	0.655	0.651
95	-	-	-	1.933	1.292	1.063	1.001	0.891	0.681	0.651
100	-	-	-	2.010	1.343	1.107	1.046	0.935	0.707	0.651
105	-	-	-	2.087	1.394	1.152	1.090	0.979	0.732	0.651
110	-	-	-	2.163	1.444	1.197	1.135	1.023	0.766	0.651
115	-	-	-	2.240	1.495	1.242	1.179	1.067	0.813	0.651
120	-	-	-	2.317	1.546	1.287	1.224	1.111	0.859	0.651
125	-	-	-	2.394	1.597	1.332	1.268	1.155	0.906	0.651
130	-	-	-	2.471	1.648	1.377	1.313	1.200	0.952	0.655
135	-	-	-	-	1.698	1.422	1.357	1.244	0.999	0.674
140	-	-	-	-	1.749	1.467	1.402	1.288	1.045	0.693
145	-	-	-	-	1.800	1.512	1.446	1.332	1.092	0.713
150	-	-	-	-	1.851	1.556	1.491	1.376	1.138	0.732
155	-	-	-	-	1.902	1.601	1.535	1.420	1.185	0.756
160	-	-	-	-	1.952	1.646	1.580	1.464	1.231	0.814
165	-	-	-	-	2.003	1.691	1.624	1.508	1.278	0.871
170	-	-	-	-	2.054	1.736	1.669	1.552	1.324	0.928
175	-	-	-	-	2.105	1.781	1.713	1.596	1.371	0.985
180	-	-	-	-	2.156	1.826	1.758	1.641	1.417	1.042
185	-	-	-	-	2.206	1.871	1.802	1.685	1.464	1.099
190	-	-	-	-	2.257	1.916	1.847	1.729	1.510	1.156
195	-	-	-	-	2.308	1.961	1.891	1.773	1.557	1.213
200	-	-	-	-	2.359	2.006	1.936	1.817	1.603	1.270
205	-	-	-	-	2.410	2.050	1.980	1.861	1.650	1.327
210	-	-	-	-	2.460	2.095	2.025	1.905	1.696	1.385
215	-	-	-	-	-	2.140	2.069	1.949	1.743	1.442
220	-	-	-	-	-	2.185	2.114	1.993	1.789	1.499
225	-	-	-	-	-	2.230	2.158	2.038	1.836	1.556
230	-	-	-	-	-	2.275	2.202	2.082	1.882	1.613
235	-	-	-	-	-	2.320	2.247	2.126	1.929	1.670
240	-	-	-	-	-	2.365	2.291	2.170	1.975	1.727
245	-	-	-	-	-	2.410	2.336	2.214	2.022	1.784
250	-	-	-	-	-	2.455	2.380	2.258	2.068	1.841
255	-	-	-	-	-	-	2.425	2.302	2.115	1.899
260	-	-	-	-	-	-	2.469	2.346	2.161	1.956
265	-	-	-	-	-	-	-	2.390	2.207	2.013
270	-	-	-	-	-	-	-	2.434	2.254	2.070
275	-	-	-	-	-	-	-	2.479	2.300	2.127
280	-	-	-	-	-	-	-	-	2.347	2.184
285	-	-	-	-	-	-	-	-	2.393	2.241
290	-	-	-	-	-	-	-	-	2.440	2.298
295	-	-	-	-	-	-	-	-	-	2.355
300	-	-	-	-	-	-	-	-	-	2.413
305	-	-	-	-	-	-	-	-	-	2.470
310	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-

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



CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

Table 7: I/H-Beam Sections 150 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	700°C	750°C
30	-	-	1.982	1.613	1.280	0.960	0.822	0.685	0.651	0.651
35	-	-	2.236	1.777	1.391	1.038	0.892	0.710	0.651	0.651
40	-	-	-	1.941	1.502	1.116	0.962	0.734	0.651	0.651
45	-	-	-	2.105	1.614	1.195	1.032	0.769	0.658	0.651
50	-	-	-	2.269	1.725	1.273	1.102	0.819	0.691	0.651
55	-	-	-	2.433	1.836	1.351	1.171	0.869	0.724	0.651
60	-	-	-	-	1.947	1.429	1.241	0.919	0.760	0.669
65	-	-	-	-	2.059	1.507	1.311	0.969	0.804	0.702
70	-	-	-	-	2.170	1.585	1.381	1.019	0.849	0.735
75	-	-	-	-	2.281	1.663	1.451	1.069	0.893	0.775
80	-	-	-	-	2.393	1.741	1.520	1.118	0.937	0.818
85	-	-	-	-	-	1.820	1.590	1.168	0.982	0.862
90	-	-	-	-	-	1.898	1.660	1.218	1.026	0.906
95	-	-	-	-	-	1.976	1.730	1.268	1.070	0.949
100	-	-	-	-	-	2.054	1.799	1.318	1.114	0.993
105	-	-	-	-	-	2.132	1.869	1.368	1.159	1.037
110	-	-	-	-	-	2.210	1.939	1.418	1.203	1.080
115	-	-	-	-	-	2.288	2.009	1.467	1.247	1.124
120	-	-	-	-	-	2.367	2.079	1.517	1.292	1.168
125	-	-	-	-	-	2.445	2.148	1.567	1.336	1.211
130	-	-	-	-	-	-	2.218	1.617	1.380	1.255
135	-	-	-	-	-	-	2.288	1.667	1.424	1.299
140	-	-	-	-	-	-	2.358	1.717	1.469	1.342
145	-	-	-	-	-	-	2.428	1.767	1.513	1.386
150	-	-	-	-	-	-	-	1.816	1.557	1.430
155	-	-	-	-	-	-	-	1.866	1.602	1.473
160	-	-	-	-	-	-	-	1.916	1.646	1.517
165	-	-	-	-	-	-	-	1.966	1.690	1.561
170	-	-	-	-	-	-	-	2.016	1.734	1.604
175	-	-	-	-	-	-	-	2.066	1.779	1.648
180	-	-	-	-	-	-	-	2.116	1.823	1.692
185	-	-	-	-	-	-	-	2.166	1.867	1.736
190	-	-	-	-	-	-	-	2.215	1.912	1.779
195	-	-	-	-	-	-	-	2.265	1.956	1.823
200	-	-	-	-	-	-	-	2.315	2.000	1.867
205	-	-	-	-	-	-	-	2.365	2.044	1.910
210	-	-	-	-	-	-	-	2.415	2.089	1.954
215	-	-	-	-	-	-	-	2.465	2.133	1.998
220	-	-	-	-	-	-	-	-	2.177	2.041
225	-	-	-	-	-	-	-	-	2.222	2.085
230	-	-	-	-	-	-	-	-	2.266	2.129
235	-	-	-	-	-	-	-	-	2.310	2.172
240	-	-	-	-	-	-	-	-	2.354	2.216
245	-	-	-	-	-	-	-	-	2.399	2.260
250	-	-	-	-	-	-	-	-	2.443	2.303
255	-	-	-	-	-	-	-	-	-	2.347
260	-	-	-	-	-	-	-	-	-	2.391
265	-	-	-	-	-	-	-	-	-	2.434
270	-	-	-	-	-	-	-	-	-	2.478
275	-	-	-	-	-	-	-	-	-	-
280	-	-	-	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-

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

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AB/007

Issued: 12th December 2016
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Valid to: 11th December 2021



CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

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	620°C	650°C	700°C	750°C
30	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
35	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
40	0.196	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
45	0.214	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
50	0.233	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
55	0.252	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
60	0.271	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
65	0.290	0.204	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
70	0.309	0.216	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
75	0.328	0.228	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
80	0.346	0.240	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
85	0.365	0.252	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
90	0.384	0.264	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
95	0.403	0.276	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
100	0.422	0.288	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
105	0.441	0.300	0.197	0.194	0.194	0.194	0.194	0.194	0.194	0.194
110	0.460	0.312	0.207	0.194	0.194	0.194	0.194	0.194	0.194	0.194
115	0.479	0.324	0.217	0.194	0.194	0.194	0.194	0.194	0.194	0.194
120	0.497	0.335	0.227	0.194	0.194	0.194	0.194	0.194	0.194	0.194
125	0.516	0.347	0.237	0.194	0.194	0.194	0.194	0.194	0.194	0.194
130	0.535	0.359	0.248	0.194	0.194	0.194	0.194	0.194	0.194	0.194
135	0.554	0.371	0.258	0.194	0.194	0.194	0.194	0.194	0.194	0.194
140	0.573	0.383	0.268	0.194	0.194	0.194	0.194	0.194	0.194	0.194
145	0.592	0.395	0.278	0.194	0.194	0.194	0.194	0.194	0.194	0.194
150	0.611	0.407	0.288	0.194	0.194	0.194	0.194	0.194	0.194	0.194
155	0.629	0.419	0.298	0.194	0.194	0.194	0.194	0.194	0.194	0.194
160	0.648	0.431	0.308	0.194	0.194	0.194	0.194	0.194	0.194	0.194
165	0.667	0.443	0.318	0.194	0.194	0.194	0.194	0.194	0.194	0.194
170	0.686	0.455	0.328	0.194	0.194	0.194	0.194	0.194	0.194	0.194
175	0.705	0.467	0.339	0.194	0.194	0.194	0.194	0.194	0.194	0.194
180	0.724	0.479	0.349	0.194	0.194	0.194	0.194	0.194	0.194	0.194
185	0.743	0.491	0.359	0.194	0.194	0.194	0.194	0.194	0.194	0.194
190	0.764	0.503	0.369	0.198	0.194	0.194	0.194	0.194	0.194	0.194
195	0.793	0.515	0.379	0.208	0.194	0.194	0.194	0.194	0.194	0.194
200	0.822	0.527	0.389	0.219	0.194	0.194	0.194	0.194	0.194	0.194
205	0.851	0.539	0.399	0.229	0.194	0.194	0.194	0.194	0.194	0.194
210	0.880	0.551	0.409	0.240	0.194	0.194	0.194	0.194	0.194	0.194
215	0.909	0.563	0.419	0.250	0.194	0.194	0.194	0.194	0.194	0.194
220	0.937	0.575	0.430	0.261	0.194	0.194	0.194	0.194	0.194	0.194
225	0.966	0.587	0.440	0.271	0.194	0.194	0.194	0.194	0.194	0.194
230	0.995	0.599	0.450	0.282	0.198	0.194	0.194	0.194	0.194	0.194
235	1.024	0.611	0.460	0.292	0.207	0.194	0.194	0.194	0.194	0.194
240	1.053	0.623	0.470	0.302	0.215	0.194	0.194	0.194	0.194	0.194
245	1.082	0.635	0.480	0.313	0.224	0.194	0.194	0.194	0.194	0.194
250	1.111	0.647	0.490	0.323	0.233	0.194	0.194	0.194	0.194	0.194
255	1.139	0.659	0.500	0.334	0.242	0.194	0.194	0.194	0.194	0.194
260	1.168	0.671	0.510	0.344	0.251	0.194	0.194	0.194	0.194	0.194
265	1.197	0.683	0.521	0.355	0.260	0.194	0.194	0.194	0.194	0.194
270	1.226	0.695	0.531	0.365	0.269	0.194	0.194	0.194	0.194	0.194
275	1.255	0.707	0.541	0.376	0.278	0.194	0.194	0.194	0.194	0.194
280	1.284	0.719	0.551	0.386	0.287	0.198	0.194	0.194	0.194	0.194
285	1.312	0.731	0.561	0.397	0.296	0.206	0.194	0.194	0.194	0.194
290	1.341	0.742	0.571	0.407	0.305	0.213	0.194	0.194	0.194	0.194
295	1.370	0.754	0.581	0.418	0.313	0.221	0.194	0.194	0.194	0.194
300	1.399	0.778	0.591	0.428	0.322	0.229	0.196	0.194	0.194	0.194
305	1.428	0.802	0.601	0.438	0.331	0.236	0.203	0.194	0.194	0.194
310	1.457	0.827	0.612	0.449	0.340	0.244	0.210	0.194	0.194	0.194
315	1.485	0.852	0.622	0.459	0.349	0.251	0.217	0.194	0.194	0.194
320	1.514	0.877	0.632	0.470	0.358	0.259	0.224	0.194	0.194	0.194
325	1.543	0.902	0.642	0.480	0.367	0.266	0.231	0.194	0.194	0.194
330	1.572	0.927	0.652	0.491	0.376	0.274	0.238	0.194	0.194	0.194
335	1.601	0.951	0.662	0.501	0.385	0.281	0.245	0.195	0.194	0.194
340	1.630	0.976	0.672	0.512	0.394	0.289	0.252	0.201	0.194	0.194
345	1.659	1.001	0.682	0.522	0.402	0.296	0.259	0.207	0.194	0.194
350	1.687	1.026	0.692	0.533	0.411	0.304	0.266	0.213	0.194	0.194
355	1.716	1.051	0.703	0.543	0.420	0.311	0.273	0.219	0.194	0.194
360	1.745	1.076	0.713	0.554	0.429	0.319	0.280	0.225	0.194	0.194
365	1.774	1.100	0.723	0.564	0.438	0.326	0.287	0.231	0.194	0.194

Thickness is intumescent only. Results also apply to I/H-section beams exposed on all four sides limited to a maximum protection thickness of 2.486mm.

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CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

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	620°C	650°C	700°C	750°C
30	0.309	0.212	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
35	0.338	0.234	0.201	0.194	0.194	0.194	0.194	0.194	0.194	0.194
40	0.367	0.257	0.219	0.194	0.194	0.194	0.194	0.194	0.194	0.194
45	0.396	0.279	0.237	0.202	0.194	0.194	0.194	0.194	0.194	0.194
50	0.425	0.301	0.254	0.215	0.194	0.194	0.194	0.194	0.194	0.194
55	0.454	0.324	0.272	0.228	0.194	0.194	0.194	0.194	0.194	0.194
60	0.483	0.346	0.289	0.241	0.194	0.194	0.194	0.194	0.194	0.194
65	0.511	0.368	0.307	0.254	0.201	0.194	0.194	0.194	0.194	0.194
70	0.540	0.391	0.325	0.267	0.211	0.194	0.194	0.194	0.194	0.194
75	0.569	0.413	0.342	0.280	0.221	0.194	0.194	0.194	0.194	0.194
80	0.598	0.435	0.360	0.293	0.231	0.194	0.194	0.194	0.194	0.194
85	0.627	0.458	0.377	0.307	0.241	0.194	0.194	0.194	0.194	0.194
90	0.656	0.480	0.395	0.320	0.251	0.194	0.194	0.194	0.194	0.194
95	0.684	0.502	0.413	0.333	0.261	0.194	0.194	0.194	0.194	0.194
100	0.713	0.525	0.430	0.346	0.271	0.194	0.194	0.194	0.194	0.194
105	0.742	0.547	0.448	0.359	0.281	0.195	0.194	0.194	0.194	0.194
110	0.800	0.569	0.465	0.372	0.291	0.204	0.194	0.194	0.194	0.194
115	0.886	0.592	0.483	0.385	0.301	0.214	0.194	0.194	0.194	0.194
120	0.971	0.614	0.500	0.398	0.311	0.223	0.194	0.194	0.194	0.194
125	1.056	0.636	0.518	0.411	0.320	0.233	0.194	0.194	0.194	0.194
130	1.142	0.659	0.536	0.425	0.330	0.242	0.194	0.194	0.194	0.194
135	1.227	0.681	0.553	0.438	0.340	0.252	0.194	0.194	0.194	0.194
140	1.313	0.703	0.571	0.451	0.350	0.261	0.199	0.194	0.194	0.194
145	1.398	0.726	0.588	0.464	0.360	0.271	0.209	0.194	0.194	0.194
150	1.483	0.748	0.606	0.477	0.370	0.280	0.218	0.194	0.194	0.194
155	1.569	0.776	0.624	0.490	0.380	0.289	0.228	0.194	0.194	0.194
160	1.654	0.806	0.641	0.503	0.390	0.299	0.238	0.194	0.194	0.194
165	1.740	0.837	0.659	0.516	0.400	0.308	0.248	0.194	0.194	0.194
170	1.825	0.868	0.676	0.529	0.410	0.318	0.257	0.194	0.194	0.194
175	1.910	0.898	0.694	0.543	0.420	0.327	0.267	0.194	0.194	0.194
180	1.996	0.929	0.712	0.556	0.430	0.337	0.277	0.194	0.194	0.194
185	2.081	0.960	0.729	0.569	0.440	0.346	0.286	0.194	0.194	0.194
190	2.133	0.990	0.747	0.582	0.450	0.356	0.296	0.194	0.194	0.194
195	2.157	1.021	0.769	0.595	0.460	0.365	0.306	0.202	0.194	0.194
200	2.181	1.052	0.796	0.608	0.469	0.375	0.316	0.212	0.194	0.194
205	2.206	1.083	0.823	0.621	0.479	0.384	0.325	0.222	0.194	0.194
210	2.230	1.113	0.850	0.634	0.489	0.394	0.335	0.232	0.194	0.194
215	2.254	1.144	0.877	0.647	0.499	0.403	0.345	0.242	0.194	0.194
220	2.279	1.175	0.904	0.661	0.509	0.412	0.355	0.252	0.194	0.194
225	2.303	1.205	0.931	0.674	0.519	0.422	0.364	0.262	0.194	0.194
230	2.327	1.236	0.958	0.687	0.529	0.431	0.374	0.272	0.194	0.194
235	2.352	1.267	0.986	0.700	0.539	0.441	0.384	0.282	0.202	0.194
240	2.376	1.297	1.013	0.713	0.549	0.450	0.393	0.292	0.210	0.194
245	2.400	1.328	1.040	0.726	0.559	0.460	0.403	0.303	0.218	0.194
250	2.425	1.359	1.067	0.739	0.569	0.469	0.413	0.313	0.227	0.194
255	2.449	1.389	1.094	0.752	0.579	0.479	0.423	0.323	0.235	0.194
260	2.473	1.420	1.121	0.775	0.589	0.488	0.432	0.333	0.244	0.194
265	2.498	1.451	1.148	0.802	0.599	0.498	0.442	0.343	0.252	0.194
270	2.522	1.481	1.175	0.829	0.609	0.507	0.452	0.353	0.260	0.194
275	2.547	1.512	1.202	0.855	0.619	0.516	0.462	0.363	0.269	0.194
280	2.571	1.543	1.229	0.882	0.628	0.526	0.471	0.373	0.277	0.194
285	2.595	1.573	1.256	0.908	0.638	0.535	0.481	0.383	0.286	0.199
290	2.620	1.604	1.283	0.935	0.648	0.545	0.491	0.393	0.294	0.206
295	2.644	1.635	1.310	0.962	0.658	0.554	0.500	0.404	0.303	0.212
300	2.668	1.665	1.338	0.988	0.668	0.564	0.510	0.414	0.311	0.219
305	2.693	1.696	1.365	1.015	0.678	0.573	0.520	0.424	0.319	0.225
310	2.717	1.727	1.392	1.042	0.688	0.583	0.530	0.434	0.328	0.232
315	2.741	1.757	1.419	1.068	0.698	0.592	0.539	0.444	0.336	0.238
320	2.766	1.788	1.446	1.095	0.708	0.602	0.549	0.454	0.345	0.245
325	2.790	1.819	1.473	1.121	0.718	0.611	0.559	0.464	0.353	0.251
330	2.814	1.849	1.500	1.148	0.728	0.621	0.569	0.474	0.361	0.258
335	2.839	1.880	1.527	1.175	0.738	0.630	0.578	0.484	0.370	0.264
340	2.863	1.911	1.554	1.201	0.748	0.639	0.588	0.494	0.378	0.271
345	2.887	1.941	1.581	1.228	0.761	0.649	0.598	0.505	0.387	0.277
350	2.912	1.972	1.608	1.255	0.788	0.658	0.607	0.515	0.395	0.284
355	2.936	2.003	1.635	1.281	0.816	0.668	0.617	0.525	0.404	0.290
360	2.961	2.033	1.663	1.308	0.844	0.677	0.627	0.535	0.412	0.297
365	2.985	2.064	1.690	1.334	0.871	0.687	0.637	0.545	0.420	0.303

Thickness is intumescent only. Results also apply to I/H-section beams exposed on all four sides limited to a maximum protection thickness of 2.486mm.

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CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

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	620°C	650°C	700°C	750°C
30	0.551	0.406	0.300	0.214	0.194	0.194	0.194	0.194	0.194	0.194
35	0.574	0.430	0.325	0.237	0.211	0.194	0.194	0.194	0.194	0.194
40	0.597	0.454	0.350	0.261	0.229	0.203	0.194	0.194	0.194	0.194
45	0.620	0.479	0.375	0.285	0.247	0.216	0.206	0.194	0.194	0.194
50	0.642	0.503	0.400	0.308	0.266	0.230	0.218	0.196	0.194	0.194
55	0.665	0.527	0.426	0.332	0.284	0.243	0.229	0.206	0.194	0.194
60	0.688	0.552	0.451	0.355	0.303	0.257	0.241	0.216	0.194	0.194
65	0.710	0.576	0.476	0.379	0.321	0.271	0.253	0.226	0.194	0.194
70	0.733	0.600	0.501	0.402	0.339	0.284	0.265	0.236	0.194	0.194
75	0.756	0.624	0.526	0.426	0.358	0.298	0.277	0.246	0.194	0.194
80	1.097	0.649	0.551	0.450	0.376	0.311	0.289	0.256	0.194	0.194
85	1.443	0.673	0.577	0.473	0.395	0.325	0.300	0.265	0.194	0.194
90	1.790	0.697	0.602	0.497	0.413	0.338	0.312	0.275	0.201	0.194
95	2.120	0.722	0.627	0.520	0.432	0.352	0.324	0.285	0.210	0.194
100	2.147	0.746	0.652	0.544	0.450	0.366	0.336	0.295	0.219	0.194
105	2.173	0.789	0.677	0.567	0.468	0.379	0.348	0.305	0.229	0.194
110	2.200	0.846	0.703	0.591	0.487	0.393	0.360	0.315	0.238	0.194
115	2.226	0.903	0.728	0.614	0.505	0.406	0.371	0.325	0.247	0.194
120	2.252	0.960	0.753	0.638	0.524	0.420	0.383	0.335	0.256	0.194
125	2.279	1.017	0.785	0.662	0.542	0.433	0.395	0.344	0.266	0.194
130	2.305	1.074	0.817	0.685	0.560	0.447	0.407	0.354	0.275	0.194
135	2.332	1.130	0.850	0.709	0.579	0.460	0.419	0.364	0.284	0.194
140	2.358	1.187	0.883	0.732	0.597	0.474	0.431	0.374	0.293	0.194
145	2.385	1.244	0.915	0.756	0.616	0.488	0.442	0.384	0.303	0.194
150	2.411	1.301	0.948	0.785	0.634	0.501	0.454	0.394	0.312	0.194
155	2.437	1.358	0.981	0.814	0.652	0.515	0.466	0.404	0.321	0.194
160	2.464	1.415	1.013	0.844	0.671	0.528	0.478	0.414	0.330	0.194
165	2.490	1.472	1.046	0.873	0.689	0.542	0.490	0.423	0.340	0.194
170	2.517	1.529	1.079	0.902	0.708	0.555	0.502	0.433	0.349	0.194
175	2.543	1.585	1.111	0.932	0.726	0.569	0.513	0.443	0.358	0.194
180	2.569	1.642	1.144	0.961	0.745	0.582	0.525	0.453	0.368	0.194
185	2.596	1.699	1.177	0.990	0.766	0.596	0.537	0.463	0.377	0.194
190	2.622	1.756	1.209	1.019	0.794	0.610	0.549	0.473	0.386	0.194
195	2.649	1.813	1.242	1.049	0.821	0.623	0.561	0.483	0.395	0.200
200	2.675	1.870	1.274	1.078	0.849	0.637	0.573	0.492	0.405	0.211
205	2.702	1.927	1.307	1.107	0.876	0.650	0.584	0.502	0.414	0.221
210	2.728	1.983	1.340	1.137	0.903	0.664	0.596	0.512	0.423	0.231
215	2.754	2.040	1.372	1.166	0.931	0.677	0.608	0.522	0.432	0.241
220	2.781	2.097	1.405	1.195	0.958	0.691	0.620	0.532	0.442	0.251
225	2.807	2.148	1.438	1.224	0.985	0.704	0.632	0.542	0.451	0.261
230	2.834	2.195	1.470	1.254	1.013	0.718	0.644	0.552	0.460	0.272
235	2.860	2.241	1.503	1.283	1.040	0.732	0.655	0.562	0.469	0.282
240	2.886	2.288	1.536	1.312	1.067	0.745	0.667	0.571	0.479	0.292
245	2.913	2.335	1.568	1.342	1.095	0.768	0.679	0.581	0.488	0.302
250	2.939	2.382	1.601	1.371	1.122	0.826	0.691	0.591	0.497	0.312
255	2.966	2.429	1.633	1.400	1.150	0.885	0.703	0.601	0.506	0.322
260	2.992	2.476	1.666	1.429	1.177	0.944	0.715	0.611	0.516	0.332
265	3.018	2.522	1.699	1.459	1.204	1.003	0.726	0.621	0.525	0.343
270	3.045	2.569	1.731	1.488	1.232	1.061	0.738	0.631	0.534	0.353
275	3.071	2.616	1.764	1.517	1.259	1.120	0.750	0.640	0.543	0.363
280	3.098	2.663	1.797	1.547	1.286	1.179	0.788	0.650	0.553	0.373
285	3.124	2.710	1.829	1.576	1.314	1.238	0.853	0.660	0.562	0.383
290	3.151	2.757	1.862	1.605	1.341	1.296	0.917	0.670	0.571	0.393
295	3.177	2.803	1.895	1.634	1.369	1.355	0.981	0.680	0.580	0.403
300	3.203	2.850	1.927	1.664	1.414	1.414	1.046	0.690	0.590	0.414
305	3.230	2.897	1.960	1.693	1.473	1.473	1.110	0.700	0.599	0.424
310	3.256	2.944	1.993	1.722	1.531	1.531	1.174	0.710	0.608	0.434
315	3.283	2.991	2.025	1.752	1.590	1.590	1.238	0.719	0.617	0.444
320	3.309	3.037	2.058	1.781	1.649	1.649	1.303	0.729	0.627	0.454
325	3.335	3.084	2.090	1.810	1.708	1.708	1.367	0.739	0.636	0.464
330	3.362	3.131	2.135	1.839	1.767	1.767	1.431	0.749	0.645	0.474
335	3.388	3.178	2.259	1.869	1.825	1.825	1.495	0.775	0.654	0.485
340	3.415	3.225	2.383	1.898	1.884	1.884	1.560	0.840	0.664	0.495
345	3.441	3.272	2.507	1.943	1.943	1.943	1.624	0.904	0.673	0.505
350	3.468	3.318	2.632	2.002	2.002	2.002	1.688	0.969	0.682	0.515
355	3.494	3.365	2.756	2.060	2.060	2.060	1.752	1.033	0.691	0.525
360	3.520	3.412	2.880	2.119	2.119	2.119	1.817	1.098	0.701	0.535
365	3.547	3.459	3.005	2.178	2.178	2.178	1.881	1.163	0.710	0.546

Thickness is intumescent only. Results also apply to I/H-section beams exposed on all four sides limited to a maximum protection thickness of 2.486mm.

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CERTIFICATE No CF 5351 AL JAZEERA FACTORY FOR PAINTS CO.

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	620°C	650°C	700°C	750°C
30	0.782	0.606	0.471	0.366	0.285	0.211	0.200	0.194	0.194	0.194
35	0.982	0.622	0.496	0.393	0.311	0.234	0.221	0.206	0.194	0.194
40	1.182	0.638	0.520	0.421	0.337	0.257	0.242	0.223	0.203	0.194
45	1.382	0.654	0.545	0.448	0.363	0.279	0.262	0.240	0.216	0.194
50	1.582	0.670	0.570	0.476	0.389	0.302	0.283	0.257	0.228	0.194
55	1.782	0.686	0.594	0.503	0.415	0.325	0.304	0.274	0.240	0.198
60	1.982	0.702	0.619	0.531	0.441	0.348	0.324	0.291	0.253	0.207
65	2.142	0.718	0.644	0.558	0.467	0.371	0.345	0.308	0.265	0.217
70	2.216	0.734	0.668	0.585	0.493	0.393	0.365	0.326	0.277	0.226
75	2.289	0.750	0.693	0.613	0.518	0.416	0.386	0.343	0.290	0.236
80	2.362	0.888	0.718	0.640	0.544	0.439	0.407	0.360	0.302	0.245
85	2.435	1.099	0.742	0.668	0.570	0.462	0.427	0.377	0.315	0.255
90	2.509	1.311	0.785	0.695	0.596	0.485	0.448	0.394	0.327	0.264
95	2.582	1.522	0.850	0.723	0.622	0.507	0.468	0.411	0.339	0.274
100	2.655	1.734	0.916	0.750	0.648	0.530	0.489	0.428	0.352	0.283
105	2.728	1.945	0.981	0.784	0.674	0.553	0.510	0.445	0.364	0.292
110	2.802	2.128	1.046	0.821	0.700	0.576	0.530	0.462	0.377	0.302
115	2.875	2.178	1.111	0.857	0.726	0.599	0.551	0.479	0.389	0.311
120	2.948	2.228	1.176	0.893	0.752	0.621	0.571	0.496	0.401	0.321
125	3.022	2.278	1.241	0.929	0.782	0.644	0.592	0.513	0.414	0.330
130	3.095	2.328	1.307	0.966	0.813	0.667	0.613	0.530	0.426	0.340
135	3.168	2.378	1.372	1.002	0.844	0.690	0.633	0.547	0.438	0.349
140	3.241	2.428	1.437	1.038	0.875	0.713	0.654	0.564	0.451	0.359
145	3.315	2.478	1.502	1.074	0.906	0.735	0.674	0.581	0.463	0.368
150	3.388	2.528	1.567	1.111	0.937	0.762	0.695	0.598	0.476	0.378
155	3.461	2.578	1.633	1.147	0.968	0.823	0.716	0.615	0.488	0.387
160	3.534	2.628	1.698	1.183	0.999	0.883	0.736	0.632	0.500	0.397
165	3.608	2.678	1.763	1.220	1.030	0.944	0.759	0.649	0.513	0.406
170	3.681	2.728	1.828	1.256	1.061	1.004	0.821	0.666	0.525	0.416
175	3.754	2.778	1.893	1.292	1.092	1.065	0.883	0.683	0.537	0.425
180	-	2.829	1.958	1.328	1.125	1.125	0.945	0.700	0.550	0.435
185	-	2.879	2.024	1.365	1.186	1.186	1.007	0.717	0.562	0.444
190	-	2.929	2.089	1.401	1.246	1.246	1.069	0.734	0.575	0.454
195	-	2.979	2.153	1.437	1.307	1.307	1.131	0.751	0.587	0.463
200	-	3.029	2.218	1.474	1.367	1.367	1.193	0.799	0.599	0.473
205	-	3.079	2.282	1.510	1.428	1.428	1.255	0.858	0.612	0.482
210	-	3.129	2.346	1.546	1.488	1.488	1.317	0.918	0.624	0.492
215	-	3.179	2.411	1.582	1.549	1.549	1.379	0.978	0.637	0.501
220	-	3.229	2.475	1.619	1.609	1.609	1.441	1.037	0.649	0.511
225	-	3.279	2.539	1.670	1.670	1.670	1.503	1.097	0.661	0.520
230	-	3.329	2.604	1.730	1.730	1.730	1.565	1.156	0.674	0.530
235	-	3.379	2.668	1.791	1.791	1.791	1.627	1.216	0.686	0.539
240	-	3.429	2.732	1.851	1.851	1.851	1.689	1.276	0.698	0.549
245	-	3.479	2.796	1.912	1.912	1.912	1.751	1.335	0.711	0.558
250	-	3.529	2.861	1.972	1.972	1.972	1.813	1.395	0.723	0.568
255	-	3.579	2.925	2.033	2.033	2.033	1.875	1.454	0.736	0.577
260	-	3.629	2.989	2.093	2.093	2.093	1.937	1.514	0.748	0.587
265	-	3.679	3.054	2.154	2.154	2.154	1.999	1.574	0.778	0.596
270	-	3.729	3.118	2.214	2.214	2.214	2.061	1.633	0.841	0.606
275	-	3.779	3.182	2.275	2.275	2.275	2.123	1.693	0.904	0.615
280	-	-	3.246	2.335	2.335	2.335	2.186	1.752	0.966	0.624
285	-	-	3.311	2.396	2.396	2.396	2.248	1.812	1.029	0.634
290	-	-	3.375	2.456	2.456	2.456	2.310	1.872	1.092	0.643
295	-	-	3.439	2.517	2.517	2.517	2.372	1.931	1.155	0.653
300	-	-	3.504	2.577	2.577	2.577	2.434	1.991	1.217	0.662
305	-	-	3.568	2.638	2.638	2.638	2.496	2.050	1.280	0.672
310	-	-	3.632	2.698	2.698	2.698	2.558	2.110	1.343	0.681
315	-	-	3.697	3.145	2.759	2.759	2.620	2.169	1.405	0.691
320	-	-	3.761	3.342	2.819	2.819	2.682	2.229	1.468	0.700
325	-	-	-	3.539	2.880	2.880	2.744	2.289	1.531	0.710
330	-	-	-	3.736	2.940	2.940	2.806	2.348	1.594	0.719
335	-	-	-	-	3.001	3.001	2.868	2.408	1.656	0.729
340	-	-	-	-	3.061	3.061	2.930	2.467	1.719	0.738
345	-	-	-	-	3.122	3.122	2.992	2.527	1.782	0.748
350	-	-	-	-	-	3.182	3.054	2.587	1.845	0.766
355	-	-	-	-	-	3.243	3.116	2.646	1.907	0.837
360	-	-	-	-	-	3.303	3.178	2.706	1.970	0.909
365	-	-	-	-	-	3.364	3.240	2.765	2.033	0.981

Thickness is intumescent only. Results also apply to I/H-section beams exposed on all four sides limited to a maximum protection thickness of 2.486mm.

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CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

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	620°C	650°C	700°C	750°C
30	1.242	0.825	0.646	0.520	0.422	0.329	0.290	0.235	0.197	0.194
35	1.495	0.982	0.660	0.545	0.450	0.356	0.317	0.259	0.217	0.199
40	1.747	1.140	0.674	0.569	0.477	0.384	0.343	0.283	0.236	0.213
45	2.000	1.298	0.688	0.594	0.505	0.411	0.370	0.308	0.256	0.228
50	2.173	1.455	0.702	0.619	0.533	0.439	0.397	0.332	0.275	0.243
55	2.275	1.613	0.717	0.644	0.561	0.466	0.424	0.356	0.295	0.258
60	2.377	1.771	0.731	0.669	0.588	0.494	0.450	0.380	0.314	0.272
65	2.479	1.928	0.745	0.694	0.616	0.521	0.477	0.405	0.334	0.287
70	2.581	2.086	0.794	0.718	0.644	0.549	0.504	0.429	0.353	0.302
75	2.683	2.181	0.981	0.743	0.672	0.576	0.531	0.453	0.373	0.316
80	2.785	2.259	1.168	0.792	0.699	0.604	0.557	0.478	0.392	0.331
85	2.887	2.338	1.355	0.867	0.727	0.631	0.584	0.502	0.412	0.346
90	2.989	2.416	1.542	0.942	0.755	0.658	0.611	0.526	0.431	0.361
95	3.091	2.495	1.729	1.017	0.799	0.686	0.637	0.550	0.451	0.375
100	3.193	2.573	1.916	1.092	0.843	0.713	0.664	0.575	0.470	0.390
105	3.295	2.652	2.102	1.167	0.887	0.741	0.691	0.599	0.490	0.405
110	3.398	2.730	2.197	1.242	0.932	0.771	0.718	0.623	0.509	0.419
115	3.500	2.809	2.283	1.317	0.976	0.803	0.744	0.648	0.529	0.434
120	3.602	2.887	2.369	1.392	1.020	0.836	0.774	0.672	0.548	0.449
125	3.704	2.965	2.455	1.467	1.065	0.869	0.806	0.696	0.568	0.464
130	-	3.044	2.541	1.542	1.109	0.902	0.838	0.720	0.587	0.478
135	-	3.122	2.627	1.617	1.153	0.935	0.870	0.745	0.607	0.493
140	-	3.201	2.713	1.692	1.198	0.968	0.902	0.773	0.626	0.508
145	-	3.279	2.798	1.767	1.242	1.000	0.934	0.804	0.646	0.522
150	-	3.358	2.884	1.842	1.286	1.033	0.966	0.836	0.665	0.537
155	-	3.436	2.970	1.917	1.331	1.066	0.998	0.868	0.685	0.552
160	-	3.515	3.056	1.992	1.375	1.099	1.030	0.899	0.704	0.567
165	-	3.593	3.142	2.067	1.419	1.132	1.062	0.931	0.724	0.581
170	-	3.672	3.228	2.170	1.464	1.165	1.095	0.963	0.743	0.596
175	-	3.750	3.314	2.340	1.508	1.197	1.127	0.994	0.767	0.611
180	-	-	3.400	2.509	1.552	1.230	1.159	1.026	0.797	0.625
185	-	-	3.485	2.678	1.597	1.263	1.191	1.057	0.828	0.640
190	-	-	3.571	2.848	1.641	1.296	1.223	1.089	0.858	0.655
195	-	-	3.657	3.017	1.685	1.329	1.255	1.121	0.888	0.670
200	-	-	3.743	3.186	1.730	1.361	1.287	1.152	0.919	0.684
205	-	-	-	3.356	1.774	1.394	1.319	1.184	0.949	0.699
210	-	-	-	3.525	1.818	1.427	1.351	1.215	0.979	0.714
215	-	-	-	3.694	1.863	1.460	1.383	1.247	1.010	0.729
220	-	-	-	-	1.907	1.493	1.415	1.279	1.040	0.743
225	-	-	-	-	1.951	1.526	1.447	1.310	1.071	0.760
230	-	-	-	-	1.996	1.558	1.479	1.342	1.101	0.789
235	-	-	-	-	2.040	1.591	1.511	1.373	1.131	0.819
240	-	-	-	-	2.084	1.624	1.543	1.405	1.162	0.848
245	-	-	-	-	-	1.657	1.575	1.437	1.192	0.878
250	-	-	-	-	-	1.690	1.608	1.468	1.222	0.907
255	-	-	-	-	-	1.723	1.640	1.500	1.253	0.936
260	-	-	-	-	-	1.755	1.672	1.532	1.283	0.966
265	-	-	-	-	-	1.788	1.704	1.563	1.314	0.995
270	-	-	-	-	-	1.821	1.736	1.595	1.344	1.025
275	-	-	-	-	-	1.854	1.768	1.626	1.374	1.054
280	-	-	-	-	-	1.887	1.800	1.658	1.405	1.083
285	-	-	-	-	-	-	1.832	1.690	1.435	1.113
290	-	-	-	-	-	-	1.864	1.721	1.465	1.142
295	-	-	-	-	-	-	1.896	1.753	1.496	1.172
300	-	-	-	-	-	-	1.928	1.784	1.526	1.201
305	-	-	-	-	-	-	1.960	1.816	1.557	1.230
310	-	-	-	-	-	-	-	1.848	1.587	1.260
315	-	-	-	-	-	-	-	1.879	1.617	1.289
320	-	-	-	-	-	-	-	1.911	1.648	1.319
325	-	-	-	-	-	-	-	1.942	1.678	1.348
330	-	-	-	-	-	-	-	1.974	1.708	1.377
335	-	-	-	-	-	-	-	2.006	1.739	1.407
340	-	-	-	-	-	-	-	3.787	1.769	1.436
345	-	-	-	-	-	-	-	-	1.800	1.466
350	-	-	-	-	-	-	-	-	1.830	1.495
355	-	-	-	-	-	-	-	-	1.860	1.524
360	-	-	-	-	-	-	-	-	1.891	1.554
365	-	-	-	-	-	-	-	-	1.921	1.583

Thickness is intumescent only. Results also apply to I/H-section beams exposed on all four sides limited to a maximum protection thickness of 2.486mm.

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CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

Table 13: 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	620°C	650°C	700°C	750°C
30	2.174	1.643	1.242	0.900	0.700	0.581	0.532	0.458	0.356	0.286
35	2.322	1.892	1.416	1.042	0.710	0.603	0.557	0.485	0.383	0.312
40	2.469	2.130	1.589	1.183	0.719	0.625	0.582	0.512	0.411	0.338
45	2.616	2.254	1.763	1.325	0.728	0.648	0.608	0.538	0.438	0.364
50	2.763	2.377	1.936	1.467	0.738	0.670	0.633	0.565	0.466	0.390
55	2.911	2.501	2.109	1.608	0.747	0.693	0.658	0.592	0.493	0.416
60	3.058	2.624	2.235	1.750	0.762	0.715	0.684	0.618	0.521	0.442
65	3.205	2.748	2.359	1.891	0.937	0.737	0.709	0.645	0.548	0.468
70	3.352	2.872	2.482	2.033	1.112	0.784	0.734	0.672	0.576	0.494
75	3.499	2.995	2.605	2.170	1.287	0.950	0.780	0.699	0.603	0.520
80	3.647	3.119	2.729	2.300	1.461	1.116	0.947	0.725	0.630	0.546
85	3.794	3.242	2.852	2.431	1.636	1.282	1.114	0.752	0.658	0.572
90	-	3.366	2.975	2.562	1.811	1.449	1.282	0.889	0.685	0.598
95	-	3.490	3.098	2.692	1.986	1.615	1.449	1.045	0.713	0.624
100	-	3.613	3.222	2.823	2.160	1.781	1.616	1.201	0.740	0.650
105	-	3.737	3.345	2.953	2.329	1.948	1.784	1.357	0.819	0.676
110	-	-	3.468	3.084	2.498	2.114	1.951	1.513	0.966	0.702
115	-	-	3.591	3.214	2.667	2.280	2.118	1.670	1.113	0.727
120	-	-	3.715	3.345	2.837	2.446	2.286	1.826	1.259	0.753
125	-	-	-	3.475	3.006	2.613	2.453	1.982	1.406	0.831
130	-	-	-	3.606	3.175	2.779	2.620	2.138	1.553	0.914
135	-	-	-	3.736	3.344	2.945	2.787	2.294	1.700	0.998
140	-	-	-	-	3.514	3.112	2.955	2.451	1.847	1.081
145	-	-	-	-	3.683	3.278	3.122	2.607	1.994	1.165
150	-	-	-	-	-	3.444	3.289	2.763	2.140	1.248
155	-	-	-	-	-	3.610	3.457	2.919	2.287	1.331
160	-	-	-	-	-	3.777	3.624	3.075	2.434	1.415
165	-	-	-	-	-	-	3.791	3.232	2.581	1.498
170	-	-	-	-	-	-	-	3.388	2.728	1.581
175	-	-	-	-	-	-	-	3.544	2.875	1.665
180	-	-	-	-	-	-	-	3.700	3.021	1.748
185	-	-	-	-	-	-	-	-	3.168	1.831
190	-	-	-	-	-	-	-	-	3.315	1.915
195	-	-	-	-	-	-	-	-	3.462	1.998
200	-	-	-	-	-	-	-	-	3.609	2.081
205	-	-	-	-	-	-	-	-	3.756	2.165
210	-	-	-	-	-	-	-	-	-	2.248
215	-	-	-	-	-	-	-	-	-	2.331
220	-	-	-	-	-	-	-	-	-	2.415
225	-	-	-	-	-	-	-	-	-	2.498
230	-	-	-	-	-	-	-	-	-	2.581
235	-	-	-	-	-	-	-	-	-	2.665
240	-	-	-	-	-	-	-	-	-	2.748
245	-	-	-	-	-	-	-	-	-	2.831
250	-	-	-	-	-	-	-	-	-	2.915
255	-	-	-	-	-	-	-	-	-	2.998
260	-	-	-	-	-	-	-	-	-	3.082
265	-	-	-	-	-	-	-	-	-	3.165
270	-	-	-	-	-	-	-	-	-	3.248
275	-	-	-	-	-	-	-	-	-	3.332
280	-	-	-	-	-	-	-	-	-	3.415
285	-	-	-	-	-	-	-	-	-	3.498
290	-	-	-	-	-	-	-	-	-	3.582
295	-	-	-	-	-	-	-	-	-	3.665
300	-	-	-	-	-	-	-	-	-	3.748
305	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only. Results also apply to I/H-section beams exposed on all four sides limited to a maximum protection thickness of 2.486mm.

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CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

Table 14: I/H-Column Sections 150 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	700°C	750°C
30	2.718	2.361	1.992	1.618	1.265	0.928	0.782	0.687	0.566	0.480
35	2.864	2.508	2.260	1.790	1.415	1.068	0.917	0.698	0.588	0.507
40	3.009	2.655	2.340	1.963	1.566	1.208	1.052	0.708	0.610	0.533
45	3.155	2.802	2.486	2.134	1.717	1.348	1.187	0.719	0.632	0.559
50	3.301	2.948	2.631	2.284	1.867	1.488	1.321	0.730	0.654	0.586
55	3.446	3.095	2.776	2.433	2.018	1.628	1.456	0.740	0.676	0.612
60	3.592	3.242	2.921	2.583	2.172	1.768	1.591	0.751	0.698	0.638
65	3.738	3.389	3.066	2.733	2.333	1.908	1.726	0.874	0.720	0.665
70	-	3.536	3.211	2.883	2.495	2.049	1.860	1.097	0.742	0.691
75	-	3.683	3.356	3.033	2.657	2.211	1.995	1.319	0.802	0.717
80	-	-	3.501	3.183	2.818	2.395	2.136	1.542	0.926	0.744
85	-	-	3.646	3.333	2.980	2.579	2.341	1.764	1.050	0.865
90	-	-	3.791	3.483	3.142	2.763	2.546	1.986	1.174	1.071
95	-	-	-	3.633	3.303	2.947	2.752	2.214	1.298	1.278
100	-	-	-	3.783	3.465	3.131	2.957	2.449	1.485	1.485
105	-	-	-	-	3.626	3.315	3.162	2.684	1.691	1.691
110	-	-	-	-	3.788	3.499	3.367	2.919	1.898	1.898
115	-	-	-	-	-	3.684	3.573	3.154	2.104	2.104
120	-	-	-	-	-	-	3.778	3.389	2.311	2.311
125	-	-	-	-	-	-	-	3.624	2.517	2.517
130	-	-	-	-	-	-	-	-	3.004	2.724
135	-	-	-	-	-	-	-	-	-	2.931
140	-	-	-	-	-	-	-	-	-	3.137
145	-	-	-	-	-	-	-	-	-	3.344
150	-	-	-	-	-	-	-	-	-	3.550
155	-	-	-	-	-	-	-	-	-	3.757
160	-	-	-	-	-	-	-	-	-	-
165	-	-	-	-	-	-	-	-	-	-
170	-	-	-	-	-	-	-	-	-	-
175	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-
185	-	-	-	-	-	-	-	-	-	-
190	-	-	-	-	-	-	-	-	-	-
195	-	-	-	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-	-	-	-
205	-	-	-	-	-	-	-	-	-	-
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. Results also apply to I/H-section beams exposed on all four sides limited to a maximum protection thickness of 2.486mm.

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AL JAZEERA FACTORY FOR PAINTS CO.

Table 15: I/H-Column Sections 180 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	700°C	750°C
30	-	2.802	2.508	2.241	1.933	1.581	1.413	1.154	0.781	0.680
35	-	2.943	2.658	2.393	2.130	1.721	1.568	1.319	0.934	0.691
40	-	3.084	2.809	2.546	2.282	1.861	1.723	1.484	1.086	0.703
45	-	3.226	2.959	2.698	2.435	2.002	1.878	1.649	1.238	0.715
50	-	3.367	3.110	2.851	2.588	2.149	2.033	1.814	1.390	0.727
55	-	3.509	3.260	3.003	2.741	2.333	2.203	1.979	1.542	0.738
60	-	3.650	3.411	3.155	2.894	2.516	2.390	2.148	1.694	0.750
65	-	3.792	3.561	3.308	3.047	2.700	2.577	2.336	1.846	0.850
70	-	-	3.712	3.460	3.199	2.883	2.764	2.524	1.999	1.044
75	-	-	-	3.613	3.352	3.067	2.951	2.712	2.170	1.238
80	-	-	-	3.765	3.505	3.250	3.138	2.900	2.413	1.432
85	-	-	-	-	3.658	3.434	3.325	3.088	2.656	1.626
90	-	-	-	-	-	3.617	3.512	3.276	2.899	1.820
95	-	-	-	-	-	-	3.699	3.463	3.143	2.014
100	-	-	-	-	-	-	-	3.651	3.386	2.397
105	-	-	-	-	-	-	-	-	3.629	3.002
110	-	-	-	-	-	-	-	-	-	3.607
115	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-
125	-	-	-	-	-	-	-	-	-	-
130	-	-	-	-	-	-	-	-	-	-
135	-	-	-	-	-	-	-	-	-	-
140	-	-	-	-	-	-	-	-	-	-
145	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-
155	-	-	-	-	-	-	-	-	-	-
160	-	-	-	-	-	-	-	-	-	-
165	-	-	-	-	-	-	-	-	-	-
170	-	-	-	-	-	-	-	-	-	-
175	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-
185	-	-	-	-	-	-	-	-	-	-
190	-	-	-	-	-	-	-	-	-	-
195	-	-	-	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-	-	-	-
205	-	-	-	-	-	-	-	-	-	-
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. Results also apply to I/H-section beams exposed on all four sides limited to a maximum protection thickness of 2.486mm.

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Table 16: I/H-Column Sections 240 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	700°C	750°C
30	-	-	-	-	2.701	2.490	2.396	2.258	1.949	1.656
35	-	-	-	-	2.850	2.647	2.558	2.423	2.172	1.808
40	-	-	-	-	2.999	2.803	2.719	2.588	2.356	1.960
45	-	-	-	-	3.148	2.960	2.880	2.753	2.540	2.112
50	-	-	-	-	3.297	3.117	3.041	2.918	2.725	2.346
55	-	-	-	-	3.446	3.274	3.203	3.082	2.909	2.585
60	-	-	-	-	3.595	3.431	3.364	3.247	3.093	2.823
65	-	-	-	-	3.744	3.588	3.525	3.412	3.277	3.061
70	-	-	-	-	-	3.744	3.686	3.577	3.461	3.300
75	-	-	-	-	-	-	-	3.742	3.645	3.538
80	-	-	-	-	-	-	-	-	-	3.776
85	-	-	-	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-	-	-	-
95	-	-	-	-	-	-	-	-	-	-
100	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-
110	-	-	-	-	-	-	-	-	-	-
115	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-
125	-	-	-	-	-	-	-	-	-	-
130	-	-	-	-	-	-	-	-	-	-
135	-	-	-	-	-	-	-	-	-	-
140	-	-	-	-	-	-	-	-	-	-
145	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-
155	-	-	-	-	-	-	-	-	-	-
160	-	-	-	-	-	-	-	-	-	-
165	-	-	-	-	-	-	-	-	-	-
170	-	-	-	-	-	-	-	-	-	-
175	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-
185	-	-	-	-	-	-	-	-	-	-
190	-	-	-	-	-	-	-	-	-	-
195	-	-	-	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-	-	-	-
205	-	-	-	-	-	-	-	-	-	-
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. Results also apply to I/H-section beams exposed on all four sides limited to a maximum protection thickness of 2.486mm.

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AL JAZEERA FACTORY FOR PAINTS CO.

Table 17: Circular and Rectangular/Square Hollow Columns: 30 Minutes										
Section Factor up to m ⁻¹	Thickness (mm) Required for a Design Temperature of									
	350	400	450	500	520	550	600	650	700	750
50	430	430	430	430	430	430	430	430	430	430
55	430	430	430	430	430	430	430	430	430	430
60	430	430	430	430	430	430	430	430	430	430
65	430	430	430	430	430	430	430	430	430	430
70	449	430	430	430	430	430	430	430	430	430
75	482	430	430	430	430	430	430	430	430	430
80	515	430	430	430	430	430	430	430	430	430
85	549	430	430	430	430	430	430	430	430	430
90	582	447	430	430	430	430	430	430	430	430
95	615	481	430	430	430	430	430	430	430	430
100	648	514	430	430	430	430	430	430	430	430
105	681	548	430	430	430	430	430	430	430	430
110	714	581	430	430	430	430	430	430	430	430
115	747	614	430	430	430	430	430	430	430	430
120	780	648	430	430	430	430	430	430	430	430
125	813	681	430	430	430	430	430	430	430	430
130	846	715	430	430	430	430	430	430	430	430
135	879	748	430	430	430	430	430	430	430	430
140	912	782	430	430	430	430	430	430	430	430
145	945	815	430	430	430	430	430	430	430	430
150	978	848	430	430	430	430	430	430	430	430
155	1011	882	430	430	430	430	430	430	430	430
160	1044	915	430	430	430	430	430	430	430	430
165	1077	949	430	430	430	430	430	430	430	430
170	1110	982	430	430	430	430	430	430	430	430
175	1143	1016	430	430	430	430	430	430	430	430
180	1177	1049	430	430	430	430	430	430	430	430
185	1210	1082	430	430	430	430	430	430	430	430
190	1243	1116	430	430	430	430	430	430	430	430
195	1276	1149	430	430	430	430	430	430	430	430
200	1309	1183	430	430	430	430	430	430	430	430
205	1342	1216	430	430	430	430	430	430	430	430
210	1375	1250	430	430	430	430	430	430	430	430
215	1408	1283	430	430	430	430	430	430	430	430
220	1441	1316	430	430	430	430	430	430	430	430
225	1474	1350	430	430	430	430	430	430	430	430
230	1507	1383	430	430	430	430	430	430	430	430
235	1540	1417	430	430	430	430	430	430	430	430
240	1573	1450	430	430	430	430	430	430	430	430
245	1606	1483	430	430	430	430	430	430	430	430
250	1639	1517	430	430	430	430	430	430	430	430
255	1672	1550	430	430	430	430	430	430	430	430
260	1705	1584	430	430	430	430	430	430	430	430
265	1738	1617	430	430	430	430	430	430	430	430
270	1771	1651	430	430	430	430	430	430	430	430
275	1804	1684	430	430	430	430	430	430	430	430
280	1838	1717	430	430	430	430	430	430	430	430
285	1871	1751	430	430	430	430	430	430	430	430
290	1904	1784	430	430	430	430	430	430	430	430
295	1937	1818	430	430	430	430	430	430	430	430
300	1970	1851	467	430	430	430	430	430	430	430
305	2003	1885	639	430	430	430	430	430	430	430
310	2036	1918	811	430	430	430	430	430	430	430
315	2069	1951	983	430	430	430	430	430	430	430
320	2703	1985	1156	430	430	430	430	430	430	430
325	3400	2018	1328	430	430	430	430	430	430	430
330	-	2052	1500	430	430	430	430	430	430	430
335	-	2653	1672	430	430	430	430	430	430	430
340	-	-	1844	430	430	430	430	430	430	430
345	-	-	2016	430	430	430	430	430	430	430
350	-	-	2188	430	430	430	430	430	430	430
355	-	-	-	430	430	430	430	430	430	430
360	-	-	-	430	430	430	430	430	430	430
365	-	-	-	-	-	-	430	430	430	430
370	-	-	-	-	-	-	430	430	430	430
375	-	-	-	-	-	-	430	430	430	430
380	-	-	-	-	-	-	430	430	430	430
385	-	-	-	-	-	-	430	430	430	430
390	-	-	-	-	-	-	-	430	430	430
395	-	-	-	-	-	-	-	430	430	430
400	-	-	-	-	-	-	-	430	430	430
405	-	-	-	-	-	-	-	430	430	430
410	-	-	-	-	-	-	-	430	430	430
415	-	-	-	-	-	-	-	430	430	430
420	-	-	-	-	-	-	-	-	430	430
425	-	-	-	-	-	-	-	-	430	430
430	-	-	-	-	-	-	-	-	430	430
435	-	-	-	-	-	-	-	-	430	430
440	-	-	-	-	-	-	-	-	430	430
445	-	-	-	-	-	-	-	-	430	430
450	-	-	-	-	-	-	-	-	430	430
455	-	-	-	-	-	-	-	-	430	430
460	-	-	-	-	-	-	-	-	430	430
465	-	-	-	-	-	-	-	-	430	430

Thickness is intumescent only.



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Table 18: Circular and Rectangular/Square Hollow Columns: 45 Minutes										
Section Factor up to m ²	Thickness (mm) Required for a Design Temperature of									
	350	400	450	500	520	550	600	650	700	750
50	430	430	430	430	430	430	430	430	430	430
55	639	430	430	430	430	430	430	430	430	430
60	785	470	430	430	430	430	430	430	430	430
65	932	610	430	430	430	430	430	430	430	430
70	1079	751	446	430	430	430	430	430	430	430
75	1225	892	586	430	430	430	430	430	430	430
80	1372	1033	725	430	430	430	430	430	430	430
85	1518	1174	864	577	452	430	430	430	430	430
90	1665	1314	1004	725	605	430	430	430	430	430
95	1811	1455	1143	874	758	512	430	430	430	430
100	1958	1596	1283	1022	912	611	430	430	430	430
105	2104	1737	1422	1171	1065	711	430	430	430	430
110	2251	1878	1562	1319	1219	811	430	430	430	430
115	2397	2019	1701	1468	1372	911	451	430	430	430
120	2544	2159	1841	1616	1525	1010	577	430	430	430
125	2690	2300	1980	1765	1679	1110	703	430	430	430
130	2837	2441	2120	1913	1832	1210	829	430	430	430
135	2983	2582	2259	2062	1985	1310	955	430	430	430
140	3130	2723	2399	2210	2139	1409	1081	430	430	430
145	3276	2864	2538	2358	2292	1509	1207	430	430	430
150	3423	3004	2678	2507	2446	1609	1333	430	430	430
155	3570	3145	2817	2655	2599	1708	1459	430	430	430
160	3716	3286	2957	2804	2752	1808	1585	430	430	430
165	3863	3427	3096	2952	2906	1908	1711	430	430	430
170	-	3568	3236	3101	3059	2008	1837	430	430	430
175	-	3709	3375	3249	3212	2253	1963	689	430	430
180	-	3849	3515	3398	3366	2766	2177	1199	430	430
185	-	-	3654	3546	3519	3279	2937	1709	430	430
190	-	-	-	-	-	-	-	2898	430	430
195	-	-	-	-	-	-	-	-	430	430
200	-	-	-	-	-	-	-	-	-	430
205	-	-	-	-	-	-	-	-	-	430
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	-	-	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-
395	-	-	-	-	-	-	-	-	-	-
400	-	-	-	-	-	-	-	-	-	-
405	-	-	-	-	-	-	-	-	-	-
410	-	-	-	-	-	-	-	-	-	-
415	-	-	-	-	-	-	-	-	-	-
420	-	-	-	-	-	-	-	-	-	-
425	-	-	-	-	-	-	-	-	-	-
430	-	-	-	-	-	-	-	-	-	-
435	-	-	-	-	-	-	-	-	-	-
440	-	-	-	-	-	-	-	-	-	-
445	-	-	-	-	-	-	-	-	-	-
450	-	-	-	-	-	-	-	-	-	-
455	-	-	-	-	-	-	-	-	-	-
460	-	-	-	-	-	-	-	-	-	-
465	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only.



CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

Table 19: Circular and Rectangular/Square Hollow Columns: 60 Minutes										
Section Factor up to m ²	Thickness (mm) Required for a Design Temperature of									
	350	400	450	500	520	550	600	650	700	750
50	1510	959	430	430	430	430	430	430	430	430
55	1613	1302	686	430	430	430	430	430	430	430
60	1716	1645	1052	518	430	430	430	430	430	430
65	1987	1987	1419	915	697	430	430	430	430	430
70	2330	2330	1785	1313	1111	788	430	430	430	430
75	2672	2672	2152	1710	1524	1228	666	430	430	430
80	3015	3015	2519	2108	1938	1668	1155	515	430	430
85	3605	3357	2885	2505	2351	2108	1643	1059	430	430
90	3688	3606	3252	2903	2765	2548	2132	1603	840	430
95	3772	3688	3586	3300	3178	2988	2621	2147	1442	430
100	3855	3769	3668	3602	3580	3428	3109	2691	2045	430
105	3938	3851	3749	3683	3662	3632	3581	3235	2647	430
110	4022	3932	3830	3765	3744	3714	3664	3609	3250	1371
115	4105	4014	3912	3846	3825	3796	3747	3693	3617	2519
120	4189	4095	3993	3928	3907	3878	3830	3777	3703	3584
125	4272	4177	4074	4010	3989	3960	3913	3862	3789	3673
130	4355	4258	4156	4091	4071	4042	3997	3946	3875	3762
135	4439	4340	4237	4173	4152	4124	4080	4031	3961	3851
140	4522	4421	4318	4254	4234	4207	4163	4115	4048	3940
145	4605	4503	4400	4336	4316	4289	4246	4200	4134	4028
150	4689	4584	4481	4417	4398	4371	4329	4284	4220	4117
155	4772	4666	4562	4499	4479	4453	4412	4369	4306	4206
160	4856	4747	4644	4580	4561	4535	4496	4453	4393	4295
165	4939	4828	4725	4662	4643	4617	4579	4538	4479	4384
170	5022	4910	4806	4743	4725	4699	4662	4622	4565	4473
175	5106	4991	4888	4825	4806	4782	4745	4707	4651	4561
180	5189	5073	4969	4906	4888	4864	4828	4791	4737	4650
185	5272	5154	5050	4988	4970	4946	4912	4876	4824	4739
190	5356	5236	5132	5069	5052	5028	4995	4960	4910	4828
195	5439	5317	5213	5151	5133	5110	5078	5044	4996	4917
200	5523	5399	5294	5232	5215	5192	5161	5129	5082	5006
205	5606	5480	5376	5314	5297	5274	5244	5213	5169	5094
210	-	5562	5457	5396	5379	5357	5327	5298	5255	5183
215	-	-	5538	5477	5461	5439	5411	5382	5341	5272
220	-	-	5620	5559	5542	5521	5494	5467	5427	5361
225	-	-	-	5640	5624	5603	5577	5551	5513	5450
230	-	-	-	-	-	-	5660	5636	5600	5539
235	-	-	-	-	-	-	-	-	5686	5628
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	-	-	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-
395	-	-	-	-	-	-	-	-	-	-
400	-	-	-	-	-	-	-	-	-	-
405	-	-	-	-	-	-	-	-	-	-
410	-	-	-	-	-	-	-	-	-	-
415	-	-	-	-	-	-	-	-	-	-
420	-	-	-	-	-	-	-	-	-	-
425	-	-	-	-	-	-	-	-	-	-
430	-	-	-	-	-	-	-	-	-	-
435	-	-	-	-	-	-	-	-	-	-
440	-	-	-	-	-	-	-	-	-	-
445	-	-	-	-	-	-	-	-	-	-
450	-	-	-	-	-	-	-	-	-	-
455	-	-	-	-	-	-	-	-	-	-
460	-	-	-	-	-	-	-	-	-	-
465	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only.



CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

Table 20: Circular and Rectangular/Square Hollow Columns: 75 Minutes										
Section Factor up to m ¹	Thickness (mm) Required for a Design Temperature of									
	350	400	450	500	520	550	600	650	700	750
50	2715	2218	1739	810	592	430	430	430	430	430
55	3066	2647	2037	1311	1087	777	430	430	430	430
60	3416	3077	2555	1813	1583	1258	796	430	430	430
65	3628	3507	3101	2480	2085	1739	1265	1183	430	430
70	3723	3654	3589	3323	3113	2545	2157	2157	1212	430
75	3817	3747	3680	3640	3627	3607	3577	3131	2374	679
80	3911	3839	3771	3731	3718	3698	3684	3684	3537	2181
85	4006	3931	3881	3881	3881	3881	3881	3881	3777	3592
90	4100	4078	4078	4078	4078	4078	4078	4078	3983	3807
95	4274	4274	4274	4274	4274	4274	4274	4274	4189	4022
100	4471	4471	4471	4471	4471	4471	4471	4471	4396	4237
105	4668	4668	4668	4668	4668	4668	4668	4668	4602	4452
110	4865	4865	4865	4865	4865	4865	4865	4865	4808	4667
115	5062	5062	5062	5062	5062	5062	5062	5062	5015	4882
120	5259	5259	5259	5259	5259	5259	5259	5259	5221	5097
125	5456	5456	5456	5456	5456	5456	5456	5456	5427	5312
130	5652	5652	5652	5652	5652	5652	5652	5652	5634	5527
135	5849	5849	5849	5849	5849	5849	5849	5849	5840	5742
140	6046	6046	6046	6046	6046	6046	6046	6046	6046	5957
145	6253	6253	6253	6253	6253	6253	6253	6253	6253	6172
150	6459	6459	6459	6459	6459	6459	6459	6459	6459	6387
155	6665	6665	6665	6665	6665	6665	6665	6665	6665	6602
160	6872	6872	6872	6872	6872	6872	6872	6872	6872	6817
165	7078	7078	7078	7078	7078	7078	7078	7078	7078	7032
170	7227	7227	7227	7227	7227	7227	7227	7227	7285	7247
175	-	-	-	-	-	-	-	-	-	7461
180	-	-	-	-	-	-	-	-	-	-
185	-	-	-	-	-	-	-	-	-	-
190	-	-	-	-	-	-	-	-	-	-
195	-	-	-	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-	-	-	-
205	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-
395	-	-	-	-	-	-	-	-	-	-
400	-	-	-	-	-	-	-	-	-	-
405	-	-	-	-	-	-	-	-	-	-
410	-	-	-	-	-	-	-	-	-	-
415	-	-	-	-	-	-	-	-	-	-
420	-	-	-	-	-	-	-	-	-	-
425	-	-	-	-	-	-	-	-	-	-
430	-	-	-	-	-	-	-	-	-	-
435	-	-	-	-	-	-	-	-	-	-
440	-	-	-	-	-	-	-	-	-	-
445	-	-	-	-	-	-	-	-	-	-
450	-	-	-	-	-	-	-	-	-	-
455	-	-	-	-	-	-	-	-	-	-
460	-	-	-	-	-	-	-	-	-	-
465	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only.



CERTIFICATE No CF 5351

AL JAZEERA FACTORY FOR PAINTS CO.

Table 21: Circular and Rectangular/Square Hollow Columns: 90 Minutes										
Section Factor up to m ⁻¹	Thickness (mm) Required for a Design Temperature of									
	350	400	450	500	520	550	600	650	700	750
50	3584	3278	2923	2782	2594	2205	1227	498	430	430
55	3726	3693	3541	3355	3249	3026	2291	1392	731	430
60	3925	3925	3782	3707	3682	3646	3582	2815	2447	865
65	4156	4156	3999	3918	3892	3855	3855	3855	3712	3027
70	4388	4388	4222	4222	4222	4222	4222	4222	4107	3895
75	4620	4620	4590	4590	4590	4590	4590	4590	4501	4320
80	4957	4957	4957	4957	4957	4957	4957	4957	4896	4746
85	5325	5325	5325	5325	5325	5325	5325	5325	5290	5171
90	5692	5692	5692	5692	5692	5692	5692	5692	5685	5597
95	6080	6080	6080	6080	6080	6080	6080	6080	6080	6022
100	6474	6474	6474	6474	6474	6474	6474	6474	6474	6448
105	6869	6869	6869	6869	6869	6869	6869	6869	6869	6869
110	-	-	-	-	-	-	-	-	-	-
115	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-
125	-	-	-	-	-	-	-	-	-	-
130	-	-	-	-	-	-	-	-	-	-
135	-	-	-	-	-	-	-	-	-	-
140	-	-	-	-	-	-	-	-	-	-
145	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-
155	-	-	-	-	-	-	-	-	-	-
160	-	-	-	-	-	-	-	-	-	-
165	-	-	-	-	-	-	-	-	-	-
170	-	-	-	-	-	-	-	-	-	-
175	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-
185	-	-	-	-	-	-	-	-	-	-
190	-	-	-	-	-	-	-	-	-	-
195	-	-	-	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-	-	-	-
205	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-
395	-	-	-	-	-	-	-	-	-	-
400	-	-	-	-	-	-	-	-	-	-
405	-	-	-	-	-	-	-	-	-	-
410	-	-	-	-	-	-	-	-	-	-
415	-	-	-	-	-	-	-	-	-	-
420	-	-	-	-	-	-	-	-	-	-
425	-	-	-	-	-	-	-	-	-	-
430	-	-	-	-	-	-	-	-	-	-
435	-	-	-	-	-	-	-	-	-	-
440	-	-	-	-	-	-	-	-	-	-
445	-	-	-	-	-	-	-	-	-	-
450	-	-	-	-	-	-	-	-	-	-
455	-	-	-	-	-	-	-	-	-	-
460	-	-	-	-	-	-	-	-	-	-
465	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only.