CERTIFICATE OF APPROVAL
No CF 845

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

JOTUN A/S

Postboks 2021 3202 Sandefjord, Norway
Tel: 0047 334 5700
Website: http://www.jotun.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	TECHNICAL SCHEDULE
SteelMaster 120SB	TS15 INTUMESCENT COATINGS FOR STEELWORK

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

Paul Duggan
Certification Manager

Issued: 28th March 2011
Revised: 22nd May 2026
Valid to: 30th September 2030

This certificate is the property of Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

SteelMaster 120SB

1. This approval relates to the use of SteelMaster 120SB for the fire protection of I/H beams and columns, circular and rectangular/square hollow columns. The precise scope is given in the Tables, which show the total dry film thickness of SteelMaster 120SB (excluding any primer and topcoat) required to provide fire resistance periods in accordance with BS 476: Part 21: 1987. The scope includes periods of fire resistance of up to 120 minutes for I/H beams, I/H columns, circular and rectangular/square hollow columns.

2. This certification is provided to the client for their own purposes, and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

3. 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.

4. The data referring to three-sided fire exposure of beams relates to beams supporting concrete floor slabs. Separate consideration is required where this is not the case.

5. 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 suitably tested and evaluated surface preparations, primers and topcoats are available from Jotun A/S whose responsibility is to ensure that the SteelMaster 120SB system is compatible for use in respect of both ambient and fire conditions. The nominal dry film thickness of primer and topcoat should be applied at a nominal thickness tested, unless stated otherwise in this certificate.

6. The data shown is applicable to SteelMaster 120SB applied to horizontal, vertical, flexural and compression members supporting loads up to the maximum design loads specified in EN 1993-1-1.

7. Results from the analysis of I/H sections are directly applicable to angles, channels and T-sections for the same section factor.

8. The approval relates to ongoing production. The product and/or its immediate packaging shall be identified with the manufacturer's name, the product name or number, the CERTIFIRE name or name and mark, together with the CERTIFIRE certificate number and application where appropriate.

9. The data shown in the tables is based on an assessment that complies with the criteria for acceptability incorporated within the CERTIFIRE scheme.

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10. For section factors below the extended minimum given in the Tables of Results, the same coating thickness as that applied to the extended minimum section factor shall be applied.

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CERTIFICATE No CF 845
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I/H Beams: 15 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
35	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
40	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
45	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
50	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
55	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
60	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
65	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
70	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
75	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
80	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
85	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
90	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
95	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
100	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
105	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
110	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
115	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
120	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
125	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
130	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
135	0.291	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
140	0.308	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
145	0.326	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
150	0.344	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
155	0.362	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
160	0.379	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
165	0.397	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
170	0.415	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
175	0.433	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
180	0.451	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
185	0.468	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
190	0.486	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
195	0.504	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
200	0.522	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
205	0.539	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
210	0.557	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
215	0.575	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
220	0.593	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
225	0.611	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
230	0.628	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
235	0.646	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
240	0.664	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
245	0.682	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
250	0.700	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
255	0.717	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
260	0.735	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
265	0.753	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
270	0.771	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
275	0.788	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
280	0.806	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
285	0.824	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
290	0.842	0.290	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
295	0.860	0.302	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
300	0.877	0.313	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
305	0.895	0.324	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
310	0.913	0.335	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
315	0.931	0.346	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
320	0.949	0.357	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
325	0.966	0.369	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
330	0.984	0.380	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
335	1.002	0.391	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
340	1.020	0.402	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
345	1.037	0.413	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
350	1.055	0.424	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284

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 845
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I/H Beams: 30 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
35	0.291	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
40	0.368	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
45	0.445	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
50	0.522	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
55	0.598	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
60	0.675	0.288	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
65	0.752	0.306	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
70	0.828	0.323	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
75	0.905	0.341	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
80	0.982	0.359	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
85	1.059	0.376	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
90	1.135	0.394	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
95	1.212	0.411	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
100	1.289	0.429	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
105	1.365	0.447	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
110	1.442	0.464	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
115	1.513	0.482	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
120	1.583	0.499	0.294	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
125	1.652	0.517	0.309	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
130	1.722	0.535	0.323	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
135	1.791	0.552	0.338	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
140	1.861	0.570	0.353	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
145	1.930	0.588	0.367	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
150	2.000	0.605	0.382	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
155	2.069	0.623	0.396	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
160	2.139	0.640	0.411	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
165	2.209	0.658	0.425	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
170	2.278	0.676	0.440	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
175	2.348	0.693	0.454	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
180	2.417	0.711	0.469	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
185	2.487	0.728	0.483	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
190	2.556	0.746	0.498	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
195	2.626	0.764	0.513	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
200	2.695	0.781	0.527	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
205	2.765	0.799	0.542	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
210	2.834	0.816	0.556	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
215	2.904	0.834	0.571	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
220	2.973	0.852	0.585	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
225	-	0.869	0.600	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
230	-	0.887	0.614	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
235	-	0.905	0.629	0.293	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
240	-	0.922	0.643	0.307	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
245	-	0.940	0.658	0.320	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
250	-	0.957	0.673	0.334	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
255	-	0.975	0.687	0.348	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
260	-	0.993	0.702	0.361	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
265	-	1.010	0.716	0.375	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
270	-	1.028	0.731	0.389	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
275	-	1.045	0.745	0.403	0.291	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
280	-	1.063	0.760	0.416	0.302	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
285	-	1.081	0.774	0.430	0.314	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
290	-	1.098	0.789	0.444	0.325	0.287	0.284	0.284	0.284	0.284	0.284	0.284	0.284
295	-	1.116	0.803	0.457	0.337	0.298	0.284	0.284	0.284	0.284	0.284	0.284	0.284
300	-	1.134	0.818	0.471	0.349	0.309	0.284	0.284	0.284	0.284	0.284	0.284	0.284
305	-	1.151	0.832	0.485	0.360	0.320	0.284	0.284	0.284	0.284	0.284	0.284	0.284
310	-	1.169	0.847	0.498	0.372	0.331	0.291	0.284	0.284	0.284	0.284	0.284	0.284
315	-	1.186	0.862	0.512	0.384	0.341	0.301	0.284	0.284	0.284	0.284	0.284	0.284
320	-	1.204	0.876	0.526	0.395	0.352	0.311	0.284	0.284	0.284	0.284	0.284	0.284
325	-	1.222	0.891	0.540	0.407	0.363	0.321	0.284	0.284	0.284	0.284	0.284	0.284
330	-	1.239	0.905	0.553	0.419	0.374	0.331	0.286	0.284	0.284	0.284	0.284	0.284
335	-	1.257	0.920	0.567	0.430	0.385	0.341	0.296	0.284	0.284	0.284	0.284	0.284
340	-	1.274	0.934	0.581	0.442	0.396	0.351	0.305	0.284	0.284	0.284	0.284	0.284
345	-	1.292	0.949	0.594	0.454	0.407	0.361	0.314	0.284	0.284	0.284	0.284	0.284
350	-	1.310	0.963	0.608	0.465	0.418	0.371	0.323	0.284	0.284	0.284	0.284	0.284

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

This certificate is the property of Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

I/H Beams: 45 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	0.947	0.296	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
35	1.128	0.352	0.286	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
40	1.310	0.408	0.305	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
45	1.487	0.464	0.324	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
50	1.645	0.519	0.343	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
55	1.803	0.575	0.362	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
60	1.961	0.631	0.382	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
65	2.118	0.687	0.401	0.291	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
70	2.276	0.743	0.420	0.307	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
75	2.434	0.798	0.439	0.323	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
80	2.592	0.854	0.458	0.339	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
85	2.750	0.910	0.477	0.355	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
90	2.842	0.966	0.497	0.371	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
95	2.897	1.021	0.516	0.387	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
100	2.952	1.077	0.535	0.403	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
105	3.007	1.133	0.554	0.419	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
110	3.062	1.189	0.573	0.435	0.298	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
115	3.117	1.244	0.592	0.451	0.313	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
120	3.172	1.300	0.611	0.467	0.328	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
125	3.228	1.356	0.631	0.483	0.343	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
130	3.283	1.412	0.650	0.499	0.358	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
135	3.338	1.469	0.669	0.515	0.373	0.288	0.284	0.284	0.284	0.284	0.284	0.284	0.284
140	3.393	1.531	0.688	0.531	0.388	0.303	0.284	0.284	0.284	0.284	0.284	0.284	0.284
145	3.448	1.593	0.707	0.547	0.403	0.317	0.284	0.284	0.284	0.284	0.284	0.284	0.284
150	3.503	1.655	0.726	0.563	0.417	0.332	0.284	0.284	0.284	0.284	0.284	0.284	0.284
155	3.558	1.718	0.746	0.579	0.432	0.347	0.284	0.284	0.284	0.284	0.284	0.284	0.284
160	3.613	1.780	0.765	0.595	0.447	0.362	0.284	0.284	0.284	0.284	0.284	0.284	0.284
165	3.668	1.842	0.784	0.611	0.462	0.377	0.284	0.284	0.284	0.284	0.284	0.284	0.284
170	3.723	1.905	0.803	0.627	0.477	0.392	0.284	0.284	0.284	0.284	0.284	0.284	0.284
175	-	1.967	0.822	0.643	0.492	0.407	0.284	0.284	0.284	0.284	0.284	0.284	0.284
180	-	2.029	0.841	0.659	0.507	0.422	0.297	0.284	0.284	0.284	0.284	0.284	0.284
185	-	2.091	0.861	0.675	0.522	0.436	0.312	0.284	0.284	0.284	0.284	0.284	0.284
190	-	2.154	0.880	0.691	0.537	0.451	0.327	0.284	0.284	0.284	0.284	0.284	0.284
195	-	2.216	0.899	0.707	0.551	0.466	0.343	0.284	0.284	0.284	0.284	0.284	0.284
200	-	2.278	0.918	0.723	0.566	0.481	0.358	0.284	0.284	0.284	0.284	0.284	0.284
205	-	2.340	0.937	0.739	0.581	0.496	0.373	0.284	0.284	0.284	0.284	0.284	0.284
210	-	2.403	0.956	0.755	0.596	0.511	0.388	0.297	0.284	0.284	0.284	0.284	0.284
215	-	2.465	0.975	0.771	0.611	0.526	0.403	0.312	0.284	0.284	0.284	0.284	0.284
220	-	2.527	0.995	0.787	0.626	0.541	0.418	0.327	0.286	0.284	0.284	0.284	0.284
225	-	2.590	1.014	0.803	0.641	0.555	0.433	0.342	0.300	0.284	0.284	0.284	0.284
230	-	2.652	1.033	0.819	0.656	0.570	0.448	0.356	0.314	0.284	0.284	0.284	0.284
235	-	2.714	1.052	0.835	0.671	0.585	0.463	0.371	0.328	0.294	0.284	0.284	0.284
240	-	2.776	1.071	0.851	0.685	0.600	0.478	0.386	0.342	0.307	0.284	0.284	0.284
245	-	2.839	1.090	0.867	0.700	0.615	0.493	0.401	0.356	0.320	0.284	0.284	0.284
250	-	2.901	1.110	0.883	0.715	0.630	0.509	0.416	0.370	0.334	0.290	0.284	0.284
255	-	2.963	1.129	0.899	0.730	0.645	0.524	0.431	0.384	0.347	0.302	0.284	0.284
260	-	3.026	1.148	0.915	0.745	0.660	0.539	0.445	0.398	0.360	0.314	0.284	0.284
265	-	-	1.167	0.931	0.760	0.674	0.554	0.460	0.412	0.374	0.326	0.284	0.284
270	-	-	1.186	0.947	0.775	0.689	0.569	0.475	0.426	0.387	0.339	0.284	0.284
275	-	-	1.205	0.963	0.790	0.704	0.584	0.490	0.440	0.400	0.351	0.284	0.284
280	-	-	1.225	0.979	0.805	0.719	0.599	0.505	0.453	0.414	0.363	0.284	0.284
285	-	-	1.244	0.995	0.819	0.734	0.614	0.520	0.467	0.427	0.375	0.284	0.284
290	-	-	1.263	1.011	0.834	0.749	0.629	0.534	0.481	0.440	0.388	0.291	0.284
295	-	-	1.282	1.027	0.849	0.764	0.644	0.549	0.495	0.454	0.400	0.302	0.284
300	-	-	1.301	1.043	0.864	0.779	0.660	0.564	0.509	0.467	0.412	0.312	0.284
305	-	-	1.320	1.059	0.879	0.793	0.675	0.579	0.523	0.480	0.424	0.323	0.284
310	-	-	1.339	1.075	0.894	0.808	0.690	0.594	0.537	0.493	0.437	0.333	0.284
315	-	-	1.359	1.091	0.909	0.823	0.705	0.609	0.551	0.507	0.449	0.344	0.284
320	-	-	1.378	1.107	0.924	0.838	0.720	0.624	0.565	0.520	0.461	0.354	0.284
325	-	-	1.397	1.123	0.938	0.853	0.735	0.638	0.579	0.533	0.473	0.365	0.284
330	-	-	1.416	1.139	0.953	0.868	0.750	0.653	0.593	0.547	0.486	0.375	0.284
335	-	-	1.435	1.155	0.968	0.883	0.765	0.668	0.607	0.560	0.498	0.386	0.284
340	-	-	1.454	1.171	0.983	0.897	0.780	0.683	0.621	0.573	0.510	0.396	0.284
345	-	-	1.474	1.187	0.998	0.912	0.795	0.698	0.635	0.587	0.522	0.407	0.293
350	-	-	1.493	1.203	1.013	0.927	0.810	0.713	0.649	0.600	0.535	0.418	0.301

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 845
JOTUN A/S

I/H Beams: 60 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	1.741	0.932	0.519	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
35	2.023	1.040	0.564	0.291	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
40	2.305	1.148	0.608	0.336	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
45	2.588	1.257	0.652	0.382	0.302	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
50	2.838	1.365	0.696	0.427	0.320	0.299	0.284	0.284	0.284	0.284	0.284	0.284	0.284
55	2.977	1.466	0.741	0.473	0.338	0.316	0.293	0.284	0.284	0.284	0.284	0.284	0.284
60	3.116	1.530	0.785	0.518	0.356	0.333	0.310	0.284	0.284	0.284	0.284	0.284	0.284
65	3.256	1.593	0.829	0.563	0.374	0.350	0.326	0.294	0.284	0.284	0.284	0.284	0.284
70	3.395	1.656	0.873	0.609	0.391	0.368	0.342	0.310	0.284	0.284	0.284	0.284	0.284
75	3.534	1.719	0.918	0.654	0.409	0.385	0.358	0.326	0.284	0.284	0.284	0.284	0.284
80	3.673	1.782	0.962	0.700	0.427	0.402	0.375	0.341	0.299	0.284	0.284	0.284	0.284
85	-	1.845	1.006	0.745	0.445	0.419	0.391	0.357	0.315	0.284	0.284	0.284	0.284
90	-	1.908	1.051	0.790	0.463	0.436	0.407	0.373	0.330	0.288	0.284	0.284	0.284
95	-	1.972	1.095	0.836	0.481	0.453	0.424	0.388	0.345	0.302	0.284	0.284	0.284
100	-	2.035	1.139	0.881	0.499	0.470	0.440	0.404	0.360	0.317	0.284	0.284	0.284
105	-	2.098	1.183	0.927	0.517	0.487	0.456	0.419	0.375	0.332	0.284	0.284	0.284
110	-	2.161	1.228	0.972	0.535	0.505	0.472	0.435	0.390	0.347	0.284	0.284	0.284
115	-	2.224	1.272	1.017	0.552	0.522	0.489	0.451	0.405	0.362	0.291	0.284	0.284
120	-	2.287	1.316	1.063	0.570	0.539	0.505	0.466	0.421	0.377	0.305	0.284	0.284
125	-	2.351	1.360	1.108	0.588	0.556	0.521	0.482	0.436	0.392	0.320	0.284	0.284
130	-	2.414	1.405	1.154	0.606	0.573	0.537	0.497	0.451	0.407	0.335	0.284	0.284
135	-	2.477	1.449	1.199	0.624	0.590	0.554	0.513	0.466	0.422	0.349	0.284	0.284
140	-	2.540	1.511	1.244	0.642	0.607	0.570	0.529	0.481	0.437	0.364	0.284	0.284
145	-	2.603	1.577	1.290	0.660	0.624	0.586	0.544	0.496	0.451	0.378	0.284	0.284
150	-	2.666	1.642	1.335	0.678	0.642	0.602	0.560	0.511	0.466	0.393	0.284	0.284
155	-	2.729	1.708	1.381	0.696	0.659	0.619	0.576	0.527	0.481	0.407	0.284	0.284
160	-	2.793	1.774	1.426	0.713	0.676	0.635	0.591	0.542	0.496	0.422	0.284	0.284
165	-	2.910	1.839	1.471	0.731	0.693	0.651	0.607	0.557	0.511	0.436	0.284	0.284
170	-	3.044	1.905	1.517	0.749	0.710	0.668	0.622	0.572	0.526	0.451	0.284	0.284
175	-	3.178	1.971	1.562	0.767	0.727	0.684	0.638	0.587	0.541	0.465	0.284	0.284
180	-	3.312	2.037	1.608	0.785	0.744	0.700	0.654	0.602	0.556	0.480	0.284	0.284
185	-	3.446	2.102	1.653	0.803	0.761	0.716	0.669	0.617	0.571	0.495	0.284	0.284
190	-	3.580	2.168	1.698	0.821	0.778	0.733	0.685	0.632	0.586	0.509	0.284	0.284
195	-	3.714	2.234	1.744	0.839	0.796	0.749	0.701	0.648	0.600	0.524	0.284	0.284
200	-	-	2.300	1.789	0.856	0.813	0.765	0.716	0.663	0.615	0.538	0.290	0.284
205	-	-	2.365	1.835	0.874	0.830	0.781	0.732	0.678	0.630	0.553	0.306	0.284
210	-	-	2.431	1.880	0.892	0.847	0.798	0.747	0.693	0.645	0.567	0.321	0.284
215	-	-	2.497	1.925	0.910	0.864	0.814	0.763	0.708	0.660	0.582	0.336	0.284
220	-	-	2.562	1.971	0.928	0.881	0.830	0.779	0.723	0.675	0.596	0.352	0.284
225	-	-	2.628	2.016	0.946	0.898	0.847	0.794	0.738	0.690	0.611	0.367	0.288
230	-	-	2.694	2.062	0.964	0.915	0.863	0.810	0.754	0.705	0.626	0.382	0.301
235	-	-	2.760	2.107	0.982	0.933	0.879	0.826	0.769	0.720	0.640	0.397	0.314
240	-	-	2.825	2.152	1.000	0.950	0.895	0.841	0.784	0.734	0.655	0.413	0.328
245	-	-	2.891	2.198	1.017	0.967	0.912	0.857	0.799	0.749	0.669	0.428	0.341
250	-	-	2.957	2.243	1.035	0.984	0.928	0.872	0.814	0.764	0.684	0.443	0.354
255	-	-	3.022	2.289	1.053	1.001	0.944	0.888	0.829	0.779	0.698	0.458	0.367
260	-	-	-	2.334	1.071	1.018	0.960	0.904	0.844	0.794	0.713	0.474	0.381
265	-	-	-	2.379	1.089	1.035	0.977	0.919	0.859	0.809	0.727	0.489	0.394
270	-	-	-	2.425	1.107	1.052	0.993	0.935	0.875	0.824	0.742	0.504	0.407
275	-	-	-	2.470	1.125	1.070	1.009	0.951	0.890	0.839	0.756	0.520	0.421
280	-	-	-	2.515	1.143	1.087	1.026	0.966	0.905	0.854	0.771	0.535	0.434
285	-	-	-	2.561	1.160	1.104	1.042	0.982	0.920	0.869	0.786	0.550	0.447
290	-	-	-	2.606	1.178	1.121	1.058	0.997	0.935	0.883	0.800	0.565	0.460
295	-	-	-	2.652	1.196	1.138	1.074	1.013	0.950	0.898	0.815	0.581	0.474
300	-	-	-	2.697	1.214	1.155	1.091	1.029	0.965	0.913	0.829	0.596	0.487
305	-	-	-	2.742	1.232	1.172	1.107	1.044	0.981	0.928	0.844	0.611	0.500
310	-	-	-	2.788	1.250	1.189	1.123	1.060	0.996	0.943	0.858	0.626	0.514
315	-	-	-	2.833	1.268	1.206	1.139	1.076	1.011	0.958	0.873	0.642	0.527
320	-	-	-	2.879	1.286	1.224	1.156	1.091	1.026	0.973	0.887	0.657	0.540
325	-	-	-	2.924	1.304	1.241	1.172	1.107	1.041	0.988	0.902	0.672	0.553
330	-	-	-	2.969	1.321	1.258	1.188	1.122	1.056	1.003	0.917	0.688	0.567
335	-	-	-	3.015	1.339	1.275	1.205	1.138	1.071	1.018	0.931	0.703	0.580
340	-	-	-	3.060	1.357	1.292	1.221	1.154	1.087	1.032	0.946	0.718	0.593
345	-	-	-	-	1.375	1.309	1.237	1.169	1.102	1.047	0.960	0.733	0.607
350	-	-	-	-	1.393	1.326	1.253	1.185	1.117	1.062	0.975	0.749	0.620

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 845
JOTUN A/S

I/H Beams: 75 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	2.480	1.529	1.028	0.564	0.310	0.298	0.284	0.284	0.284	0.284	0.284	0.284	0.284
35	2.866	1.684	1.111	0.604	0.338	0.321	0.293	0.292	0.284	0.284	0.284	0.284	0.284
40	3.172	1.838	1.195	0.643	0.366	0.344	0.338	0.311	0.292	0.284	0.284	0.284	0.284
45	3.477	1.993	1.279	0.683	0.395	0.383	0.383	0.330	0.310	0.293	0.284	0.284	0.284
50	-	2.147	1.362	0.723	0.428	0.428	0.428	0.349	0.328	0.310	0.284	0.284	0.284
55	-	2.301	1.446	0.763	0.473	0.473	0.473	0.368	0.346	0.328	0.301	0.284	0.284
60	-	2.456	1.506	0.803	0.518	0.518	0.518	0.387	0.364	0.345	0.318	0.284	0.284
65	-	2.610	1.563	0.842	0.563	0.563	0.563	0.405	0.382	0.363	0.334	0.284	0.284
70	-	2.765	1.620	0.882	0.608	0.608	0.608	0.424	0.400	0.380	0.351	0.284	0.284
75	-	2.844	1.677	0.922	0.653	0.653	0.653	0.443	0.418	0.398	0.368	0.298	0.284
80	-	2.894	1.734	0.962	0.698	0.698	0.698	0.462	0.437	0.416	0.385	0.313	0.284
85	-	2.945	1.790	1.001	0.743	0.743	0.743	0.481	0.455	0.433	0.401	0.329	0.284
90	-	2.995	1.847	1.041	0.788	0.788	0.788	0.500	0.473	0.451	0.418	0.345	0.284
95	-	3.046	1.904	1.081	0.833	0.833	0.833	0.519	0.491	0.468	0.435	0.361	0.284
100	-	3.096	1.961	1.121	0.878	0.878	0.878	0.538	0.509	0.486	0.452	0.376	0.284
105	-	3.147	2.018	1.161	0.923	0.923	0.923	0.556	0.527	0.503	0.468	0.392	0.285
110	-	3.197	2.074	1.200	0.968	0.968	0.968	0.575	0.545	0.521	0.485	0.408	0.300
115	-	3.248	2.131	1.240	1.013	1.013	1.013	0.594	0.563	0.539	0.502	0.423	0.315
120	-	3.298	2.188	1.280	1.058	1.058	1.058	0.613	0.581	0.556	0.519	0.439	0.330
125	-	3.349	2.245	1.320	1.103	1.103	1.103	0.632	0.599	0.574	0.535	0.455	0.345
130	-	3.399	2.302	1.359	1.148	1.148	1.148	0.651	0.617	0.591	0.552	0.470	0.360
135	-	3.450	2.358	1.399	1.193	1.193	1.193	0.670	0.636	0.609	0.569	0.486	0.375
140	-	3.500	2.415	1.439	1.238	1.238	1.238	0.689	0.654	0.626	0.586	0.502	0.390
145	-	3.551	2.472	1.503	1.283	1.283	1.283	0.707	0.672	0.644	0.603	0.518	0.405
150	-	3.601	2.529	1.587	1.328	1.328	1.328	0.726	0.690	0.661	0.619	0.533	0.420
155	-	3.652	2.586	1.672	1.373	1.373	1.373	0.745	0.708	0.679	0.636	0.549	0.435
160	-	3.702	2.642	1.756	1.418	1.418	1.418	0.764	0.726	0.697	0.653	0.565	0.450
165	-	3.753	2.699	1.840	1.463	1.463	1.463	0.783	0.744	0.714	0.670	0.580	0.465
170	-	-	2.756	1.924	1.508	1.508	1.508	0.802	0.762	0.732	0.686	0.596	0.480
175	-	-	2.817	2.008	1.553	1.553	1.553	0.821	0.780	0.749	0.703	0.612	0.495
180	-	-	2.913	2.092	1.598	1.598	1.598	0.840	0.798	0.767	0.720	0.627	0.510
185	-	-	3.010	2.177	1.643	1.643	1.643	0.859	0.816	0.784	0.737	0.643	0.526
190	-	-	3.106	2.261	1.688	1.688	1.688	0.877	0.835	0.802	0.753	0.659	0.541
195	-	-	3.203	2.345	1.733	1.733	1.733	0.896	0.853	0.820	0.770	0.674	0.556
200	-	-	3.299	2.429	1.778	1.778	1.778	0.915	0.871	0.837	0.787	0.690	0.571
205	-	-	3.396	2.513	1.823	1.823	1.823	0.934	0.889	0.855	0.804	0.706	0.586
210	-	-	3.492	2.597	1.868	1.868	1.868	0.953	0.907	0.872	0.821	0.722	0.601
215	-	-	3.588	2.682	1.913	1.913	1.913	0.972	0.925	0.890	0.837	0.737	0.616
220	-	-	3.685	2.766	1.958	1.958	1.958	0.991	0.943	0.907	0.854	0.753	0.631
225	-	-	-	2.835	2.003	2.003	2.003	1.010	0.961	0.925	0.871	0.769	0.646
230	-	-	-	2.891	2.048	2.048	2.048	1.028	0.979	0.942	0.888	0.784	0.661
235	-	-	-	2.946	2.093	2.093	2.093	1.047	0.997	0.960	0.904	0.800	0.676
240	-	-	-	3.002	2.138	2.138	2.138	1.066	1.015	0.978	0.921	0.816	0.691
245	-	-	-	3.057	2.183	2.183	2.183	1.085	1.034	0.995	0.938	0.831	0.706
250	-	-	-	3.113	2.228	2.228	2.228	1.104	1.052	1.013	0.955	0.847	0.721
255	-	-	-	3.168	2.281	2.273	2.273	1.123	1.070	1.030	0.971	0.863	0.736
260	-	-	-	3.223	2.472	2.318	2.318	1.142	1.088	1.048	0.988	0.879	0.751
265	-	-	-	3.279	2.662	2.363	2.363	1.161	1.106	1.065	1.005	0.894	0.766
270	-	-	-	3.334	2.853	2.408	2.408	1.179	1.124	1.083	1.022	0.910	0.781
275	-	-	-	-	-	2.453	2.453	1.198	1.142	1.101	1.038	0.926	0.796
280	-	-	-	-	-	2.498	2.498	1.217	1.160	1.118	1.055	0.941	0.811
285	-	-	-	-	-	2.543	2.543	1.236	1.178	1.136	1.072	0.957	0.826
290	-	-	-	-	-	-	2.588	1.255	1.196	1.153	1.089	0.973	0.841
295	-	-	-	-	-	-	2.633	1.274	1.214	1.171	1.106	0.988	0.856
300	-	-	-	-	-	-	2.678	1.293	1.232	1.188	1.122	1.004	0.871
305	-	-	-	-	-	-	2.723	1.312	1.251	1.206	1.139	1.020	0.886
310	-	-	-	-	-	-	2.768	1.331	1.269	1.223	1.156	1.035	0.901
315	-	-	-	-	-	-	2.813	1.349	1.287	1.241	1.173	1.051	0.916
320	-	-	-	-	-	-	2.858	1.368	1.305	1.259	1.189	1.067	0.931
325	-	-	-	-	-	-	2.903	1.387	1.323	1.276	1.206	1.083	0.946
330	-	-	-	-	-	-	2.948	1.406	1.341	1.294	1.223	1.098	0.961
335	-	-	-	-	-	-	2.993	1.425	1.359	1.311	1.240	1.114	0.976
340	-	-	-	-	-	-	3.038	1.444	1.377	1.329	1.256	1.130	0.991
345	-	-	-	-	-	-	-	1.463	1.395	1.346	1.273	1.145	1.006
350	-	-	-	-	-	-	-	1.482	1.413	1.364	1.290	1.161	1.021

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

This certificate is the property of Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

I/H Beams: 90 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	3.271	2.184	1.492	1.006	0.695	0.588	0.340	0.320	0.304	0.294	0.284	0.284	0.284
35	-	2.435	1.591	1.067	0.739	0.624	0.377	0.352	0.331	0.317	0.300	0.284	0.284
40	-	2.685	1.689	1.128	0.783	0.659	0.415	0.384	0.357	0.339	0.320	0.284	0.284
45	-	2.887	1.788	1.190	0.827	0.695	0.453	0.416	0.383	0.361	0.339	0.298	0.284
50	-	3.041	1.886	1.251	0.871	0.731	0.490	0.447	0.410	0.384	0.359	0.316	0.284
55	-	3.196	1.985	1.312	0.915	0.766	0.528	0.479	0.436	0.406	0.379	0.335	0.284
60	-	3.351	2.083	1.373	0.959	0.802	0.566	0.511	0.462	0.429	0.399	0.353	0.293
65	-	3.506	2.182	1.434	1.003	0.838	0.603	0.543	0.489	0.451	0.419	0.372	0.311
70	-	3.661	2.280	1.497	1.047	0.874	0.641	0.575	0.515	0.473	0.439	0.390	0.328
75	-	-	2.379	1.561	1.091	0.909	0.679	0.606	0.541	0.496	0.459	0.409	0.345
80	-	-	2.477	1.624	1.135	0.945	0.717	0.638	0.567	0.518	0.478	0.427	0.363
85	-	-	2.576	1.688	1.179	0.981	0.754	0.670	0.594	0.540	0.498	0.445	0.380
90	-	-	2.674	1.752	1.223	1.016	0.792	0.702	0.620	0.563	0.518	0.464	0.398
95	-	-	2.773	1.815	1.267	1.052	0.833	0.733	0.646	0.585	0.538	0.482	0.415
100	-	-	2.845	1.879	1.311	1.088	0.878	0.765	0.673	0.608	0.558	0.501	0.432
105	-	-	2.903	1.943	1.354	1.123	0.923	0.797	0.699	0.630	0.578	0.519	0.450
110	-	-	2.961	2.007	1.398	1.159	0.968	0.829	0.725	0.652	0.598	0.538	0.467
115	-	-	3.019	2.070	1.442	1.195	1.013	0.860	0.752	0.675	0.617	0.556	0.485
120	-	-	3.077	2.134	1.508	1.230	1.058	0.892	0.778	0.697	0.637	0.574	0.502
125	-	-	3.135	2.198	1.584	1.266	1.103	0.924	0.804	0.719	0.657	0.593	0.519
130	-	-	3.193	2.261	1.660	1.302	1.148	0.956	0.831	0.742	0.677	0.611	0.537
135	-	-	3.251	2.325	1.736	1.338	1.193	0.987	0.857	0.764	0.697	0.630	0.554
140	-	-	3.309	2.389	1.812	1.373	1.238	1.019	0.883	0.787	0.717	0.648	0.572
145	-	-	3.367	2.453	1.888	1.409	1.283	1.051	0.909	0.809	0.736	0.667	0.589
150	-	-	3.425	2.516	1.964	1.445	1.328	1.083	0.936	0.831	0.756	0.685	0.606
155	-	-	3.483	2.580	2.039	1.523	1.373	1.114	0.962	0.854	0.776	0.704	0.624
160	-	-	3.542	2.644	2.115	1.624	1.418	1.146	0.988	0.876	0.796	0.722	0.641
165	-	-	3.600	2.707	2.191	1.725	1.463	1.178	1.015	0.898	0.816	0.740	0.658
170	-	-	3.658	2.771	2.267	1.826	1.508	1.210	1.041	0.921	0.836	0.759	0.676
175	-	-	3.716	2.850	2.343	1.927	1.553	1.242	1.067	0.943	0.856	0.777	0.693
180	-	-	-	2.949	2.419	2.028	1.598	1.273	1.094	0.966	0.875	0.796	0.711
185	-	-	-	3.048	2.495	2.129	1.643	1.305	1.120	0.988	0.895	0.814	0.728
190	-	-	-	3.146	2.571	2.230	1.727	1.337	1.146	1.010	0.915	0.833	0.745
195	-	-	-	3.245	2.647	2.331	1.841	1.369	1.173	1.033	0.935	0.851	0.763
200	-	-	-	3.344	2.723	2.431	1.956	1.400	1.199	1.055	0.955	0.870	0.780
205	-	-	-	3.442	2.799	2.532	2.070	1.432	1.225	1.077	0.975	0.888	0.798
210	-	-	-	3.541	2.867	2.633	2.184	1.489	1.252	1.100	0.995	0.906	0.815
215	-	-	-	3.640	2.935	2.734	2.299	1.636	1.278	1.122	1.014	0.925	0.832
220	-	-	-	3.738	3.002	2.828	2.413	1.783	1.304	1.145	1.034	0.943	0.850
225	-	-	-	-	3.070	2.904	2.528	1.930	1.330	1.167	1.054	0.962	0.867
230	-	-	-	-	3.137	2.979	2.642	2.076	1.357	1.189	1.074	0.980	0.885
235	-	-	-	-	3.204	3.054	2.757	2.223	1.383	1.212	1.094	0.999	0.902
240	-	-	-	-	3.272	3.130	2.859	2.370	1.409	1.234	1.114	1.017	0.919
245	-	-	-	-	3.339	3.205	2.952	2.517	1.436	1.256	1.134	1.035	0.937
250	-	-	-	-	3.407	3.281	3.045	2.664	1.507	1.279	1.153	1.054	0.954
255	-	-	-	-	3.474	3.356	3.137	2.811	1.773	1.301	1.173	1.072	0.971
260	-	-	-	-	3.542	3.432	3.230	2.931	2.038	1.324	1.193	1.091	0.989
265	-	-	-	-	3.609	3.507	3.323	3.052	2.304	1.346	1.213	1.109	1.006
270	-	-	-	-	3.677	3.582	3.416	3.173	2.569	1.368	1.233	1.128	1.024
275	-	-	-	-	3.744	3.658	3.509	3.294	2.826	1.391	1.253	1.146	1.041
280	-	-	-	-	-	3.733	3.602	3.415	3.009	1.413	1.273	1.165	1.058
285	-	-	-	-	-	-	3.695	3.536	3.193	1.436	1.292	1.183	1.076
290	-	-	-	-	-	-	-	3.656	3.376	1.546	1.312	1.201	1.093
295	-	-	-	-	-	-	-	-	3.560	1.656	1.332	1.220	1.111
300	-	-	-	-	-	-	-	-	-	-	1.352	1.238	1.128
305	-	-	-	-	-	-	-	-	-	-	1.372	1.257	1.145
310	-	-	-	-	-	-	-	-	-	-	1.392	1.275	1.163
315	-	-	-	-	-	-	-	-	-	-	1.412	1.294	1.180
320	-	-	-	-	-	-	-	-	-	-	1.431	1.312	1.198
325	-	-	-	-	-	-	-	-	-	-	1.451	1.330	1.215
330	-	-	-	-	-	-	-	-	-	-	1.471	1.349	1.232
335	-	-	-	-	-	-	-	-	-	-	1.491	1.367	1.250
340	-	-	-	-	-	-	-	-	-	-	1.511	1.386	1.267
345	-	-	-	-	-	-	-	-	-	-	1.531	1.404	1.284
350	-	-	-	-	-	-	-	-	-	-	1.550	1.423	1.302

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

This certificate is the property of Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

I/H Beams: 105 minutes Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	-	2.794	2.083	1.437	1.080	0.958	0.829	0.704	0.582	0.343	0.320	0.285	0.284
35	-	3.136	2.265	1.526	1.151	1.014	0.882	0.751	0.622	0.385	0.355	0.310	0.284
40	-	3.479	2.447	1.615	1.221	1.070	0.934	0.798	0.662	0.427	0.391	0.335	0.289
45	-	-	2.629	1.703	1.291	1.125	0.987	0.844	0.702	0.469	0.427	0.361	0.309
50	-	-	2.809	1.792	1.362	1.181	1.039	0.891	0.742	0.511	0.462	0.386	0.329
55	-	-	2.893	1.881	1.432	1.237	1.092	0.938	0.782	0.553	0.498	0.411	0.350
60	-	-	2.976	1.969	1.497	1.293	1.144	0.985	0.822	0.595	0.534	0.437	0.370
65	-	-	3.060	2.058	1.559	1.348	1.197	1.032	0.862	0.637	0.569	0.462	0.390
70	-	-	3.143	2.147	1.620	1.404	1.249	1.078	0.902	0.679	0.605	0.487	0.411
75	-	-	3.227	2.235	1.682	1.460	1.302	1.125	0.942	0.721	0.640	0.513	0.431
80	-	-	3.311	2.324	1.743	1.527	1.355	1.172	0.982	0.763	0.676	0.538	0.451
85	-	-	3.394	2.413	1.805	1.593	1.407	1.219	1.022	0.805	0.712	0.564	0.471
90	-	-	3.478	2.501	1.866	1.659	1.460	1.266	1.062	0.847	0.747	0.589	0.492
95	-	-	3.561	2.590	1.928	1.726	1.527	1.312	1.102	0.889	0.783	0.614	0.512
100	-	-	3.645	2.679	1.990	1.792	1.594	1.359	1.142	0.931	0.819	0.640	0.532
105	-	-	3.729	2.767	2.051	1.858	1.661	1.406	1.182	0.973	0.854	0.665	0.553
110	-	-	-	2.844	2.113	1.925	1.728	1.453	1.222	1.015	0.890	0.690	0.573
115	-	-	-	2.910	2.174	1.991	1.795	1.523	1.262	1.057	0.925	0.716	0.593
120	-	-	-	2.977	2.236	2.057	1.862	1.596	1.302	1.099	0.961	0.741	0.613
125	-	-	-	3.044	2.297	2.124	1.929	1.669	1.342	1.141	0.997	0.766	0.634
130	-	-	-	3.110	2.359	2.190	1.996	1.742	1.382	1.183	1.032	0.792	0.654
135	-	-	-	3.177	2.421	2.256	2.063	1.815	1.422	1.225	1.068	0.817	0.674
140	-	-	-	3.243	2.482	2.323	2.130	1.888	1.467	1.267	1.104	0.842	0.695
145	-	-	-	3.310	2.544	2.389	2.198	1.961	1.555	1.310	1.139	0.868	0.715
150	-	-	-	3.377	2.605	2.455	2.265	2.034	1.642	1.352	1.175	0.893	0.735
155	-	-	-	3.443	2.667	2.522	2.332	2.107	1.730	1.394	1.211	0.919	0.755
160	-	-	-	3.510	2.729	2.588	2.399	2.180	1.817	1.436	1.246	0.944	0.776
165	-	-	-	3.576	2.790	2.654	2.466	2.252	1.904	1.507	1.282	0.969	0.796
170	-	-	-	3.643	2.891	2.721	2.533	2.325	1.992	1.609	1.317	0.995	0.816
175	-	-	-	3.710	3.006	2.787	2.600	2.398	2.079	1.711	1.353	1.020	0.837
180	-	-	-	-	3.121	2.856	2.667	2.471	2.167	1.813	1.389	1.045	0.857
185	-	-	-	-	3.236	2.925	2.734	2.544	2.254	1.915	1.424	1.071	0.877
190	-	-	-	-	3.352	2.995	2.801	2.617	2.342	2.016	1.467	1.096	0.897
195	-	-	-	-	3.467	3.064	2.876	2.690	2.429	2.118	1.582	1.121	0.918
200	-	-	-	-	3.582	3.134	2.952	2.763	2.517	2.220	1.697	1.147	0.938
205	-	-	-	-	3.698	3.204	3.028	2.840	2.604	2.322	1.812	1.172	0.958
210	-	-	-	-	-	3.273	3.104	2.925	2.692	2.424	1.927	1.197	0.979
215	-	-	-	-	-	3.343	3.181	3.010	2.779	2.526	2.042	1.223	0.999
220	-	-	-	-	-	3.412	3.257	3.095	2.873	2.628	2.157	1.248	1.019
225	-	-	-	-	-	3.482	3.333	3.179	2.971	2.730	2.272	1.274	1.039
230	-	-	-	-	-	3.551	3.409	3.264	3.068	2.834	2.388	1.299	1.060
235	-	-	-	-	-	3.621	3.485	3.349	3.165	2.949	2.503	1.324	1.080
240	-	-	-	-	-	3.691	3.561	3.434	3.263	3.063	2.618	1.350	1.100
245	-	-	-	-	-	-	3.637	3.518	3.360	3.177	2.733	1.375	1.120
250	-	-	-	-	-	-	3.713	3.603	3.458	3.291	2.864	1.400	1.141
255	-	-	-	-	-	-	-	3.688	3.555	3.406	3.023	1.426	1.161
260	-	-	-	-	-	-	-	-	3.652	3.520	3.183	1.451	1.181
265	-	-	-	-	-	-	-	-	3.750	3.634	3.342	1.670	1.202
270	-	-	-	-	-	-	-	-	-	3.748	3.502	1.948	1.222
275	-	-	-	-	-	-	-	-	-	-	3.661	2.226	1.242
280	-	-	-	-	-	-	-	-	-	-	-	2.504	1.262
285	-	-	-	-	-	-	-	-	-	-	-	2.782	1.283
290	-	-	-	-	-	-	-	-	-	-	-	3.364	1.303
295	-	-	-	-	-	-	-	-	-	-	-	-	1.323
300	-	-	-	-	-	-	-	-	-	-	-	-	1.344
305	-	-	-	-	-	-	-	-	-	-	-	-	1.364
310	-	-	-	-	-	-	-	-	-	-	-	-	1.384
315	-	-	-	-	-	-	-	-	-	-	-	-	1.404
320	-	-	-	-	-	-	-	-	-	-	-	-	1.425
325	-	-	-	-	-	-	-	-	-	-	-	-	1.445
330	-	-	-	-	-	-	-	-	-	-	-	-	1.465
335	-	-	-	-	-	-	-	-	-	-	-	-	1.486
340	-	-	-	-	-	-	-	-	-	-	-	-	1.506
345	-	-	-	-	-	-	-	-	-	-	-	-	1.526
350	-	-	-	-	-	-	-	-	-	-	-	-	1.546

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

This certificate is the property of Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

I/H Beams: 120 minutes Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	-	-	2.612	1.948	1.452	1.314	1.168	1.030	0.894	0.785	0.642	0.328	0.284
35	-	-	2.871	2.119	1.548	1.425	1.258	1.103	0.955	0.844	0.695	0.372	0.308
40	-	-	3.099	2.291	1.644	1.503	1.348	1.176	1.017	0.903	0.747	0.417	0.341
45	-	-	3.326	2.462	1.740	1.568	1.439	1.250	1.078	0.961	0.800	0.462	0.375
50	-	-	3.554	2.634	1.836	1.634	1.505	1.323	1.140	1.020	0.852	0.507	0.408
55	-	-	-	2.805	1.932	1.699	1.564	1.396	1.201	1.079	0.905	0.551	0.441
60	-	-	-	2.889	2.028	1.764	1.624	1.468	1.263	1.138	0.957	0.596	0.475
65	-	-	-	2.973	2.124	1.829	1.684	1.529	1.324	1.196	1.009	0.641	0.508
70	-	-	-	3.056	2.220	1.894	1.743	1.591	1.386	1.255	1.062	0.686	0.541
75	-	-	-	3.139	2.315	1.960	1.803	1.652	1.447	1.314	1.114	0.730	0.575
80	-	-	-	3.222	2.411	2.025	1.863	1.714	1.512	1.373	1.167	0.775	0.608
85	-	-	-	3.305	2.507	2.090	1.922	1.776	1.578	1.431	1.219	0.820	0.641
90	-	-	-	3.389	2.603	2.155	1.982	1.837	1.643	1.495	1.272	0.865	0.675
95	-	-	-	3.472	2.699	2.220	2.042	1.899	1.708	1.562	1.324	0.910	0.708
100	-	-	-	3.555	2.795	2.286	2.101	1.960	1.774	1.629	1.377	0.954	0.741
105	-	-	-	3.638	2.863	2.351	2.161	2.022	1.839	1.696	1.429	0.999	0.775
110	-	-	-	3.722	2.928	2.416	2.221	2.084	1.905	1.763	1.491	1.044	0.808
115	-	-	-	-	2.992	2.481	2.280	2.145	1.970	1.830	1.562	1.089	0.841
120	-	-	-	-	3.056	2.546	2.340	2.207	2.036	1.898	1.634	1.133	0.875
125	-	-	-	-	3.120	2.612	2.400	2.268	2.101	1.965	1.706	1.178	0.908
130	-	-	-	-	3.184	2.677	2.460	2.330	2.167	2.032	1.778	1.223	0.941
135	-	-	-	-	3.248	2.742	2.519	2.392	2.232	2.099	1.850	1.268	0.975
140	-	-	-	-	3.313	2.807	2.579	2.453	2.298	2.166	1.921	1.312	1.008
145	-	-	-	-	3.377	2.922	2.639	2.515	2.363	2.233	1.993	1.357	1.041
150	-	-	-	-	3.441	3.036	2.698	2.576	2.429	2.300	2.065	1.402	1.075
155	-	-	-	-	3.505	3.150	2.758	2.638	2.494	2.367	2.137	1.447	1.108
160	-	-	-	-	3.569	3.264	2.829	2.700	2.560	2.434	2.209	1.529	1.141
165	-	-	-	-	3.634	3.378	2.955	2.761	2.625	2.502	2.280	1.622	1.175
170	-	-	-	-	3.698	3.492	3.080	2.836	2.691	2.569	2.352	1.715	1.208
175	-	-	-	-	-	3.606	3.205	2.948	2.756	2.636	2.424	1.809	1.241
180	-	-	-	-	-	3.720	3.330	3.060	2.828	2.703	2.496	1.902	1.275
185	-	-	-	-	-	-	3.456	3.172	2.921	2.770	2.567	1.995	1.308
190	-	-	-	-	-	-	3.581	3.284	3.013	2.846	2.639	2.089	1.341
195	-	-	-	-	-	-	3.706	3.396	3.106	2.934	2.711	2.182	1.375
200	-	-	-	-	-	-	-	3.509	3.199	3.022	2.783	2.275	1.408
205	-	-	-	-	-	-	-	3.621	3.291	3.109	2.874	2.368	1.441
210	-	-	-	-	-	-	-	3.733	3.384	3.197	2.975	2.462	1.530
215	-	-	-	-	-	-	-	-	3.477	3.284	3.076	2.555	1.667
220	-	-	-	-	-	-	-	-	3.569	3.372	3.177	2.648	1.805
225	-	-	-	-	-	-	-	-	3.662	3.460	3.278	2.742	1.942
230	-	-	-	-	-	-	-	-	3.755	3.547	3.379	2.849	2.080
235	-	-	-	-	-	-	-	-	-	3.635	3.479	2.991	2.217
240	-	-	-	-	-	-	-	-	-	3.722	3.580	3.133	2.355
245	-	-	-	-	-	-	-	-	-	-	3.681	3.275	2.492
250	-	-	-	-	-	-	-	-	-	-	-	3.417	2.630
255	-	-	-	-	-	-	-	-	-	-	-	3.558	2.767
260	-	-	-	-	-	-	-	-	-	-	-	3.700	2.952
265	-	-	-	-	-	-	-	-	-	-	-	-	3.155
270	-	-	-	-	-	-	-	-	-	-	-	-	3.358
275	-	-	-	-	-	-	-	-	-	-	-	-	3.561
280	-	-	-	-	-	-	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-	-	-	-	-	-	-

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

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Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

I/H Columns: 15 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
35	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
40	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
45	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
50	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
55	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
60	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
65	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
70	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
75	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
80	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
85	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
90	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
95	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
100	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
105	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
110	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
115	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
120	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
125	0.294	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
130	0.314	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
135	0.333	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
140	0.352	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
145	0.371	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
150	0.391	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
155	0.410	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
160	0.429	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
165	0.448	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
170	0.468	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
175	0.487	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
180	0.506	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
185	0.526	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
190	0.545	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
195	0.564	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
200	0.583	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
205	0.603	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
210	0.622	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
215	0.641	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
220	0.660	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
225	0.680	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
230	0.699	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
235	0.718	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
240	0.738	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
245	0.757	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
250	0.776	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
255	0.795	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
260	0.815	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
265	0.834	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
270	0.853	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
275	0.872	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
280	0.892	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
285	0.911	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
290	0.930	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
295	0.949	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
300	0.969	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
305	0.988	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
310	1.007	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
315	1.027	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
320	1.046	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
325	1.065	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
330	1.084	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
335	1.104	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
340	1.123	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
345	1.142	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
350	1.161	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
355	1.181	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
360	1.200	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
365	1.219	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
370	1.239	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
375	1.258	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291

Thickness is intumescent only. Results apply to I/H section columns with 4-sided fire exposure.
Results also apply to I/H beams exposed on all 4 sides.

This certificate is the property of Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

I/H Columns: 30 minutes Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
35	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
40	0.316	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
45	0.361	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
50	0.406	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
55	0.451	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
60	0.496	0.294	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
65	0.541	0.309	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
70	0.586	0.323	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
75	0.631	0.337	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
80	0.676	0.351	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
85	0.721	0.366	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
90	0.766	0.380	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
95	0.811	0.394	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
100	0.856	0.408	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
105	0.901	0.423	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
110	0.946	0.437	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
115	0.991	0.451	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
120	1.036	0.465	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
125	1.081	0.479	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
130	1.126	0.494	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
135	1.171	0.508	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
140	1.216	0.522	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
145	1.261	0.536	0.294	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
150	1.306	0.551	0.307	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
155	1.351	0.565	0.320	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
160	1.396	0.579	0.333	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
165	1.441	0.593	0.346	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
170	1.486	0.608	0.360	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
175	1.531	0.622	0.373	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
180	1.581	0.636	0.386	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
185	1.635	0.650	0.399	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
190	1.689	0.665	0.412	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
195	1.743	0.679	0.425	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
200	1.797	0.693	0.438	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
205	1.851	0.707	0.451	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
210	1.905	0.722	0.464	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
215	1.960	0.736	0.477	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
220	2.014	0.750	0.490	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
225	2.068	0.764	0.503	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
230	2.122	0.778	0.516	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
235	2.176	0.793	0.529	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
240	2.230	0.807	0.542	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
245	2.284	0.821	0.555	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
250	2.338	0.835	0.568	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
255	2.392	0.850	0.581	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
260	2.446	0.864	0.594	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
265	2.501	0.878	0.607	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
270	2.555	0.892	0.620	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
275	2.609	0.907	0.633	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
280	2.663	0.921	0.646	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
285	2.717	0.935	0.659	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
290	2.771	0.949	0.672	0.292	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
295	2.825	0.964	0.685	0.306	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
300	2.879	0.978	0.698	0.320	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
305	2.933	0.992	0.711	0.334	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
310	2.987	1.006	0.724	0.348	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
315	3.042	1.021	0.737	0.362	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
320	3.096	1.035	0.750	0.376	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
325	3.150	1.049	0.763	0.390	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
330	-	1.063	0.776	0.404	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
335	-	1.077	0.789	0.418	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
340	-	1.092	0.802	0.433	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
345	-	1.106	0.815	0.447	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
350	-	1.120	0.828	0.461	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
355	-	1.134	0.841	0.475	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
360	-	1.149	0.854	0.489	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
365	-	1.163	0.867	0.503	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
370	-	1.177	0.880	0.517	0.296	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
375	-	1.191	0.893	0.531	0.309	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291

Thickness is intumescent only. Results apply to I/H section columns with 4-sided fire exposure.
Results also apply to I/H beams exposed on all 4 sides.

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CERTIFICATE No CF 845
JOTUN A/S

I/H Columns: 45 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	0.779	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
35	0.977	0.327	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
40	1.175	0.358	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
45	1.373	0.388	0.306	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
50	1.554	0.419	0.323	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
55	1.600	0.450	0.340	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
60	1.647	0.481	0.357	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
65	1.693	0.512	0.374	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
70	1.739	0.543	0.391	0.302	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
75	1.785	0.574	0.408	0.317	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
80	1.832	0.604	0.425	0.332	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
85	1.878	0.635	0.442	0.348	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
90	1.924	0.666	0.459	0.363	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
95	1.971	0.697	0.476	0.378	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
100	2.017	0.728	0.493	0.393	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
105	2.063	0.759	0.510	0.409	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
110	2.109	0.790	0.527	0.424	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
115	2.156	0.820	0.544	0.439	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
120	2.202	0.851	0.561	0.454	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
125	2.248	0.882	0.578	0.470	0.305	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
130	2.295	0.913	0.595	0.485	0.319	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
135	2.341	0.944	0.612	0.500	0.334	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
140	2.387	0.975	0.629	0.515	0.349	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
145	2.434	1.006	0.646	0.531	0.363	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
150	2.480	1.036	0.663	0.546	0.378	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
155	2.526	1.067	0.680	0.561	0.392	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
160	2.572	1.098	0.697	0.576	0.407	0.297	0.291	0.291	0.291	0.291	0.291	0.291	0.291
165	2.619	1.129	0.714	0.592	0.422	0.312	0.291	0.291	0.291	0.291	0.291	0.291	0.291
170	2.665	1.160	0.731	0.607	0.436	0.327	0.291	0.291	0.291	0.291	0.291	0.291	0.291
175	2.711	1.191	0.748	0.622	0.451	0.342	0.291	0.291	0.291	0.291	0.291	0.291	0.291
180	2.758	1.222	0.765	0.637	0.465	0.356	0.291	0.291	0.291	0.291	0.291	0.291	0.291
185	2.804	1.253	0.782	0.653	0.480	0.371	0.291	0.291	0.291	0.291	0.291	0.291	0.291
190	2.850	1.283	0.799	0.668	0.495	0.386	0.291	0.291	0.291	0.291	0.291	0.291	0.291
195	2.896	1.314	0.816	0.683	0.509	0.401	0.299	0.291	0.291	0.291	0.291	0.291	0.291
200	2.943	1.345	0.833	0.699	0.524	0.416	0.313	0.291	0.291	0.291	0.291	0.291	0.291
205	2.989	1.376	0.850	0.714	0.539	0.431	0.328	0.291	0.291	0.291	0.291	0.291	0.291
210	3.035	1.407	0.867	0.729	0.553	0.446	0.342	0.291	0.291	0.291	0.291	0.291	0.291
215	3.082	1.438	0.884	0.744	0.568	0.461	0.357	0.291	0.291	0.291	0.291	0.291	0.291
220	3.128	1.469	0.901	0.760	0.582	0.475	0.371	0.291	0.291	0.291	0.291	0.291	0.291
225	-	1.499	0.918	0.775	0.597	0.490	0.386	0.291	0.291	0.291	0.291	0.291	0.291
230	-	1.530	0.935	0.790	0.612	0.505	0.400	0.293	0.291	0.291	0.291	0.291	0.291
235	-	1.576	0.952	0.805	0.626	0.520	0.415	0.308	0.291	0.291	0.291	0.291	0.291
240	-	1.646	0.968	0.821	0.641	0.535	0.429	0.322	0.291	0.291	0.291	0.291	0.291
245	-	1.715	0.985	0.836	0.656	0.550	0.444	0.337	0.291	0.291	0.291	0.291	0.291
250	-	1.784	1.002	0.851	0.670	0.565	0.458	0.351	0.291	0.291	0.291	0.291	0.291
255	-	1.854	1.019	0.866	0.685	0.580	0.473	0.365	0.291	0.291	0.291	0.291	0.291
260	-	1.923	1.036	0.882	0.699	0.594	0.487	0.380	0.291	0.291	0.291	0.291	0.291
265	-	1.992	1.053	0.897	0.714	0.609	0.502	0.394	0.291	0.291	0.291	0.291	0.291
270	-	2.062	1.070	0.912	0.729	0.624	0.516	0.409	0.291	0.291	0.291	0.291	0.291
275	-	2.131	1.087	0.927	0.743	0.639	0.531	0.423	0.300	0.291	0.291	0.291	0.291
280	-	2.201	1.104	0.943	0.758	0.654	0.545	0.438	0.315	0.291	0.291	0.291	0.291
285	-	2.270	1.121	0.958	0.772	0.669	0.560	0.452	0.329	0.291	0.291	0.291	0.291
290	-	2.339	1.138	0.973	0.787	0.684	0.574	0.466	0.344	0.291	0.291	0.291	0.291
295	-	2.409	1.155	0.989	0.802	0.698	0.589	0.481	0.358	0.291	0.291	0.291	0.291
300	-	2.478	1.172	1.004	0.816	0.713	0.603	0.495	0.373	0.291	0.291	0.291	0.291
305	-	2.547	1.189	1.019	0.831	0.728	0.618	0.510	0.388	0.291	0.291	0.291	0.291
310	-	2.617	1.206	1.034	0.846	0.743	0.632	0.524	0.402	0.291	0.291	0.291	0.291
315	-	2.686	1.223	1.050	0.860	0.758	0.647	0.538	0.417	0.291	0.291	0.291	0.291
320	-	2.756	1.240	1.065	0.875	0.773	0.661	0.553	0.431	0.291	0.291	0.291	0.291
325	-	2.825	1.257	1.080	0.889	0.788	0.676	0.567	0.446	0.306	0.291	0.291	0.291
330	-	2.894	1.274	1.095	0.904	0.803	0.690	0.582	0.460	0.321	0.291	0.291	0.291
335	-	2.964	1.291	1.111	0.919	0.817	0.705	0.596	0.475	0.336	0.291	0.291	0.291
340	-	3.033	1.308	1.126	0.933	0.832	0.719	0.611	0.489	0.351	0.291	0.291	0.291
345	-	3.102	1.325	1.141	0.948	0.847	0.734	0.625	0.504	0.366	0.293	0.291	0.291
350	-	3.172	1.342	1.156	0.962	0.862	0.748	0.639	0.518	0.381	0.307	0.291	0.291
355	-	-	1.359	1.172	0.977	0.877	0.763	0.654	0.533	0.396	0.321	0.291	0.291
360	-	-	1.376	1.187	0.992	0.892	0.777	0.668	0.547	0.411	0.335	0.291	0.291
365	-	-	1.393	1.202	1.006	0.907	0.792	0.683	0.562	0.427	0.349	0.291	0.291
370	-	-	1.410	1.217	1.021	0.922	0.806	0.697	0.577	0.442	0.363	0.291	0.291
375	-	-	1.427	1.233	1.036	0.936	0.821	0.711	0.591	0.457	0.377	0.291	0.291

Thickness is intumescent only. Results apply to I/H section columns with 4-sided fire exposure.
Results also apply to I/H beams exposed on all 4 sides.

This certificate is the property of Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

I/H Columns: 60 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	1.582	0.805	0.324	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
35	1.734	0.937	0.358	0.308	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
40	1.886	1.070	0.391	0.327	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
45	2.038	1.203	0.425	0.347	0.299	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
50	2.190	1.335	0.458	0.366	0.316	0.294	0.291	0.291	0.291	0.291	0.291	0.291	0.291
55	2.342	1.468	0.491	0.385	0.334	0.310	0.291	0.291	0.291	0.291	0.291	0.291	0.291
60	2.494	1.564	0.525	0.405	0.351	0.327	0.291	0.291	0.291	0.291	0.291	0.291	0.291
65	2.646	1.604	0.558	0.424	0.368	0.344	0.302	0.291	0.291	0.291	0.291	0.291	0.291
70	2.798	1.643	0.592	0.444	0.386	0.360	0.318	0.291	0.291	0.291	0.291	0.291	0.291
75	2.950	1.683	0.625	0.463	0.403	0.377	0.334	0.293	0.291	0.291	0.291	0.291	0.291
80	-	1.722	0.659	0.483	0.420	0.394	0.350	0.308	0.291	0.291	0.291	0.291	0.291
85	-	1.762	0.692	0.502	0.437	0.410	0.366	0.323	0.291	0.291	0.291	0.291	0.291
90	-	1.801	0.726	0.521	0.455	0.427	0.382	0.339	0.295	0.291	0.291	0.291	0.291
95	-	1.841	0.759	0.541	0.472	0.443	0.398	0.354	0.310	0.291	0.291	0.291	0.291
100	-	1.880	0.793	0.560	0.489	0.460	0.413	0.369	0.325	0.291	0.291	0.291	0.291
105	-	1.920	0.826	0.580	0.507	0.477	0.429	0.385	0.340	0.298	0.291	0.291	0.291
110	-	1.959	0.860	0.599	0.524	0.493	0.445	0.400	0.355	0.313	0.291	0.291	0.291
115	-	1.999	0.893	0.618	0.541	0.510	0.461	0.416	0.370	0.328	0.291	0.291	0.291
120	-	2.038	0.927	0.638	0.559	0.527	0.477	0.431	0.385	0.342	0.291	0.291	0.291
125	-	2.078	0.960	0.657	0.576	0.543	0.493	0.446	0.400	0.357	0.291	0.291	0.291
130	-	2.117	0.994	0.677	0.593	0.560	0.509	0.462	0.415	0.372	0.291	0.291	0.291
135	-	2.157	1.027	0.696	0.611	0.577	0.524	0.477	0.430	0.386	0.304	0.291	0.291
140	-	2.196	1.061	0.716	0.628	0.593	0.540	0.492	0.445	0.401	0.318	0.291	0.291
145	-	2.236	1.094	0.735	0.645	0.610	0.556	0.508	0.460	0.416	0.333	0.291	0.291
150	-	2.275	1.127	0.754	0.663	0.627	0.572	0.523	0.475	0.431	0.347	0.291	0.291
155	-	2.315	1.161	0.774	0.680	0.643	0.588	0.538	0.490	0.445	0.362	0.291	0.291
160	-	2.354	1.194	0.793	0.697	0.660	0.604	0.554	0.505	0.460	0.376	0.291	0.291
165	-	2.394	1.228	0.813	0.715	0.677	0.620	0.569	0.520	0.475	0.391	0.291	0.291
170	-	2.433	1.261	0.832	0.732	0.693	0.635	0.584	0.534	0.490	0.406	0.291	0.291
175	-	2.473	1.295	0.851	0.749	0.710	0.651	0.600	0.549	0.504	0.420	0.291	0.291
180	-	2.512	1.328	0.871	0.767	0.727	0.667	0.615	0.564	0.519	0.435	0.291	0.291
185	-	2.552	1.362	0.890	0.784	0.743	0.683	0.630	0.579	0.534	0.449	0.291	0.291
190	-	2.591	1.395	0.910	0.801	0.760	0.699	0.646	0.594	0.548	0.464	0.291	0.291
195	-	2.631	1.429	0.929	0.819	0.776	0.715	0.661	0.609	0.563	0.478	0.304	0.291
200	-	2.670	1.462	0.948	0.836	0.793	0.731	0.677	0.624	0.578	0.493	0.318	0.291
205	-	2.710	1.496	0.968	0.853	0.810	0.746	0.692	0.639	0.593	0.507	0.332	0.291
210	-	2.749	1.529	0.987	0.870	0.826	0.762	0.707	0.654	0.607	0.522	0.346	0.291
215	-	2.789	1.571	1.007	0.888	0.843	0.778	0.723	0.669	0.622	0.536	0.360	0.291
220	-	2.828	1.626	1.026	0.905	0.860	0.794	0.738	0.684	0.637	0.551	0.375	0.291
225	-	2.868	1.680	1.046	0.922	0.876	0.810	0.753	0.699	0.651	0.565	0.389	0.291
230	-	2.907	1.735	1.065	0.940	0.893	0.826	0.769	0.714	0.666	0.580	0.403	0.291
235	-	2.947	1.789	1.084	0.957	0.910	0.842	0.784	0.729	0.681	0.594	0.417	0.291
240	-	2.986	1.844	1.104	0.974	0.926	0.858	0.799	0.744	0.696	0.609	0.431	0.291
245	-	3.026	1.899	1.123	0.992	0.943	0.873	0.815	0.759	0.710	0.623	0.445	0.291
250	-	3.065	1.953	1.143	1.009	0.960	0.889	0.830	0.774	0.725	0.638	0.459	0.291
255	-	-	2.008	1.162	1.026	0.976	0.905	0.845	0.789	0.740	0.652	0.473	0.291
260	-	-	2.062	1.181	1.044	0.993	0.921	0.861	0.804	0.755	0.667	0.487	0.291
265	-	-	2.117	1.201	1.061	1.010	0.937	0.876	0.819	0.769	0.681	0.502	0.291
270	-	-	2.171	1.220	1.078	1.026	0.953	0.891	0.833	0.784	0.696	0.516	0.291
275	-	-	2.226	1.240	1.096	1.043	0.969	0.907	0.848	0.799	0.710	0.530	0.291
280	-	-	2.280	1.259	1.113	1.060	0.984	0.922	0.863	0.813	0.725	0.544	0.291
285	-	-	2.335	1.278	1.130	1.076	1.000	0.938	0.878	0.828	0.739	0.558	0.291
290	-	-	2.389	1.298	1.148	1.093	1.016	0.953	0.893	0.843	0.754	0.572	0.291
295	-	-	2.444	1.317	1.165	1.109	1.032	0.968	0.908	0.858	0.769	0.586	0.291
300	-	-	2.499	1.337	1.182	1.126	1.048	0.984	0.923	0.872	0.783	0.600	0.291
305	-	-	2.553	1.356	1.200	1.143	1.064	0.999	0.938	0.887	0.798	0.614	0.291
310	-	-	2.608	1.376	1.217	1.159	1.080	1.014	0.953	0.902	0.812	0.629	0.304
315	-	-	2.662	1.395	1.234	1.176	1.095	1.030	0.968	0.917	0.827	0.643	0.319
320	-	-	2.717	1.414	1.252	1.193	1.111	1.045	0.983	0.931	0.841	0.657	0.334
325	-	-	2.771	1.434	1.269	1.209	1.127	1.060	0.998	0.946	0.856	0.671	0.348
330	-	-	2.826	1.453	1.286	1.226	1.143	1.076	1.013	0.961	0.870	0.685	0.363
335	-	-	2.880	1.473	1.304	1.243	1.159	1.091	1.028	0.975	0.885	0.699	0.378
340	-	-	2.935	1.492	1.321	1.259	1.175	1.106	1.043	0.990	0.899	0.713	0.393
345	-	-	2.990	1.511	1.338	1.276	1.191	1.122	1.058	1.005	0.914	0.727	0.408
350	-	-	3.044	1.531	1.355	1.293	1.206	1.137	1.073	1.020	0.928	0.741	0.423
355	-	-	3.099	1.558	1.373	1.309	1.222	1.153	1.088	1.034	0.943	0.756	0.438
360	-	-	3.153	1.696	1.390	1.326	1.238	1.168	1.103	1.049	0.957	0.770	0.453
365	-	-	-	1.834	1.407	1.343	1.254	1.183	1.118	1.064	0.972	0.784	0.468
370	-	-	-	1.972	1.425	1.359	1.270	1.199	1.133	1.078	0.986	0.798	0.483
375	-	-	-	2.110	1.442	1.376	1.286	1.214	1.147	1.093	1.001	0.812	0.497

Thickness is intumescent only. Results apply to I/H section columns with 4-sided fire exposure.
Results also apply to I/H beams exposed on all 4 sides.

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CERTIFICATE No CF 845
JOTUN A/S

I/H Columns: 75 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	2.463	1.419	0.848	0.353	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291
35	2.731	1.570	0.941	0.393	0.336	0.321	0.300	0.291	0.291	0.291	0.291	0.291	0.291
40	2.999	1.617	1.035	0.432	0.362	0.343	0.319	0.300	0.291	0.291	0.291	0.291	0.291
45	-	1.665	1.129	0.472	0.388	0.364	0.339	0.318	0.298	0.291	0.291	0.291	0.291
50	-	1.712	1.222	0.512	0.414	0.386	0.358	0.336	0.316	0.298	0.291	0.291	0.291
55	-	1.760	1.316	0.551	0.440	0.408	0.377	0.355	0.334	0.316	0.291	0.291	0.291
60	-	1.807	1.410	0.591	0.466	0.430	0.396	0.373	0.352	0.333	0.301	0.291	0.291
65	-	1.854	1.504	0.631	0.492	0.451	0.415	0.391	0.369	0.350	0.318	0.291	0.291
70	-	1.902	1.570	0.670	0.518	0.473	0.434	0.410	0.387	0.367	0.335	0.291	0.291
75	-	1.949	1.610	0.710	0.544	0.495	0.454	0.428	0.405	0.385	0.351	0.291	0.291
80	-	1.997	1.651	0.750	0.570	0.516	0.473	0.446	0.422	0.402	0.368	0.291	0.291
85	-	2.044	1.691	0.790	0.596	0.538	0.492	0.465	0.440	0.419	0.384	0.307	0.291
90	-	2.091	1.732	0.829	0.622	0.560	0.511	0.483	0.458	0.436	0.401	0.322	0.291
95	-	2.139	1.772	0.869	0.648	0.582	0.530	0.501	0.475	0.453	0.417	0.338	0.291
100	-	2.186	1.813	0.909	0.674	0.603	0.549	0.520	0.493	0.471	0.434	0.353	0.291
105	-	2.234	1.853	0.948	0.700	0.625	0.568	0.538	0.511	0.488	0.450	0.369	0.291
110	-	2.281	1.894	0.988	0.726	0.647	0.588	0.557	0.528	0.505	0.467	0.384	0.291
115	-	2.329	1.934	1.028	0.752	0.668	0.607	0.575	0.546	0.522	0.483	0.400	0.291
120	-	2.376	1.975	1.067	0.778	0.690	0.626	0.593	0.564	0.539	0.500	0.415	0.291
125	-	2.423	2.016	1.107	0.804	0.712	0.645	0.612	0.581	0.557	0.516	0.431	0.291
130	-	2.471	2.056	1.147	0.830	0.734	0.664	0.630	0.599	0.574	0.533	0.446	0.291
135	-	2.518	2.097	1.186	0.856	0.755	0.683	0.648	0.617	0.591	0.550	0.462	0.305
140	-	2.566	2.137	1.226	0.882	0.777	0.703	0.667	0.634	0.608	0.566	0.477	0.321
145	-	2.613	2.178	1.266	0.907	0.799	0.722	0.685	0.652	0.625	0.583	0.493	0.336
150	-	2.660	2.218	1.306	0.933	0.820	0.741	0.703	0.670	0.643	0.599	0.508	0.351
155	-	2.708	2.259	1.345	0.959	0.842	0.760	0.722	0.687	0.660	0.616	0.524	0.366
160	-	2.755	2.299	1.385	0.985	0.864	0.779	0.740	0.705	0.677	0.632	0.539	0.382
165	-	2.803	2.340	1.425	1.011	0.886	0.798	0.758	0.723	0.694	0.649	0.555	0.397
170	-	2.850	2.380	1.464	1.037	0.907	0.817	0.777	0.740	0.711	0.665	0.570	0.412
175	-	2.897	2.421	1.504	1.063	0.929	0.837	0.795	0.758	0.729	0.682	0.586	0.427
180	-	2.945	2.461	1.544	1.089	0.951	0.856	0.813	0.776	0.746	0.698	0.601	0.443
185	-	2.992	2.502	1.597	1.115	0.972	0.875	0.832	0.793	0.763	0.715	0.617	0.458
190	-	3.040	2.542	1.651	1.141	0.994	0.894	0.850	0.811	0.780	0.732	0.632	0.473
195	-	3.087	2.583	1.706	1.167	1.016	0.913	0.868	0.829	0.797	0.748	0.648	0.489
200	-	-	2.623	1.761	1.193	1.038	0.932	0.887	0.846	0.815	0.765	0.663	0.504
205	-	-	2.664	1.816	1.219	1.059	0.951	0.905	0.864	0.832	0.781	0.679	0.519
210	-	-	2.704	1.871	1.245	1.081	0.971	0.923	0.882	0.849	0.798	0.694	0.534
215	-	-	2.745	1.926	1.271	1.103	0.990	0.942	0.899	0.866	0.814	0.710	0.550
220	-	-	2.785	1.981	1.297	1.125	1.009	0.960	0.917	0.884	0.831	0.725	0.565
225	-	-	2.826	2.035	1.323	1.146	1.028	0.979	0.935	0.901	0.847	0.741	0.580
230	-	-	2.866	2.090	1.349	1.168	1.047	0.997	0.952	0.918	0.864	0.756	0.595
235	-	-	2.907	2.145	1.375	1.190	1.066	1.015	0.970	0.935	0.880	0.772	0.611
240	-	-	2.947	2.200	1.401	1.211	1.086	1.034	0.988	0.952	0.897	0.787	0.626
245	-	-	2.988	2.255	1.427	1.233	1.105	1.052	1.005	0.970	0.913	0.803	0.641
250	-	-	3.028	2.310	1.453	1.255	1.124	1.070	1.023	0.987	0.930	0.818	0.657
255	-	-	3.069	2.365	1.479	1.277	1.143	1.089	1.041	1.004	0.947	0.834	0.672
260	-	-	-	2.419	1.505	1.298	1.162	1.107	1.058	1.021	0.963	0.849	0.687
265	-	-	-	2.474	1.531	1.320	1.181	1.125	1.076	1.038	0.980	0.865	0.702
270	-	-	-	2.529	1.570	1.342	1.200	1.144	1.094	1.056	0.996	0.880	0.718
275	-	-	-	2.584	1.643	1.363	1.220	1.162	1.111	1.073	1.013	0.896	0.733
280	-	-	-	2.639	1.716	1.385	1.239	1.180	1.129	1.090	1.029	0.911	0.748
285	-	-	-	2.694	1.789	1.407	1.258	1.199	1.147	1.107	1.046	0.927	0.763
290	-	-	-	2.749	1.862	1.429	1.277	1.217	1.165	1.124	1.062	0.942	0.779
295	-	-	-	2.804	1.935	1.450	1.296	1.235	1.182	1.142	1.079	0.958	0.794
300	-	-	-	2.858	2.008	1.472	1.315	1.254	1.200	1.159	1.095	0.973	0.809
305	-	-	-	2.913	2.081	1.494	1.335	1.272	1.218	1.176	1.112	0.989	0.825
310	-	-	-	2.968	2.154	1.515	1.354	1.290	1.235	1.193	1.129	1.004	0.840
315	-	-	-	3.023	2.227	1.537	1.373	1.309	1.253	1.210	1.145	1.020	0.855
320	-	-	-	3.078	2.301	1.602	1.392	1.327	1.271	1.228	1.162	1.035	0.870
325	-	-	-	3.133	2.374	1.718	1.411	1.346	1.288	1.245	1.178	1.051	0.886
330	-	-	-	-	2.447	1.834	1.430	1.364	1.306	1.262	1.195	1.066	0.901
335	-	-	-	-	2.520	1.950	1.449	1.382	1.324	1.279	1.211	1.082	0.916
340	-	-	-	-	2.593	2.067	1.469	1.401	1.341	1.296	1.228	1.097	0.932
345	-	-	-	-	2.666	2.183	1.488	1.419	1.359	1.314	1.244	1.113	0.947
350	-	-	-	-	2.739	2.299	1.507	1.437	1.377	1.331	1.261	1.128	0.962
355	-	-	-	-	2.812	2.415	1.526	1.456	1.394	1.348	1.277	1.144	0.977
360	-	-	-	-	2.885	2.531	1.545	1.474	1.412	1.365	1.294	1.159	0.993
365	-	-	-	-	2.958	2.648	1.699	1.492	1.430	1.383	1.310	1.175	1.008
370	-	-	-	-	3.031	2.764	1.885	1.511	1.447	1.400	1.327	1.190	1.023
375	-	-	-	-	3.104	2.880	2.071	1.529	1.465	1.417	1.344	1.206	1.038

Thickness is intumescent only. Results apply to I/H section columns with 4-sided fire exposure.
Results also apply to I/H beams exposed on all 4 sides.

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Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

I/H Columns: 90 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	-	2.130	1.317	0.923	0.642	0.542	0.331	0.291	0.291	0.291	0.291	0.291	0.291
35	-	2.277	1.488	1.018	0.686	0.575	0.364	0.340	0.322	0.309	0.291	0.291	0.291
40	-	2.424	1.580	1.113	0.730	0.609	0.397	0.368	0.346	0.331	0.310	0.291	0.291
45	-	2.570	1.627	1.209	0.775	0.642	0.429	0.396	0.371	0.353	0.329	0.291	0.291
50	-	2.717	1.674	1.304	0.819	0.676	0.462	0.424	0.395	0.374	0.349	0.302	0.291
55	-	2.864	1.722	1.400	0.864	0.709	0.495	0.452	0.419	0.396	0.368	0.320	0.291
60	-	3.010	1.769	1.495	0.908	0.743	0.528	0.481	0.443	0.417	0.388	0.339	0.291
65	-	-	1.816	1.567	0.952	0.776	0.561	0.509	0.468	0.439	0.408	0.357	0.291
70	-	-	1.864	1.610	0.997	0.809	0.594	0.537	0.492	0.460	0.427	0.375	0.292
75	-	-	1.911	1.652	1.041	0.843	0.627	0.565	0.516	0.482	0.447	0.393	0.309
80	-	-	1.958	1.694	1.085	0.876	0.660	0.593	0.541	0.503	0.466	0.411	0.327
85	-	-	2.006	1.736	1.130	0.910	0.692	0.621	0.565	0.525	0.486	0.430	0.344
90	-	-	2.053	1.779	1.174	0.943	0.725	0.649	0.589	0.546	0.505	0.448	0.361
95	-	-	2.100	1.821	1.219	0.977	0.758	0.678	0.614	0.568	0.525	0.466	0.379
100	-	-	2.148	1.863	1.263	1.010	0.791	0.706	0.638	0.589	0.544	0.484	0.396
105	-	-	2.195	1.905	1.307	1.044	0.824	0.734	0.662	0.611	0.564	0.502	0.413
110	-	-	2.242	1.948	1.352	1.077	0.857	0.762	0.686	0.632	0.584	0.520	0.431
115	-	-	2.290	1.990	1.396	1.110	0.890	0.790	0.711	0.654	0.603	0.539	0.448
120	-	-	2.337	2.032	1.440	1.144	0.923	0.818	0.735	0.675	0.623	0.557	0.465
125	-	-	2.384	2.074	1.485	1.177	0.956	0.846	0.759	0.697	0.642	0.575	0.483
130	-	-	2.432	2.117	1.529	1.211	0.988	0.875	0.784	0.718	0.662	0.593	0.500
135	-	-	2.479	2.159	1.576	1.244	1.021	0.903	0.808	0.740	0.681	0.611	0.518
140	-	-	2.526	2.201	1.625	1.278	1.054	0.931	0.832	0.761	0.701	0.630	0.535
145	-	-	2.574	2.243	1.674	1.311	1.087	0.959	0.856	0.783	0.720	0.648	0.552
150	-	-	2.621	2.286	1.723	1.345	1.120	0.987	0.881	0.804	0.740	0.666	0.570
155	-	-	2.668	2.328	1.772	1.378	1.153	1.015	0.905	0.826	0.759	0.684	0.587
160	-	-	2.716	2.370	1.821	1.412	1.186	1.043	0.929	0.847	0.779	0.702	0.604
165	-	-	2.763	2.412	1.870	1.445	1.219	1.071	0.954	0.869	0.799	0.721	0.622
170	-	-	2.810	2.455	1.919	1.478	1.251	1.100	0.978	0.890	0.818	0.739	0.639
175	-	-	2.858	2.497	1.968	1.512	1.284	1.128	1.002	0.912	0.838	0.757	0.657
180	-	-	2.905	2.539	2.017	1.545	1.317	1.156	1.027	0.933	0.857	0.775	0.674
185	-	-	2.953	2.581	2.066	1.604	1.350	1.184	1.051	0.955	0.877	0.793	0.691
190	-	-	3.000	2.624	2.115	1.667	1.383	1.212	1.075	0.976	0.896	0.811	0.709
195	-	-	3.047	2.666	2.164	1.729	1.416	1.240	1.099	0.998	0.916	0.830	0.726
200	-	-	-	2.708	2.213	1.791	1.449	1.268	1.124	1.020	0.935	0.848	0.743
205	-	-	-	2.750	2.262	1.853	1.482	1.297	1.148	1.041	0.955	0.866	0.761
210	-	-	-	2.793	2.311	1.916	1.515	1.325	1.172	1.063	0.975	0.884	0.778
215	-	-	-	2.835	2.360	1.978	1.547	1.353	1.197	1.084	0.994	0.902	0.795
220	-	-	-	2.877	2.409	2.040	1.612	1.381	1.221	1.106	1.014	0.921	0.813
225	-	-	-	2.919	2.458	2.102	1.678	1.409	1.245	1.127	1.033	0.939	0.830
230	-	-	-	2.962	2.507	2.164	1.744	1.437	1.269	1.149	1.053	0.957	0.848
235	-	-	-	3.004	2.556	2.227	1.810	1.465	1.294	1.170	1.072	0.975	0.865
240	-	-	-	3.046	2.605	2.289	1.877	1.494	1.318	1.192	1.092	0.993	0.882
245	-	-	-	3.088	2.654	2.351	1.943	1.522	1.342	1.213	1.111	1.012	0.900
250	-	-	-	-	2.703	2.413	2.009	1.551	1.367	1.235	1.131	1.030	0.917
255	-	-	-	-	2.752	2.476	2.075	1.624	1.391	1.256	1.151	1.048	0.934
260	-	-	-	-	2.801	2.538	2.141	1.696	1.415	1.278	1.170	1.066	0.952
265	-	-	-	-	2.850	2.600	2.207	1.769	1.440	1.299	1.190	1.084	0.969
270	-	-	-	-	2.899	2.662	2.273	1.841	1.464	1.321	1.209	1.102	0.987
275	-	-	-	-	2.948	2.725	2.339	1.914	1.488	1.342	1.229	1.121	1.004
280	-	-	-	-	2.997	2.787	2.406	1.986	1.512	1.364	1.248	1.139	1.021
285	-	-	-	-	3.046	2.849	2.472	2.058	1.537	1.385	1.268	1.157	1.039
290	-	-	-	-	3.095	2.911	2.538	2.131	1.598	1.407	1.287	1.175	1.056
295	-	-	-	-	3.144	2.973	2.604	2.203	1.696	1.428	1.307	1.193	1.073
300	-	-	-	-	-	3.036	2.670	2.276	1.795	1.450	1.327	1.212	1.091
305	-	-	-	-	-	3.098	2.736	2.348	1.893	1.471	1.346	1.230	1.108
310	-	-	-	-	-	-	2.802	2.421	1.991	1.493	1.366	1.248	1.125
315	-	-	-	-	-	-	2.868	2.493	2.090	1.514	1.385	1.266	1.143
320	-	-	-	-	-	-	2.935	2.566	2.188	1.536	1.405	1.284	1.160
325	-	-	-	-	-	-	3.001	2.638	2.287	1.609	1.424	1.302	1.178
330	-	-	-	-	-	-	3.067	2.711	2.385	1.762	1.444	1.321	1.195
335	-	-	-	-	-	-	3.133	2.783	2.483	1.915	1.463	1.339	1.212
340	-	-	-	-	-	-	-	2.855	2.582	2.067	1.483	1.357	1.230
345	-	-	-	-	-	-	-	2.928	2.680	2.220	1.502	1.375	1.247
350	-	-	-	-	-	-	-	3.000	2.779	2.373	1.522	1.393	1.264
355	-	-	-	-	-	-	-	3.073	2.877	2.526	1.542	1.412	1.282
360	-	-	-	-	-	-	-	-	2.975	2.679	1.696	1.430	1.299
365	-	-	-	-	-	-	-	-	3.074	2.832	1.931	1.448	1.316
370	-	-	-	-	-	-	-	-	-	2.984	2.167	1.466	1.334
375	-	-	-	-	-	-	-	-	-	-	2.403	1.484	1.351

Thickness is intumescent only. Results apply to I/H section columns with 4-sided fire exposure.
Results also apply to I/H beams exposed on all 4 sides

This certificate is the property of Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

I/H Columns: 105 minutes Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	-	2.767	1.700	1.321	0.994	0.880	0.723	0.600	0.349	0.332	0.291	0.291	0.291
35	-	-	1.861	1.482	1.096	0.964	0.783	0.643	0.389	0.368	0.340	0.298	0.291
40	-	-	2.021	1.577	1.198	1.048	0.843	0.686	0.429	0.405	0.371	0.321	0.291
45	-	-	2.182	1.626	1.301	1.132	0.903	0.729	0.468	0.441	0.403	0.345	0.291
50	-	-	2.342	1.675	1.403	1.216	0.963	0.772	0.508	0.478	0.435	0.369	0.304
55	-	-	2.502	1.723	1.505	1.300	1.023	0.815	0.548	0.514	0.466	0.393	0.324
60	-	-	2.663	1.772	1.574	1.384	1.083	0.858	0.588	0.551	0.498	0.417	0.344
65	-	-	2.823	1.821	1.618	1.468	1.143	0.901	0.627	0.587	0.530	0.440	0.364
70	-	-	2.983	1.870	1.663	1.550	1.203	0.944	0.667	0.624	0.561	0.464	0.384
75	-	-	-	1.918	1.707	1.594	1.263	0.986	0.707	0.660	0.593	0.488	0.404
80	-	-	-	1.967	1.751	1.638	1.323	1.029	0.747	0.697	0.625	0.512	0.425
85	-	-	-	2.016	1.795	1.682	1.383	1.072	0.786	0.733	0.656	0.535	0.445
90	-	-	-	2.064	1.839	1.726	1.443	1.115	0.826	0.770	0.688	0.559	0.465
95	-	-	-	2.113	1.883	1.770	1.503	1.158	0.866	0.806	0.720	0.583	0.485
100	-	-	-	2.162	1.927	1.814	1.560	1.201	0.906	0.843	0.751	0.607	0.505
105	-	-	-	2.210	1.972	1.857	1.607	1.244	0.945	0.879	0.783	0.631	0.525
110	-	-	-	2.259	2.016	1.901	1.653	1.287	0.985	0.916	0.815	0.654	0.545
115	-	-	-	2.308	2.060	1.945	1.700	1.330	1.025	0.952	0.846	0.678	0.566
120	-	-	-	2.357	2.104	1.989	1.746	1.373	1.065	0.989	0.878	0.702	0.586
125	-	-	-	2.405	2.148	2.033	1.792	1.416	1.104	1.025	0.910	0.726	0.606
130	-	-	-	2.454	2.192	2.077	1.839	1.459	1.144	1.062	0.941	0.750	0.626
135	-	-	-	2.503	2.237	2.121	1.885	1.502	1.184	1.098	0.973	0.773	0.646
140	-	-	-	2.551	2.281	2.164	1.932	1.545	1.224	1.135	1.005	0.797	0.666
145	-	-	-	2.600	2.325	2.208	1.978	1.599	1.263	1.171	1.036	0.821	0.686
150	-	-	-	2.649	2.369	2.252	2.025	1.655	1.303	1.208	1.068	0.845	0.707
155	-	-	-	2.698	2.413	2.296	2.071	1.710	1.343	1.244	1.100	0.869	0.727
160	-	-	-	2.746	2.457	2.340	2.118	1.766	1.383	1.281	1.131	0.892	0.747
165	-	-	-	2.795	2.501	2.384	2.164	1.821	1.422	1.317	1.163	0.916	0.767
170	-	-	-	2.844	2.546	2.428	2.210	1.877	1.462	1.354	1.194	0.940	0.787
175	-	-	-	2.892	2.590	2.471	2.257	1.932	1.502	1.391	1.226	0.964	0.807
180	-	-	-	2.941	2.634	2.515	2.303	1.988	1.542	1.427	1.258	0.987	0.828
185	-	-	-	2.990	2.678	2.559	2.350	2.043	1.606	1.464	1.289	1.011	0.848
190	-	-	-	3.039	2.722	2.603	2.396	2.099	1.675	1.500	1.321	1.035	0.868
195	-	-	-	3.087	2.766	2.647	2.443	2.154	1.745	1.537	1.353	1.059	0.888
200	-	-	-	-	2.810	2.691	2.489	2.210	1.814	1.596	1.384	1.083	0.908
205	-	-	-	-	2.855	2.735	2.535	2.265	1.884	1.667	1.416	1.106	0.928
210	-	-	-	-	2.899	2.778	2.582	2.321	1.953	1.738	1.448	1.130	0.948
215	-	-	-	-	2.943	2.822	2.628	2.376	2.023	1.810	1.479	1.154	0.969
220	-	-	-	-	2.987	2.866	2.675	2.432	2.093	1.881	1.511	1.178	0.989
225	-	-	-	-	3.031	2.910	2.721	2.487	2.162	1.952	1.543	1.202	1.009
230	-	-	-	-	3.075	2.954	2.768	2.543	2.232	2.023	1.611	1.225	1.029
235	-	-	-	-	3.120	2.998	2.814	2.598	2.301	2.094	1.688	1.249	1.049
240	-	-	-	-	-	3.042	2.861	2.654	2.371	2.166	1.766	1.273	1.069
245	-	-	-	-	-	3.085	2.907	2.709	2.440	2.237	1.843	1.297	1.090
250	-	-	-	-	-	-	2.953	2.765	2.510	2.308	1.920	1.321	1.110
255	-	-	-	-	-	-	3.000	2.820	2.580	2.379	1.998	1.344	1.130
260	-	-	-	-	-	-	3.046	2.876	2.649	2.451	2.075	1.368	1.150
265	-	-	-	-	-	-	3.093	2.931	2.719	2.522	2.152	1.392	1.170
270	-	-	-	-	-	-	-	2.987	2.788	2.593	2.230	1.416	1.190
275	-	-	-	-	-	-	-	3.042	2.858	2.664	2.307	1.439	1.210
280	-	-	-	-	-	-	-	3.098	2.927	2.736	2.384	1.463	1.231
285	-	-	-	-	-	-	-	3.153	2.997	2.807	2.462	1.487	1.251
290	-	-	-	-	-	-	-	-	3.067	2.878	2.539	1.511	1.271
295	-	-	-	-	-	-	-	-	3.136	2.949	2.616	1.535	1.291
300	-	-	-	-	-	-	-	-	-	3.020	2.694	1.597	1.311
305	-	-	-	-	-	-	-	-	-	3.092	2.771	1.717	1.331
310	-	-	-	-	-	-	-	-	-	3.163	2.848	1.837	1.352
315	-	-	-	-	-	-	-	-	-	-	2.926	1.957	1.372
320	-	-	-	-	-	-	-	-	-	-	3.003	2.077	1.392
325	-	-	-	-	-	-	-	-	-	-	3.080	2.198	1.412
330	-	-	-	-	-	-	-	-	-	-	-	2.318	1.432
335	-	-	-	-	-	-	-	-	-	-	-	2.438	1.452
340	-	-	-	-	-	-	-	-	-	-	-	2.558	1.472
345	-	-	-	-	-	-	-	-	-	-	-	2.679	1.493
350	-	-	-	-	-	-	-	-	-	-	-	2.799	1.513
355	-	-	-	-	-	-	-	-	-	-	-	2.919	1.533
360	-	-	-	-	-	-	-	-	-	-	-	3.039	1.592
365	-	-	-	-	-	-	-	-	-	-	-	-	1.801
370	-	-	-	-	-	-	-	-	-	-	-	-	2.011
375	-	-	-	-	-	-	-	-	-	-	-	-	2.220

Thickness is intumescent only. Results apply to I/H section columns with 4-sided fire exposure.
Results also apply to I/H beams exposed on all 4 sides.

This certificate is the property of Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

I/H Columns: 120 minutes Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
30	-	-	2.496	1.664	1.343	1.215	1.037	0.899	0.783	0.689	0.547	0.291	0.291
35	-	-	2.726	1.819	1.503	1.354	1.149	0.992	0.860	0.755	0.596	0.347	0.291
40	-	-	2.955	1.975	1.585	1.493	1.261	1.084	0.937	0.821	0.646	0.383	0.311
45	-	-	-	2.131	1.637	1.578	1.372	1.176	1.014	0.887	0.696	0.420	0.340
50	-	-	-	2.286	1.688	1.626	1.484	1.268	1.091	0.953	0.746	0.456	0.368
55	-	-	-	2.442	1.739	1.674	1.568	1.361	1.169	1.020	0.795	0.493	0.397
60	-	-	-	2.598	1.790	1.722	1.615	1.453	1.246	1.086	0.845	0.529	0.426
65	-	-	-	2.754	1.841	1.770	1.661	1.545	1.323	1.152	0.895	0.566	0.455
70	-	-	-	2.909	1.892	1.818	1.708	1.593	1.400	1.218	0.944	0.602	0.483
75	-	-	-	-	1.943	1.866	1.754	1.639	1.477	1.285	0.994	0.639	0.512
80	-	-	-	-	1.994	1.914	1.800	1.685	1.552	1.351	1.044	0.675	0.541
85	-	-	-	-	2.046	1.962	1.847	1.731	1.599	1.417	1.094	0.712	0.569
90	-	-	-	-	2.097	2.010	1.893	1.777	1.646	1.483	1.143	0.748	0.598
95	-	-	-	-	2.148	2.058	1.940	1.823	1.693	1.549	1.193	0.785	0.627
100	-	-	-	-	2.199	2.106	1.986	1.869	1.740	1.598	1.243	0.821	0.656
105	-	-	-	-	2.250	2.154	2.032	1.915	1.787	1.647	1.293	0.857	0.684
110	-	-	-	-	2.301	2.202	2.079	1.961	1.834	1.696	1.342	0.894	0.713
115	-	-	-	-	2.352	2.250	2.125	2.007	1.880	1.744	1.392	0.930	0.742
120	-	-	-	-	2.403	2.298	2.172	2.053	1.927	1.793	1.442	0.967	0.770
125	-	-	-	-	2.455	2.346	2.218	2.099	1.974	1.842	1.492	1.003	0.799
130	-	-	-	-	2.506	2.394	2.264	2.145	2.021	1.891	1.541	1.040	0.828
135	-	-	-	-	2.557	2.442	2.311	2.191	2.068	1.939	1.598	1.076	0.857
140	-	-	-	-	2.608	2.490	2.357	2.237	2.115	1.988	1.657	1.113	0.885
145	-	-	-	-	2.659	2.538	2.404	2.283	2.162	2.037	1.715	1.149	0.914
150	-	-	-	-	2.710	2.586	2.450	2.329	2.208	2.086	1.773	1.186	0.943
155	-	-	-	-	2.761	2.635	2.496	2.375	2.255	2.134	1.832	1.222	0.971
160	-	-	-	-	2.813	2.683	2.543	2.421	2.302	2.183	1.890	1.259	1.000
165	-	-	-	-	2.864	2.731	2.589	2.467	2.349	2.232	1.948	1.295	1.029
170	-	-	-	-	2.915	2.779	2.636	2.513	2.396	2.281	2.007	1.331	1.058
175	-	-	-	-	2.966	2.827	2.682	2.559	2.443	2.329	2.065	1.368	1.086
180	-	-	-	-	3.017	2.875	2.728	2.605	2.490	2.378	2.123	1.404	1.115
185	-	-	-	-	3.068	2.923	2.775	2.651	2.536	2.427	2.182	1.441	1.144
190	-	-	-	-	-	2.971	2.821	2.697	2.583	2.476	2.240	1.477	1.172
195	-	-	-	-	-	3.019	2.868	2.743	2.630	2.524	2.298	1.514	1.201
200	-	-	-	-	-	3.067	2.914	2.789	2.677	2.573	2.356	1.552	1.230
205	-	-	-	-	-	-	2.960	2.835	2.724	2.622	2.415	1.641	1.259
210	-	-	-	-	-	-	3.007	2.881	2.771	2.671	2.473	1.730	1.287
215	-	-	-	-	-	-	3.053	2.927	2.818	2.719	2.531	1.818	1.316
220	-	-	-	-	-	-	3.100	2.973	2.865	2.768	2.590	1.907	1.345
225	-	-	-	-	-	-	-	3.019	2.911	2.817	2.648	1.996	1.373
230	-	-	-	-	-	-	-	3.065	2.958	2.865	2.706	2.085	1.402
235	-	-	-	-	-	-	-	3.111	3.005	2.914	2.765	2.174	1.431
240	-	-	-	-	-	-	-	-	3.052	2.963	2.823	2.262	1.460
245	-	-	-	-	-	-	-	-	3.099	3.012	2.881	2.351	1.488
250	-	-	-	-	-	-	-	-	-	3.060	2.940	2.440	1.517
255	-	-	-	-	-	-	-	-	-	3.109	2.998	2.529	1.546
260	-	-	-	-	-	-	-	-	-	-	3.056	2.617	1.633
265	-	-	-	-	-	-	-	-	-	-	3.114	2.706	1.729
270	-	-	-	-	-	-	-	-	-	-	-	2.795	1.824
275	-	-	-	-	-	-	-	-	-	-	-	2.884	1.919
280	-	-	-	-	-	-	-	-	-	-	-	2.973	2.015
285	-	-	-	-	-	-	-	-	-	-	-	3.061	2.110
290	-	-	-	-	-	-	-	-	-	-	-	3.150	2.205
295	-	-	-	-	-	-	-	-	-	-	-	-	2.301
300	-	-	-	-	-	-	-	-	-	-	-	-	2.396
305	-	-	-	-	-	-	-	-	-	-	-	-	2.491
310	-	-	-	-	-	-	-	-	-	-	-	-	2.587
315	-	-	-	-	-	-	-	-	-	-	-	-	2.682
320	-	-	-	-	-	-	-	-	-	-	-	-	2.777
325	-	-	-	-	-	-	-	-	-	-	-	-	2.873
330	-	-	-	-	-	-	-	-	-	-	-	-	2.968
335	-	-	-	-	-	-	-	-	-	-	-	-	3.063
340	-	-	-	-	-	-	-	-	-	-	-	-	3.159
345	-	-	-	-	-	-	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only. Results apply to I/H section columns with 4-sided fire exposure.
Results also apply to I/H beams exposed on all 4 sides.

This certificate is the property of Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

Circular and Rectangular/Square Hollow Columns: 15 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
45	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
50	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
55	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
60	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
65	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
70	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
75	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
80	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
85	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
90	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
95	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
100	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
105	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
110	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
115	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
120	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
125	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
130	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
135	0.486	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
140	0.517	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
145	0.549	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
150	0.580	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
155	0.612	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
160	0.643	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
165	0.675	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
170	0.707	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
175	0.738	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
180	0.770	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
185	0.801	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
190	0.833	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
195	0.865	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
200	0.896	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
205	0.928	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
210	0.959	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
215	0.991	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
220	1.022	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
225	1.054	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460

Thickness is intumescent only. Results apply to Circular and Rectangular/Square hollow columns exposed to fire on all sides.

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Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

Circular and Rectangular/Square Hollow Columns: 30 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
45	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
50	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
55	0.523	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
60	0.692	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
65	0.860	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
70	1.029	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
75	1.197	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
80	1.366	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
85	1.535	0.484	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
90	1.703	0.520	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
95	1.857	0.557	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
100	1.926	0.593	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
105	1.996	0.630	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
110	2.066	0.666	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
115	2.135	0.702	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
120	2.205	0.739	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
125	2.275	0.775	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
130	2.345	0.812	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
135	2.414	0.848	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
140	2.484	0.885	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
145	2.554	0.921	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
150	2.624	0.958	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
155	2.693	0.994	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
160	2.763	1.031	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
165	2.833	1.067	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
170	2.902	1.103	0.496	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
175	2.972	1.140	0.541	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
180	3.042	1.176	0.586	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
185	3.112	1.213	0.631	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
190	3.181	1.249	0.676	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
195	3.251	1.286	0.721	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
200	3.321	1.322	0.766	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
205	3.390	1.359	0.811	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
210	3.460	1.395	0.856	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
215	3.530	1.432	0.901	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
220	3.600	1.468	0.946	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
225	3.676	1.504	0.991	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460

Thickness is intumescent only. Results apply to Circular and Rectangular/Square hollow columns exposed to fire on all sides.

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Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

Circular and Rectangular/Square Hollow Columns: 45 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
45	1.831	0.471	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
50	1.965	0.511	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
55	2.099	0.697	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
60	2.234	0.883	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
65	2.368	1.070	0.465	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
70	2.502	1.256	0.513	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
75	2.636	1.443	0.560	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
80	2.771	1.629	0.608	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
85	2.905	1.816	0.656	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
90	3.039	1.895	0.703	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
95	3.174	1.953	0.751	0.489	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
100	3.308	2.011	0.799	0.536	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
105	3.442	2.069	0.847	0.583	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
110	3.577	2.126	0.894	0.631	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
115	3.680	2.184	0.942	0.678	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
120	3.760	2.242	0.990	0.725	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
125	3.839	2.300	1.037	0.772	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
130	3.919	2.358	1.085	0.820	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
135	3.999	2.416	1.133	0.867	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
140	4.078	2.474	1.181	0.914	0.499	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
145	4.158	2.532	1.228	0.962	0.553	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
150	4.238	2.590	1.276	1.009	0.606	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
155	4.318	2.648	1.324	1.056	0.659	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
160	4.397	2.706	1.371	1.103	0.712	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
165	4.477	2.764	1.419	1.151	0.766	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
170	4.557	2.822	1.467	1.198	0.819	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
175	4.636	2.880	1.514	1.245	0.872	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
180	4.716	2.938	1.562	1.293	0.926	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
185	4.796	2.996	1.610	1.340	0.979	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
190	4.875	3.054	1.658	1.387	1.032	0.523	0.460	0.460	0.460	0.460	0.460	0.460	0.460
195	4.955	3.112	1.705	1.434	1.085	0.598	0.460	0.460	0.460	0.460	0.460	0.460	0.460
200	5.035	3.170	1.753	1.482	1.139	0.673	0.460	0.460	0.460	0.460	0.460	0.460	0.460
205	5.114	3.228	1.801	1.529	1.192	0.748	0.480	0.460	0.460	0.460	0.460	0.460	0.460
210	5.194	3.286	1.853	1.576	1.245	0.823	0.554	0.460	0.460	0.460	0.460	0.460	0.460
215	5.274	3.344	1.987	1.624	1.299	0.898	0.627	0.460	0.460	0.460	0.460	0.460	0.460
220	5.353	3.402	2.122	1.671	1.352	0.973	0.701	0.502	0.460	0.460	0.460	0.460	0.460
225	5.433	3.460	2.256	1.718	1.405	1.049	0.775	0.572	0.460	0.460	0.460	0.460	0.460

Thickness is intumescent only. Results apply to Circular and Rectangular/Square hollow columns exposed to fire on all sides.

This certificate is the property of Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

Circular and Rectangular/Square Hollow Columns: 60 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
45	2.901	2.047	0.471	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
50	2.999	2.221	0.966	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
55	3.213	2.290	1.607	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
60	3.426	2.358	1.884	0.533	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
65	3.637	2.426	1.945	0.717	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
70	3.738	2.495	2.005	0.902	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
75	3.839	2.563	2.066	1.087	0.524	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
80	3.939	2.631	2.126	1.272	0.596	0.500	0.460	0.460	0.460	0.460	0.460	0.460	0.460
85	4.040	2.700	2.187	1.457	0.668	0.557	0.460	0.460	0.460	0.460	0.460	0.460	0.460
90	4.141	2.768	2.248	1.642	0.740	0.615	0.481	0.460	0.460	0.460	0.460	0.460	0.460
95	4.242	2.836	2.308	1.826	0.812	0.673	0.534	0.460	0.460	0.460	0.460	0.460	0.460
100	4.342	2.904	2.369	1.906	0.884	0.731	0.588	0.466	0.460	0.460	0.460	0.460	0.460
105	4.443	2.973	2.430	1.973	0.956	0.789	0.641	0.519	0.460	0.460	0.460	0.460	0.460
110	4.544	3.041	2.490	2.040	1.028	0.847	0.694	0.572	0.460	0.460	0.460	0.460	0.460
115	4.644	3.109	2.551	2.107	1.100	0.904	0.748	0.625	0.489	0.460	0.460	0.460	0.460
120	4.745	3.178	2.612	2.174	1.172	0.962	0.801	0.678	0.542	0.460	0.460	0.460	0.460
125	4.846	3.246	2.672	2.241	1.244	1.020	0.855	0.731	0.594	0.462	0.460	0.460	0.460
130	4.947	3.314	2.733	2.308	1.316	1.078	0.908	0.784	0.647	0.515	0.460	0.460	0.460
135	5.047	3.383	2.793	2.375	1.388	1.136	0.961	0.837	0.700	0.568	0.460	0.460	0.460
140	5.148	3.451	2.854	2.442	1.460	1.193	1.015	0.890	0.752	0.621	0.460	0.460	0.460
145	5.249	3.519	2.915	2.508	1.532	1.251	1.068	0.943	0.805	0.673	0.460	0.460	0.460
150	5.349	3.588	2.975	2.575	1.604	1.309	1.122	0.996	0.858	0.726	0.460	0.460	0.460
155	-	3.661	3.036	2.642	1.676	1.367	1.175	1.049	0.910	0.779	0.460	0.460	0.460
160	-	3.746	3.097	2.709	1.748	1.425	1.229	1.102	0.963	0.832	0.460	0.460	0.460
165	-	3.831	3.157	2.776	1.820	1.483	1.282	1.155	1.015	0.885	0.460	0.460	0.460
170	-	3.917	3.218	2.843	1.914	1.540	1.335	1.208	1.068	0.938	0.460	0.460	0.460
175	-	4.002	3.279	2.910	2.021	1.598	1.389	1.261	1.121	0.990	0.460	0.460	0.460
180	-	4.087	3.339	2.977	2.128	1.656	1.442	1.314	1.173	1.043	0.522	0.460	0.460
185	-	4.172	3.400	3.044	2.235	1.714	1.496	1.367	1.226	1.096	0.591	0.460	0.460
190	-	4.257	3.460	3.111	2.341	1.772	1.549	1.420	1.278	1.149	0.659	0.460	0.460
195	-	4.343	3.521	3.178	2.448	1.830	1.603	1.473	1.331	1.202	0.728	0.460	0.460
200	-	4.428	3.582	3.245	2.555	1.947	1.656	1.526	1.384	1.255	0.797	0.460	0.460
205	-	4.513	3.650	3.312	2.662	2.089	1.709	1.579	1.436	1.307	0.866	0.460	0.460
210	-	4.598	3.777	3.379	2.768	2.230	1.763	1.632	1.489	1.360	0.935	0.460	0.460
215	-	4.683	3.905	3.446	2.875	2.372	1.816	1.685	1.542	1.413	1.004	0.521	0.460
220	-	4.768	4.032	3.513	2.982	2.513	1.916	1.738	1.594	1.466	1.073	0.586	0.460
225	-	4.854	4.159	3.580	3.089	2.654	2.073	1.791	1.647	1.519	1.142	0.650	0.460

Thickness is intumescent only. Results apply to Circular and Rectangular/Square hollow columns exposed to fire on all sides.

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CERTIFICATE No CF 845
JOTUN A/S

Circular and Rectangular/Square Hollow Columns: 75 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
45	3.843	2.866	2.387	1.877	0.471	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
50	4.259	3.062	2.603	1.948	0.471	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
55	4.391	3.180	2.659	2.018	0.928	0.482	0.460	0.460	0.460	0.460	0.460	0.460	0.460
60	4.523	3.297	2.715	2.088	1.539	0.827	0.460	0.460	0.460	0.460	0.460	0.460	0.460
65	4.655	3.415	2.771	2.158	1.880	1.172	0.620	0.462	0.460	0.460	0.460	0.460	0.460
70	4.787	3.532	2.827	2.228	1.947	1.517	0.785	0.560	0.460	0.460	0.460	0.460	0.460
75	4.919	3.644	2.883	2.298	2.014	1.849	0.951	0.657	0.526	0.460	0.460	0.460	0.460
80	5.051	3.718	2.939	2.368	2.082	1.918	1.117	0.755	0.604	0.512	0.460	0.460	0.460
85	5.183	3.791	2.995	2.438	2.149	1.987	1.282	0.853	0.682	0.577	0.460	0.460	0.460
90	5.315	3.864	3.051	2.508	2.217	2.056	1.448	0.950	0.760	0.641	0.511	0.460	0.460
95	-	3.938	3.107	2.579	2.284	2.125	1.613	1.048	0.839	0.706	0.565	0.460	0.460
100	-	4.011	3.163	2.649	2.351	2.193	1.779	1.145	0.917	0.770	0.618	0.460	0.460
105	-	4.085	3.219	2.719	2.419	2.262	1.893	1.243	0.995	0.835	0.672	0.460	0.460
110	-	4.158	3.274	2.789	2.486	2.331	1.971	1.341	1.073	0.899	0.726	0.479	0.460
115	-	4.231	3.330	2.859	2.554	2.400	2.049	1.438	1.151	0.964	0.780	0.531	0.460
120	-	4.305	3.386	2.929	2.621	2.469	2.127	1.536	1.229	1.028	0.834	0.582	0.460
125	-	4.378	3.442	2.999	2.688	2.538	2.205	1.634	1.308	1.093	0.888	0.634	0.460
130	-	4.451	3.498	3.069	2.756	2.607	2.283	1.731	1.386	1.157	0.941	0.685	0.460
135	-	4.525	3.554	3.140	2.823	2.675	2.361	1.829	1.464	1.222	0.995	0.737	0.460
140	-	4.598	3.610	3.210	2.891	2.744	2.440	1.927	1.542	1.286	1.049	0.789	0.460
145	-	4.672	3.696	3.280	2.958	2.813	2.518	2.025	1.620	1.351	1.103	0.840	0.460
150	-	4.745	3.806	3.350	3.025	2.882	2.596	2.123	1.698	1.415	1.157	0.892	0.460
155	-	4.818	3.917	3.420	3.093	2.951	2.674	2.221	1.776	1.480	1.211	0.943	0.460
160	-	4.892	4.027	3.490	3.160	3.020	2.752	2.319	1.859	1.544	1.264	0.995	0.460
165	-	4.965	4.137	3.560	3.228	3.089	2.830	2.418	1.972	1.609	1.318	1.047	0.460
170	-	5.039	4.248	3.630	3.295	3.157	2.908	2.516	2.085	1.673	1.372	1.098	0.460
175	-	5.112	4.358	3.765	3.362	3.226	2.987	2.614	2.198	1.738	1.426	1.150	0.475
180	-	5.185	4.468	3.904	3.430	3.295	3.065	2.712	2.312	1.802	1.480	1.201	0.539
185	-	5.259	4.578	4.043	3.497	3.364	3.143	2.810	2.425	1.890	1.534	1.253	0.603
190	-	5.332	4.689	4.182	3.564	3.433	3.221	2.908	2.538	2.028	1.587	1.305	0.666
195	-	-	4.799	4.321	3.632	3.502	3.299	3.007	2.652	2.166	1.641	1.356	0.730
200	-	-	4.909	4.460	3.803	3.571	3.377	3.105	2.765	2.303	1.695	1.408	0.794
205	-	-	5.020	4.599	3.978	3.648	3.455	3.203	2.878	2.441	1.749	1.459	0.857
210	-	-	5.130	4.738	4.154	3.842	3.534	3.301	2.992	2.579	1.803	1.511	0.921
215	-	-	5.240	4.877	4.330	4.037	3.612	3.399	3.105	2.716	1.880	1.563	0.985
220	-	-	5.351	5.015	4.506	4.231	3.784	3.497	3.218	2.854	2.057	1.614	1.048
225	-	-	5.461	5.154	4.681	4.426	3.995	3.596	3.332	2.992	2.233	1.666	1.112

Thickness is intumescent only. Results apply to Circular and Rectangular/Square hollow columns exposed to fire on all sides.

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CERTIFICATE No CF 845
JOTUN A/S

Circular and Rectangular/Square Hollow Columns: 90 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
45	-	3.644	3.183	2.704	2.229	1.905	1.773	0.471	0.460	0.460	0.460	0.460	0.460
50	-	3.755	3.183	2.963	2.427	1.980	1.846	0.476	0.460	0.460	0.460	0.460	0.460
55	-	3.866	3.521	3.005	2.487	2.055	1.920	1.178	0.543	0.460	0.460	0.460	0.460
60	-	3.977	3.624	3.047	2.546	2.130	1.993	1.850	0.908	0.588	0.460	0.460	0.460
65	-	4.088	3.708	3.089	2.605	2.206	2.066	1.923	1.273	0.820	0.520	0.460	0.460
70	-	4.199	3.790	3.131	2.664	2.281	2.140	1.996	1.638	1.052	0.641	0.460	0.460
75	-	4.310	3.872	3.173	2.723	2.356	2.213	2.069	1.878	1.283	0.763	0.463	0.460
80	-	4.421	3.953	3.214	2.783	2.431	2.286	2.142	1.952	1.515	0.884	0.534	0.460
85	-	4.532	4.035	3.256	2.842	2.506	2.360	2.215	2.026	1.747	1.006	0.605	0.460
90	-	4.643	4.117	3.298	2.901	2.581	2.433	2.288	2.101	1.890	1.127	0.675	0.460
95	-	4.754	4.199	3.340	2.960	2.657	2.506	2.361	2.175	1.968	1.249	0.746	0.460
100	-	4.865	4.281	3.382	3.019	2.732	2.580	2.434	2.249	2.045	1.370	0.816	0.507
105	-	4.976	4.363	3.424	3.078	2.807	2.653	2.507	2.324	2.122	1.492	0.887	0.561
110	-	5.087	4.445	3.466	3.138	2.882	2.726	2.580	2.398	2.200	1.613	0.958	0.614
115	-	5.198	4.527	3.508	3.197	2.957	2.800	2.653	2.472	2.277	1.735	1.028	0.668
120	-	5.309	4.609	3.550	3.256	3.032	2.873	2.726	2.547	2.354	1.854	1.099	0.721
125	-	-	4.691	3.592	3.315	3.108	2.946	2.799	2.621	2.432	1.946	1.170	0.775
130	-	-	4.772	3.634	3.374	3.183	3.020	2.872	2.695	2.509	2.039	1.240	0.828
135	-	-	4.854	3.815	3.434	3.258	3.093	2.945	2.770	2.586	2.131	1.311	0.882
140	-	-	4.936	4.001	3.493	3.333	3.167	3.018	2.844	2.664	2.224	1.381	0.935
145	-	-	5.018	4.187	3.552	3.408	3.240	3.091	2.918	2.741	2.317	1.452	0.989
150	-	-	5.100	4.373	3.611	3.483	3.313	3.164	2.993	2.818	2.409	1.523	1.042
155	-	-	5.182	4.559	3.753	3.559	3.387	3.237	3.067	2.896	2.502	1.593	1.096
160	-	-	5.264	4.745	3.952	3.634	3.460	3.310	3.141	2.973	2.595	1.664	1.149
165	-	-	5.346	4.931	4.151	3.835	3.533	3.383	3.215	3.050	2.687	1.735	1.202
170	-	-	-	5.117	4.350	4.038	3.607	3.456	3.290	3.128	2.780	1.805	1.256
175	-	-	-	5.303	4.548	4.242	3.764	3.529	3.364	3.205	2.873	1.902	1.309
180	-	-	-	-	4.747	4.445	3.975	3.602	3.438	3.282	2.965	2.036	1.363
185	-	-	-	-	4.946	4.648	4.185	3.762	3.513	3.360	3.058	2.169	1.416
190	-	-	-	-	5.144	4.851	4.395	3.998	3.587	3.437	3.150	2.303	1.470
195	-	-	-	-	5.343	5.055	4.606	4.233	3.732	3.514	3.243	2.436	1.523
200	-	-	-	-	-	5.258	4.816	4.469	4.006	3.592	3.336	2.570	1.577
205	-	-	-	-	-	5.461	5.027	4.704	4.279	3.777	3.428	2.703	1.630
210	-	-	-	-	-	-	5.237	4.939	4.553	4.098	3.521	2.837	1.684
215	-	-	-	-	-	-	5.448	5.175	4.826	4.420	3.614	2.970	1.737
220	-	-	-	-	-	-	-	5.410	5.100	4.742	3.925	3.104	1.791
225	-	-	-	-	-	-	-	-	-	5.064	4.301	3.237	1.844

Thickness is intumescent only. Results apply to Circular and Rectangular/Square hollow columns exposed to fire on all sides.

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CERTIFICATE No CF 845
JOTUN A/S

Circular and Rectangular/Square Hollow Columns: 105 minutes													
Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
45	-	4.988	4.318	3.610	2.977	2.770	2.458	2.201	1.865	1.776	0.471	0.460	0.460
50	-	-	4.453	3.694	3.247	3.042	2.684	2.395	1.943	1.853	0.471	0.460	0.460
55	-	-	4.588	3.777	3.303	3.078	2.736	2.457	2.022	1.930	1.087	0.460	0.460
60	-	-	4.724	3.861	3.360	3.114	2.788	2.519	2.100	2.007	1.737	0.496	0.460
65	-	-	4.859	3.945	3.417	3.151	2.840	2.581	2.178	2.084	1.910	0.710	0.460
70	-	-	4.995	4.029	3.473	3.187	2.892	2.643	2.256	2.161	1.986	0.923	0.460
75	-	-	5.130	4.113	3.530	3.224	2.944	2.706	2.334	2.238	2.063	1.137	0.504
80	-	-	5.266	4.197	3.586	3.260	2.996	2.768	2.412	2.315	2.139	1.350	0.602
85	-	-	-	4.281	3.650	3.297	3.048	2.830	2.490	2.392	2.216	1.564	0.699
90	-	-	-	4.365	3.763	3.333	3.100	2.892	2.568	2.469	2.292	1.778	0.796
95	-	-	-	4.448	3.875	3.369	3.152	2.954	2.646	2.546	2.369	1.902	0.893
100	-	-	-	4.532	3.988	3.406	3.204	3.016	2.724	2.623	2.445	1.984	0.991
105	-	-	-	4.616	4.100	3.442	3.256	3.079	2.802	2.700	2.522	2.067	1.088
110	-	-	-	4.700	4.212	3.479	3.308	3.141	2.880	2.777	2.599	2.149	1.185
115	-	-	-	4.784	4.325	3.515	3.360	3.203	2.958	2.854	2.675	2.231	1.283
120	-	-	-	4.868	4.437	3.552	3.412	3.265	3.036	2.931	2.752	2.314	1.380
125	-	-	-	4.952	4.550	3.588	3.464	3.327	3.115	3.008	2.828	2.396	1.477
130	-	-	-	5.036	4.662	3.625	3.517	3.390	3.193	3.084	2.905	2.478	1.575
135	-	-	-	5.119	4.774	3.856	3.569	3.452	3.271	3.161	2.981	2.561	1.672
140	-	-	-	5.203	4.887	4.166	3.621	3.514	3.349	3.238	3.058	2.643	1.769
145	-	-	-	5.287	4.999	4.476	3.860	3.576	3.427	3.315	3.134	2.725	1.869
150	-	-	-	-	5.112	4.785	4.171	3.651	3.505	3.392	3.211	2.808	1.979
155	-	-	-	-	5.224	5.095	4.482	3.966	3.583	3.469	3.287	2.890	2.088
160	-	-	-	-	-	-	4.793	4.280	3.742	3.546	3.364	2.972	2.198
165	-	-	-	-	-	-	5.103	4.595	4.063	3.623	3.440	3.055	2.307
170	-	-	-	-	-	-	-	4.909	4.383	3.919	3.517	3.137	2.417
175	-	-	-	-	-	-	-	5.223	4.704	4.255	3.593	3.219	2.526
180	-	-	-	-	-	-	-	-	5.025	4.591	3.803	3.302	2.636
185	-	-	-	-	-	-	-	-	5.346	4.927	4.169	3.384	2.746
190	-	-	-	-	-	-	-	-	-	5.263	4.536	3.466	2.855
195	-	-	-	-	-	-	-	-	-	-	4.903	3.549	2.965
200	-	-	-	-	-	-	-	-	-	-	5.270	3.631	3.074
205	-	-	-	-	-	-	-	-	-	-	-	4.105	3.184
210	-	-	-	-	-	-	-	-	-	-	-	4.599	3.293
215	-	-	-	-	-	-	-	-	-	-	-	-	3.403
220	-	-	-	-	-	-	-	-	-	-	-	-	3.512
225	-	-	-	-	-	-	-	-	-	-	-	-	3.622

Thickness is intumescent only. Results apply to Circular and Rectangular/Square hollow columns exposed to fire on all sides.

This certificate is the property of Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA. Company Registration No: 11371436

CERTIFICATE No CF 845
JOTUN A/S

Circular and Rectangular/Square Hollow Columns: 120 minutes Required Thickness (mm) for a Design Temperature (°C)													
Section Factor (m^{-1})	300	350	400	450	500	520	550	575	600	620	650	700	750
45	-	-	-	4.709	3.828	3.655	3.169	2.886	2.613	2.402	1.915	0.471	0.460
50	-	-	-	4.897	3.946	3.741	3.169	3.153	2.860	2.619	1.997	0.700	0.460
55	-	-	-	5.084	4.063	3.826	3.510	3.204	2.906	2.676	2.079	1.693	0.460
60	-	-	-	5.272	4.181	3.911	3.585	3.256	2.952	2.732	2.161	1.914	0.480
65	-	-	-	-	4.298	3.996	3.666	3.307	2.998	2.788	2.243	1.993	0.779
70	-	-	-	-	4.416	4.081	3.764	3.359	3.044	2.845	2.325	2.073	1.077
75	-	-	-	-	4.534	4.166	3.861	3.410	3.090	2.901	2.407	2.153	1.376
80	-	-	-	-	4.651	4.251	3.958	3.461	3.136	2.957	2.489	2.233	1.674
85	-	-	-	-	4.769	4.336	4.056	3.513	3.182	3.014	2.571	2.312	1.881
90	-	-	-	-	4.886	4.421	4.153	3.564	3.228	3.070	2.653	2.392	1.964
95	-	-	-	-	5.004	4.506	4.251	3.616	3.274	3.126	2.736	2.472	2.047
100	-	-	-	-	5.121	4.591	4.348	3.729	3.321	3.183	2.818	2.552	2.129
105	-	-	-	-	5.239	4.676	4.446	3.880	3.367	3.239	2.900	2.632	2.212
110	-	-	-	-	5.356	4.762	4.543	4.031	3.413	3.295	2.982	2.711	2.295
115	-	-	-	-	-	4.847	4.640	4.182	3.459	3.351	3.064	2.791	2.378
120	-	-	-	-	-	4.932	4.738	4.333	3.505	3.408	3.146	2.871	2.461
125	-	-	-	-	-	5.017	4.835	4.484	3.551	3.464	3.228	2.951	2.543
130	-	-	-	-	-	5.102	4.933	4.635	3.597	3.520	3.310	3.030	2.626
135	-	-	-	-	-	5.187	5.030	4.786	3.707	3.577	3.392	3.110	2.709
140	-	-	-	-	-	5.272	5.127	4.937	4.111	3.633	3.474	3.190	2.792
145	-	-	-	-	-	-	5.225	5.088	4.515	4.024	3.556	3.270	2.874
150	-	-	-	-	-	-	5.322	5.239	4.919	4.427	3.651	3.349	2.957
155	-	-	-	-	-	-	-	5.390	5.323	4.831	4.062	3.429	3.040
160	-	-	-	-	-	-	-	-	-	5.234	4.474	3.509	3.123
165	-	-	-	-	-	-	-	-	-	-	4.886	3.589	3.206
170	-	-	-	-	-	-	-	-	-	-	5.297	3.830	3.288
175	-	-	-	-	-	-	-	-	-	-	-	4.292	3.371
180	-	-	-	-	-	-	-	-	-	-	-	4.754	3.454
185	-	-	-	-	-	-	-	-	-	-	-	5.216	3.537
190	-	-	-	-	-	-	-	-	-	-	-	-	3.620
195	-	-	-	-	-	-	-	-	-	-	-	-	4.072
200	-	-	-	-	-	-	-	-	-	-	-	-	4.608
205	-	-	-	-	-	-	-	-	-	-	-	-	-
210	-	-	-	-	-	-	-	-	-	-	-	-	-
215	-	-	-	-	-	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-	-	-	-	-	-
225	-	-	-	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only. Results apply to Circular and Rectangular/Square hollow columns exposed to fire on all sides.

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