certifire

CERTIFICATE OF APPROVAL
No CF 5243

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

JOTUN A/S

Hystedveien 167, P.O. Box 2021, N-3209
Sandefjord,
Norway

Tel : + 47 33 45 7000

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 1200WF	TS 15 INTUMESCENT COATINGS FOR STEELWORK

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

Paul Duggan
Certification Manager

Issued: 13th May 2014
Revised: 6th June 2024
Valid to: 12th May 2029

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

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SteelMaster 1200WF

1. This approval relates to the use of SteelMaster 1200WF for the fire protection of I/H beams and columns, rectangular/square hollow columns, circular hollow columns, and rectangular/square hollow beams. The precise scope is given in the Tables, which show the total dry film thickness of SteelMaster 1200WF (excluding any primer and topcoat) required to provide fire resistance periods in accordance with BS476: Part 21: 1987. The scope includes periods of fire resistance of up to 180 minutes for I/H beams, I/H columns, rectangular/square hollow columns, circular hollow columns, and rectangular/square hollow beams.

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 relate 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 1200WF 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 1200WF applied to horizontal, vertical, flexural and compression members supporting loads up to the maximum design loads specified in BS449: Part 2.

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 5243
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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	540	550	575	590	600	620	650	700	750
30	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
35	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
40	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
45	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
50	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
55	0.323	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
60	0.371	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
65	0.419	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
70	0.467	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
75	0.515	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
80	0.563	0.309	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
85	0.611	0.333	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
90	0.659	0.357	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
95	0.707	0.381	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
100	0.755	0.405	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
105	0.803	0.429	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
110	0.851	0.453	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
115	0.899	0.477	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
120	0.947	0.501	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
125	0.995	0.525	0.299	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
130	1.043	0.549	0.319	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
135	1.091	0.573	0.338	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
140	1.139	0.597	0.357	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
145	1.180	0.621	0.377	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
150	1.203	0.645	0.396	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
155	1.225	0.669	0.415	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
160	1.248	0.693	0.435	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
165	1.270	0.718	0.454	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
170	1.293	0.742	0.473	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
175	1.316	0.766	0.493	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
180	1.338	0.790	0.512	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
185	1.361	0.814	0.531	0.295	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
190	1.383	0.838	0.551	0.314	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
195	1.406	0.862	0.570	0.333	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
200	1.428	0.886	0.589	0.352	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293

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 5243
JOTUN A/S

I/H Beams: 30 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	540	550	575	590	600	620	650	700	750
205	1.451	0.910	0.609	0.371	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
210	1.473	0.934	0.628	0.390	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
215	1.496	0.958	0.647	0.408	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
220	1.518	0.982	0.666	0.427	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
225	1.541	1.006	0.686	0.446	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
230	1.563	1.030	0.705	0.465	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
235	1.586	1.054	0.724	0.484	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
240	1.609	1.078	0.744	0.503	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
245	1.631	1.102	0.763	0.521	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
250	1.654	1.126	0.782	0.540	0.308	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
255	1.676	1.150	0.802	0.559	0.326	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
260	1.699	1.174	0.821	0.578	0.344	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
265	1.721	1.196	0.840	0.597	0.362	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
270	1.744	1.218	0.860	0.616	0.380	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
275	1.766	1.240	0.879	0.634	0.398	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
280	1.789	1.261	0.898	0.653	0.416	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
285	1.811	1.283	0.918	0.672	0.434	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
290	1.834	1.305	0.937	0.691	0.452	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
295	1.856	1.327	0.956	0.710	0.470	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
300	1.879	1.349	0.975	0.729	0.488	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
305	1.902	1.371	0.995	0.748	0.506	0.302	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
310	1.924	1.393	1.014	0.766	0.524	0.319	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
315	1.947	1.414	1.033	0.785	0.542	0.336	0.307	0.293	0.293	0.293	0.293	0.293	0.293	0.293
320	1.969	1.436	1.053	0.804	0.560	0.354	0.323	0.293	0.293	0.293	0.293	0.293	0.293	0.293
325	1.992	1.458	1.072	0.823	0.578	0.371	0.340	0.293	0.293	0.293	0.293	0.293	0.293	0.293
330	2.014	1.480	1.091	0.842	0.596	0.388	0.357	0.293	0.293	0.293	0.293	0.293	0.293	0.293

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 5243
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	540	550	575	590	600	620	650	700	750
30	0.317	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
35	0.433	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
40	0.550	0.326	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
45	0.666	0.389	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
50	0.783	0.452	0.307	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
55	0.899	0.515	0.341	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
60	1.016	0.578	0.374	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
65	1.132	0.641	0.408	0.303	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
70	1.193	0.704	0.441	0.328	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
75	1.223	0.767	0.474	0.352	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
80	1.253	0.830	0.508	0.376	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
85	1.283	0.893	0.541	0.401	0.299	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
90	1.313	0.956	0.575	0.425	0.317	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
95	1.343	1.019	0.608	0.449	0.336	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
100	1.373	1.082	0.642	0.473	0.355	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
105	1.403	1.145	0.675	0.498	0.374	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
110	1.433	1.188	0.709	0.522	0.393	0.306	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
115	1.463	1.213	0.742	0.546	0.412	0.324	0.299	0.293	0.293	0.293	0.293	0.293	0.293	0.293
120	1.493	1.239	0.775	0.571	0.431	0.341	0.317	0.293	0.293	0.293	0.293	0.293	0.293	0.293
125	1.523	1.264	0.809	0.595	0.450	0.359	0.334	0.293	0.293	0.293	0.293	0.293	0.293	0.293
130	1.553	1.290	0.842	0.619	0.469	0.377	0.352	0.293	0.293	0.293	0.293	0.293	0.293	0.293
135	1.583	1.315	0.876	0.644	0.488	0.395	0.369	0.298	0.293	0.293	0.293	0.293	0.293	0.293
140	1.613	1.341	0.909	0.668	0.507	0.413	0.387	0.315	0.293	0.293	0.293	0.293	0.293	0.293
145	1.643	1.366	0.943	0.692	0.526	0.431	0.405	0.333	0.293	0.293	0.293	0.293	0.293	0.293
150	1.673	1.392	0.976	0.717	0.545	0.448	0.422	0.350	0.303	0.293	0.293	0.293	0.293	0.293
155	1.703	1.417	1.010	0.741	0.564	0.466	0.440	0.367	0.320	0.293	0.293	0.293	0.293	0.293
160	1.733	1.443	1.043	0.765	0.583	0.484	0.457	0.384	0.337	0.300	0.293	0.293	0.293	0.293
165	1.763	1.469	1.076	0.789	0.602	0.502	0.475	0.402	0.354	0.317	0.293	0.293	0.293	0.293
170	1.793	1.494	1.110	0.814	0.621	0.520	0.493	0.419	0.371	0.334	0.293	0.293	0.293	0.293
175	1.823	1.520	1.143	0.838	0.640	0.538	0.510	0.436	0.388	0.351	0.298	0.293	0.293	0.293
180	1.853	1.545	1.176	0.862	0.659	0.555	0.528	0.453	0.405	0.368	0.314	0.293	0.293	0.293
185	1.883	1.571	1.202	0.887	0.678	0.573	0.546	0.471	0.422	0.385	0.330	0.293	0.293	0.293
190	1.913	1.596	1.228	0.911	0.697	0.591	0.563	0.488	0.439	0.402	0.347	0.293	0.293	0.293
195	1.943	1.622	1.254	0.935	0.716	0.609	0.581	0.505	0.456	0.419	0.363	0.293	0.293	0.293
200	1.973	1.647	1.280	0.960	0.735	0.627	0.598	0.522	0.473	0.436	0.379	0.293	0.293	0.293

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

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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	540	550	575	590	600	620	650	700	750
205	2.003	1.673	1.306	0.984	0.754	0.645	0.616	0.540	0.490	0.453	0.396	0.302	0.293	0.293
210	2.033	1.698	1.332	1.008	0.773	0.662	0.634	0.557	0.507	0.470	0.412	0.318	0.293	0.293
215	2.063	1.724	1.358	1.033	0.792	0.680	0.651	0.574	0.524	0.487	0.429	0.333	0.293	0.293
220	2.093	1.749	1.384	1.057	0.811	0.698	0.669	0.591	0.541	0.503	0.445	0.349	0.293	0.293
225	2.123	1.775	1.409	1.081	0.830	0.716	0.686	0.608	0.558	0.520	0.461	0.365	0.293	0.293
230	2.154	1.800	1.435	1.106	0.849	0.734	0.704	0.626	0.575	0.537	0.478	0.380	0.293	0.293
235	2.184	1.826	1.461	1.130	0.868	0.752	0.722	0.643	0.592	0.554	0.494	0.396	0.293	0.293
240	2.214	1.851	1.487	1.154	0.887	0.769	0.739	0.660	0.609	0.571	0.511	0.411	0.293	0.293
245	2.244	1.877	1.513	1.179	0.906	0.787	0.757	0.677	0.626	0.588	0.527	0.427	0.293	0.293
250	2.274	1.902	1.539	1.205	0.925	0.805	0.774	0.695	0.643	0.605	0.543	0.443	0.293	0.293
255	2.304	1.928	1.565	1.231	0.944	0.823	0.792	0.712	0.660	0.622	0.560	0.458	0.293	0.293
260	2.334	1.953	1.591	1.256	0.963	0.841	0.810	0.729	0.677	0.639	0.576	0.474	0.293	0.293
265	2.364	1.979	1.617	1.282	0.982	0.859	0.827	0.746	0.694	0.656	0.592	0.489	0.293	0.293
270	2.394	2.004	1.643	1.308	1.000	0.876	0.845	0.764	0.711	0.673	0.609	0.505	0.293	0.293
275	2.424	2.030	1.669	1.334	1.019	0.894	0.863	0.781	0.728	0.690	0.625	0.521	0.293	0.293
280	2.454	2.055	1.695	1.360	1.038	0.912	0.880	0.798	0.745	0.707	0.642	0.536	0.293	0.293
285	2.484	2.081	1.721	1.386	1.057	0.930	0.898	0.815	0.762	0.724	0.658	0.552	0.293	0.293
290	2.514	2.107	1.747	1.412	1.076	0.948	0.915	0.833	0.779	0.741	0.674	0.567	0.298	0.293
295	2.544	2.132	1.772	1.437	1.095	0.966	0.933	0.850	0.796	0.758	0.691	0.583	0.314	0.293
300	2.574	2.158	1.798	1.463	1.114	0.983	0.951	0.867	0.813	0.775	0.707	0.599	0.329	0.293
305	2.609	2.183	1.824	1.489	1.133	1.001	0.968	0.884	0.830	0.792	0.723	0.614	0.345	0.293
310	2.655	2.209	1.850	1.515	1.152	1.019	0.986	0.902	0.847	0.809	0.740	0.630	0.360	0.293
315	2.701	2.234	1.876	1.541	1.171	1.037	1.003	0.919	0.864	0.826	0.756	0.645	0.376	0.293
320	2.747	2.260	1.902	1.567	1.196	1.055	1.021	0.936	0.881	0.843	0.773	0.661	0.391	0.293
325	2.793	2.285	1.928	1.593	1.222	1.073	1.039	0.953	0.898	0.860	0.789	0.677	0.407	0.293
330	2.839	2.311	1.954	1.619	1.248	1.090	1.056	0.971	0.915	0.877	0.805	0.692	0.422	0.293

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 5243
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	540	550	575	590	600	620	650	700	750
30	0.709	0.450	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
35	0.891	0.565	0.362	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
40	1.072	0.681	0.439	0.319	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
45	1.207	0.797	0.515	0.367	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
50	1.283	0.913	0.592	0.416	0.320	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
55	1.359	1.028	0.669	0.464	0.352	0.297	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
60	1.435	1.144	0.745	0.512	0.383	0.323	0.310	0.293	0.293	0.293	0.293	0.293	0.293	0.293
65	1.510	1.201	0.822	0.561	0.415	0.349	0.334	0.301	0.293	0.293	0.293	0.293	0.293	0.293
70	1.586	1.237	0.899	0.609	0.447	0.375	0.359	0.323	0.304	0.293	0.293	0.293	0.293	0.293
75	1.662	1.273	0.975	0.657	0.478	0.401	0.384	0.344	0.324	0.311	0.293	0.293	0.293	0.293
80	1.738	1.309	1.052	0.706	0.510	0.427	0.408	0.366	0.344	0.330	0.302	0.293	0.293	0.293
85	1.814	1.345	1.129	0.754	0.542	0.452	0.433	0.388	0.364	0.349	0.320	0.293	0.293	0.293
90	1.890	1.381	1.186	0.802	0.573	0.478	0.458	0.410	0.385	0.368	0.339	0.293	0.293	0.293
95	1.965	1.417	1.214	0.851	0.605	0.504	0.482	0.432	0.405	0.387	0.357	0.307	0.293	0.293
100	2.041	1.453	1.243	0.899	0.637	0.530	0.507	0.454	0.425	0.406	0.375	0.324	0.293	0.293
105	2.117	1.489	1.271	0.948	0.668	0.556	0.532	0.475	0.445	0.425	0.394	0.342	0.293	0.293
110	2.193	1.525	1.300	0.996	0.700	0.582	0.556	0.497	0.465	0.444	0.412	0.359	0.293	0.293
115	2.269	1.561	1.328	1.044	0.732	0.608	0.581	0.519	0.485	0.464	0.430	0.376	0.293	0.293
120	2.345	1.597	1.356	1.093	0.763	0.634	0.606	0.541	0.505	0.483	0.449	0.394	0.293	0.293
125	2.420	1.633	1.385	1.141	0.795	0.660	0.630	0.563	0.525	0.502	0.467	0.411	0.293	0.293
130	2.496	1.669	1.413	1.183	0.827	0.685	0.655	0.585	0.545	0.521	0.485	0.429	0.300	0.293
135	2.572	1.705	1.442	1.211	0.858	0.711	0.679	0.606	0.565	0.540	0.504	0.446	0.317	0.293
140	2.618	1.741	1.470	1.238	0.890	0.737	0.704	0.628	0.586	0.559	0.522	0.464	0.333	0.293
145	2.652	1.777	1.499	1.266	0.922	0.763	0.729	0.650	0.606	0.578	0.540	0.481	0.350	0.293
150	2.686	1.813	1.527	1.294	0.953	0.789	0.753	0.672	0.626	0.597	0.559	0.498	0.366	0.293
155	2.720	1.849	1.556	1.322	0.985	0.815	0.778	0.694	0.646	0.616	0.577	0.516	0.383	0.293
160	2.754	1.885	1.584	1.349	1.017	0.841	0.803	0.715	0.666	0.635	0.595	0.533	0.399	0.293
165	2.788	1.921	1.613	1.377	1.048	0.867	0.827	0.737	0.686	0.654	0.614	0.551	0.416	0.293
170	2.822	1.957	1.641	1.405	1.080	0.892	0.852	0.759	0.706	0.673	0.632	0.568	0.432	0.293
175	2.856	1.993	1.670	1.433	1.111	0.918	0.877	0.781	0.726	0.692	0.650	0.585	0.449	0.295
180	2.890	2.029	1.698	1.460	1.143	0.944	0.901	0.803	0.746	0.711	0.669	0.603	0.465	0.310
185	2.924	2.065	1.727	1.488	1.175	0.970	0.926	0.825	0.766	0.730	0.687	0.620	0.481	0.325
190	2.958	2.101	1.755	1.516	1.203	0.996	0.951	0.846	0.787	0.749	0.705	0.638	0.498	0.340
195	2.992	2.137	1.784	1.544	1.232	1.022	0.975	0.868	0.807	0.768	0.724	0.655	0.514	0.355
200	3.026	2.173	1.812	1.571	1.260	1.048	1.000	0.890	0.827	0.787	0.742	0.672	0.531	0.370

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 5243
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	540	550	575	590	600	620	650	700	750
205	3.061	2.209	1.841	1.599	1.289	1.074	1.024	0.912	0.847	0.806	0.760	0.690	0.547	0.386
210	3.095	2.245	1.869	1.627	1.317	1.099	1.049	0.934	0.867	0.825	0.779	0.707	0.564	0.401
215	3.129	2.281	1.897	1.655	1.346	1.125	1.074	0.956	0.887	0.844	0.797	0.725	0.580	0.416
220	3.163	2.317	1.926	1.682	1.374	1.151	1.098	0.977	0.907	0.863	0.815	0.742	0.597	0.431
225	3.197	2.353	1.954	1.710	1.402	1.177	1.123	0.999	0.927	0.882	0.834	0.760	0.613	0.446
230	3.231	2.389	1.983	1.738	1.431	1.205	1.148	1.021	0.947	0.901	0.852	0.777	0.630	0.461
235	3.265	2.425	2.011	1.765	1.459	1.234	1.172	1.043	0.968	0.920	0.870	0.794	0.646	0.476
240	3.299	2.461	2.040	1.793	1.488	1.262	1.200	1.065	0.988	0.939	0.888	0.812	0.663	0.491
245	3.333	2.496	2.068	1.821	1.516	1.290	1.228	1.086	1.008	0.958	0.907	0.829	0.679	0.507
250	3.367	2.532	2.097	1.849	1.545	1.318	1.257	1.108	1.028	0.977	0.925	0.847	0.696	0.522
255	3.401	2.568	2.125	1.876	1.573	1.346	1.285	1.130	1.048	0.996	0.943	0.864	0.712	0.537
260	3.435	2.606	2.154	1.904	1.602	1.374	1.313	1.152	1.068	1.015	0.962	0.881	0.729	0.552
265	3.469	2.649	2.182	1.932	1.630	1.402	1.341	1.174	1.088	1.035	0.980	0.899	0.745	0.567
270	3.503	2.691	2.211	1.960	1.659	1.430	1.369	1.202	1.108	1.054	0.998	0.916	0.761	0.582
275	3.537	2.733	2.239	1.987	1.687	1.459	1.397	1.230	1.128	1.073	1.017	0.934	0.778	0.597
280	3.572	2.775	2.268	2.015	1.716	1.487	1.425	1.258	1.148	1.092	1.035	0.951	0.794	0.612
285	3.606	2.818	2.296	2.043	1.744	1.515	1.454	1.287	1.169	1.111	1.053	0.968	0.811	0.627
290	3.640	2.860	2.325	2.071	1.773	1.543	1.482	1.315	1.195	1.130	1.072	0.986	0.827	0.643
295	3.674	2.902	2.353	2.098	1.801	1.571	1.510	1.343	1.224	1.149	1.090	1.003	0.844	0.658
300	3.708	2.944	2.382	2.126	1.830	1.599	1.538	1.371	1.252	1.168	1.108	1.021	0.860	0.673
305	3.742	2.986	2.410	2.154	1.858	1.627	1.566	1.399	1.281	1.193	1.127	1.038	0.877	0.688
310	3.776	3.029	2.439	2.182	1.886	1.655	1.594	1.428	1.309	1.222	1.145	1.056	0.893	0.703
315	3.810	3.071	2.467	2.209	1.915	1.684	1.622	1.456	1.338	1.251	1.163	1.073	0.910	0.718
320	3.844	3.113	2.495	2.237	1.943	1.712	1.650	1.484	1.367	1.280	1.186	1.090	0.926	0.733
325	3.878	3.155	2.524	2.265	1.972	1.740	1.679	1.512	1.395	1.309	1.214	1.108	0.943	0.748
330	3.912	3.197	2.552	2.293	2.000	1.768	1.707	1.540	1.424	1.338	1.242	1.125	0.959	0.764

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 5243
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	540	550	575	590	600	620	650	700	750
30	1.099	0.753	0.537	0.350	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
35	1.277	0.921	0.655	0.438	0.328	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
40	1.424	1.089	0.774	0.527	0.390	0.320	0.307	0.293	0.293	0.293	0.293	0.293	0.293	0.293
45	1.572	1.212	0.892	0.615	0.452	0.365	0.348	0.314	0.298	0.293	0.293	0.293	0.293	0.293
50	1.719	1.288	1.010	0.704	0.515	0.410	0.389	0.347	0.330	0.318	0.296	0.293	0.293	0.293
55	1.866	1.364	1.129	0.792	0.577	0.455	0.431	0.381	0.361	0.349	0.324	0.293	0.293	0.293
60	2.014	1.441	1.202	0.881	0.639	0.500	0.472	0.414	0.393	0.379	0.352	0.313	0.293	0.293
65	2.161	1.517	1.246	0.969	0.701	0.545	0.513	0.448	0.425	0.410	0.380	0.337	0.293	0.293
70	2.308	1.593	1.291	1.058	0.764	0.590	0.555	0.481	0.456	0.440	0.408	0.362	0.293	0.293
75	2.456	1.669	1.336	1.146	0.826	0.635	0.596	0.515	0.488	0.470	0.436	0.387	0.308	0.293
80	2.598	1.746	1.380	1.195	0.888	0.680	0.638	0.549	0.519	0.501	0.464	0.412	0.327	0.293
85	2.666	1.822	1.425	1.226	0.950	0.725	0.679	0.582	0.551	0.531	0.492	0.436	0.347	0.293
90	2.735	1.898	1.470	1.257	1.013	0.770	0.720	0.616	0.583	0.561	0.520	0.461	0.366	0.293
95	2.803	1.974	1.515	1.289	1.075	0.815	0.762	0.649	0.614	0.592	0.548	0.486	0.385	0.309
100	2.872	2.051	1.559	1.320	1.137	0.860	0.803	0.683	0.646	0.622	0.576	0.511	0.404	0.326
105	2.940	2.127	1.604	1.351	1.186	0.905	0.844	0.716	0.677	0.653	0.604	0.535	0.423	0.343
110	3.009	2.203	1.649	1.382	1.215	0.950	0.886	0.750	0.709	0.683	0.633	0.560	0.442	0.360
115	3.077	2.280	1.693	1.413	1.245	0.996	0.927	0.783	0.740	0.713	0.661	0.585	0.461	0.377
120	3.146	2.356	1.738	1.444	1.274	1.041	0.969	0.817	0.772	0.744	0.689	0.610	0.480	0.395
125	3.214	2.432	1.783	1.475	1.304	1.086	1.010	0.850	0.804	0.774	0.717	0.634	0.499	0.412
130	3.283	2.508	1.828	1.506	1.333	1.131	1.051	0.884	0.835	0.804	0.745	0.659	0.519	0.429
135	3.351	2.585	1.872	1.537	1.363	1.175	1.093	0.917	0.867	0.835	0.773	0.684	0.538	0.446
140	3.420	2.624	1.917	1.568	1.392	1.205	1.134	0.951	0.898	0.865	0.801	0.709	0.557	0.463
145	3.488	2.658	1.962	1.599	1.422	1.234	1.175	0.984	0.930	0.896	0.829	0.734	0.576	0.480
150	3.557	2.692	2.006	1.630	1.451	1.263	1.205	1.018	0.961	0.926	0.857	0.758	0.595	0.498
155	3.625	2.727	2.051	1.661	1.481	1.293	1.234	1.051	0.993	0.956	0.885	0.783	0.614	0.515
160	3.694	2.761	2.096	1.692	1.510	1.322	1.264	1.085	1.025	0.987	0.913	0.808	0.633	0.532
165	3.762	2.795	2.141	1.723	1.540	1.352	1.294	1.118	1.056	1.017	0.941	0.833	0.652	0.549
170	3.831	2.830	2.185	1.754	1.569	1.381	1.323	1.152	1.088	1.047	0.969	0.857	0.671	0.566
175	3.900	2.864	2.230	1.785	1.599	1.410	1.353	1.184	1.119	1.078	0.997	0.882	0.691	0.583
180	3.968	2.899	2.275	1.816	1.628	1.440	1.382	1.215	1.151	1.108	1.025	0.907	0.710	0.601
185	4.037	2.933	2.319	1.847	1.658	1.469	1.412	1.245	1.182	1.139	1.053	0.932	0.729	0.618
190	4.105	2.967	2.364	1.878	1.687	1.499	1.442	1.276	1.212	1.169	1.082	0.956	0.748	0.635
195	4.174	3.002	2.409	1.909	1.716	1.528	1.471	1.306	1.242	1.199	1.110	0.981	0.767	0.652
200	4.242	3.036	2.454	1.940	1.746	1.557	1.501	1.337	1.273	1.229	1.138	1.006	0.786	0.669

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 5243
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	540	550	575	590	600	620	650	700	750
205	-	3.070	2.498	1.971	1.775	1.587	1.531	1.367	1.303	1.259	1.166	1.031	0.805	0.687
210	-	3.105	2.543	2.003	1.805	1.616	1.560	1.398	1.333	1.288	1.195	1.055	0.824	0.704
215	-	3.139	2.588	2.034	1.834	1.646	1.590	1.428	1.363	1.318	1.224	1.080	0.844	0.721
220	-	3.174	2.630	2.065	1.864	1.675	1.620	1.459	1.393	1.348	1.254	1.105	0.863	0.738
225	-	3.208	2.673	2.096	1.893	1.704	1.649	1.489	1.423	1.378	1.284	1.130	0.882	0.755
230	-	3.242	2.715	2.127	1.923	1.734	1.679	1.520	1.454	1.408	1.313	1.154	0.901	0.772
235	-	3.277	2.758	2.158	1.952	1.763	1.708	1.550	1.484	1.438	1.343	1.180	0.920	0.790
240	-	3.311	2.800	2.189	1.982	1.793	1.738	1.581	1.514	1.467	1.372	1.209	0.939	0.807
245	-	3.345	2.842	2.220	2.011	1.822	1.768	1.611	1.544	1.497	1.402	1.239	0.958	0.824
250	-	3.380	2.885	2.251	2.041	1.851	1.797	1.642	1.574	1.527	1.432	1.268	0.977	0.841
255	-	3.414	2.927	2.282	2.070	1.881	1.827	1.672	1.604	1.557	1.461	1.297	0.996	0.858
260	-	3.449	2.970	2.313	2.100	1.910	1.857	1.703	1.635	1.587	1.491	1.326	1.016	0.875
265	-	3.483	3.012	2.344	2.129	1.940	1.886	1.733	1.665	1.617	1.520	1.356	1.035	0.893
270	-	3.517	3.055	2.375	2.159	1.969	1.916	1.764	1.695	1.646	1.550	1.385	1.054	0.910
275	-	3.552	3.097	2.406	2.188	1.998	1.946	1.794	1.725	1.676	1.579	1.414	1.073	0.927
280	-	3.586	3.139	2.437	2.218	2.028	1.975	1.825	1.755	1.706	1.609	1.443	1.092	0.944
285	-	3.620	3.182	2.468	2.247	2.057	2.005	1.855	1.785	1.736	1.639	1.473	1.111	0.961
290	-	3.655	3.224	2.499	2.276	2.087	2.034	1.886	1.816	1.766	1.668	1.502	1.130	0.978
295	-	3.689	3.267	2.530	2.306	2.116	2.064	1.916	1.846	1.796	1.698	1.531	1.149	0.996
300	-	3.724	3.309	2.561	2.335	2.145	2.094	1.947	1.876	1.825	1.727	1.560	1.168	1.013
305	-	3.758	3.352	2.592	2.365	2.175	2.123	1.977	1.906	1.855	1.757	1.590	1.196	1.030
310	-	3.792	3.394	2.653	2.394	2.204	2.153	2.008	1.936	1.885	1.787	1.619	1.227	1.047
315	-	3.827	3.436	2.715	2.424	2.234	2.183	2.038	1.966	1.915	1.816	1.648	1.257	1.064
320	-	3.861	3.479	2.776	2.453	2.263	2.212	2.069	1.997	1.945	1.846	1.677	1.288	1.082
325	-	3.895	3.521	2.838	2.483	2.292	2.242	2.099	2.027	1.975	1.875	1.707	1.319	1.099
330	-	3.930	3.564	2.899	2.512	2.322	2.272	2.130	2.057	2.004	1.905	1.736	1.350	1.116

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 5243
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	540	550	575	590	600	620	650	700	750
30	1.849	1.061	0.794	0.604	0.446	0.318	0.301	0.293	0.293	0.293	0.293	0.293	0.293	0.293
35	2.078	1.243	0.957	0.726	0.539	0.397	0.376	0.331	0.310	0.297	0.293	0.293	0.293	0.293
40	2.307	1.386	1.119	0.848	0.632	0.476	0.451	0.395	0.368	0.351	0.322	0.293	0.293	0.293
45	2.536	1.528	1.230	0.970	0.724	0.555	0.525	0.459	0.426	0.406	0.369	0.323	0.293	0.293
50	2.719	1.671	1.315	1.092	0.817	0.634	0.600	0.523	0.484	0.460	0.416	0.362	0.293	0.293
55	2.888	1.813	1.400	1.191	0.909	0.713	0.674	0.587	0.542	0.514	0.464	0.400	0.323	0.293
60	3.056	1.956	1.485	1.244	1.002	0.791	0.749	0.651	0.600	0.569	0.511	0.438	0.353	0.293
65	3.225	2.098	1.570	1.296	1.095	0.870	0.824	0.715	0.658	0.623	0.558	0.477	0.384	0.316
70	3.393	2.241	1.654	1.348	1.180	0.949	0.898	0.780	0.717	0.677	0.606	0.515	0.414	0.340
75	3.562	2.383	1.739	1.400	1.218	1.028	0.973	0.844	0.775	0.732	0.653	0.553	0.445	0.364
80	3.730	2.526	1.824	1.453	1.256	1.107	1.047	0.908	0.833	0.786	0.700	0.592	0.476	0.388
85	3.898	2.625	1.909	1.505	1.294	1.179	1.122	0.972	0.891	0.840	0.748	0.630	0.506	0.412
90	4.067	2.685	1.994	1.557	1.333	1.210	1.183	1.036	0.949	0.895	0.795	0.668	0.537	0.436
95	4.235	2.745	2.079	1.610	1.371	1.242	1.214	1.100	1.007	0.949	0.842	0.706	0.567	0.460
100	-	2.805	2.164	1.662	1.409	1.273	1.245	1.164	1.065	1.003	0.890	0.745	0.598	0.484
105	-	2.865	2.248	1.714	1.448	1.304	1.277	1.200	1.123	1.058	0.937	0.783	0.629	0.508
110	-	2.925	2.333	1.766	1.486	1.336	1.308	1.230	1.178	1.112	0.984	0.821	0.659	0.532
115	-	2.985	2.418	1.819	1.524	1.367	1.339	1.261	1.208	1.166	1.032	0.860	0.690	0.556
120	-	3.045	2.503	1.871	1.563	1.398	1.370	1.291	1.238	1.200	1.079	0.898	0.720	0.580
125	-	3.105	2.588	1.923	1.601	1.430	1.401	1.321	1.268	1.230	1.126	0.936	0.751	0.604
130	-	3.165	2.627	1.975	1.639	1.461	1.432	1.352	1.299	1.260	1.174	0.975	0.781	0.628
135	-	3.225	2.664	2.028	1.677	1.492	1.463	1.382	1.329	1.290	1.204	1.013	0.812	0.652
140	-	3.285	2.700	2.080	1.716	1.524	1.494	1.412	1.359	1.320	1.234	1.051	0.843	0.677
145	-	3.345	2.737	2.132	1.754	1.555	1.525	1.443	1.389	1.350	1.264	1.090	0.873	0.701
150	-	3.405	2.774	2.184	1.792	1.586	1.556	1.473	1.419	1.380	1.294	1.128	0.904	0.725
155	-	3.465	2.810	2.237	1.831	1.618	1.587	1.504	1.449	1.410	1.324	1.166	0.934	0.749
160	-	3.525	2.847	2.289	1.869	1.649	1.618	1.534	1.480	1.440	1.354	1.198	0.965	0.773
165	-	3.585	2.883	2.341	1.907	1.680	1.649	1.564	1.510	1.470	1.384	1.229	0.995	0.797
170	-	3.645	2.920	2.394	1.946	1.712	1.680	1.595	1.540	1.500	1.414	1.259	1.026	0.821
175	-	3.705	2.956	2.446	1.984	1.743	1.711	1.625	1.570	1.530	1.445	1.290	1.057	0.845
180	-	3.765	2.993	2.498	2.022	1.774	1.742	1.655	1.600	1.560	1.475	1.320	1.087	0.869
185	-	3.825	3.029	2.550	2.061	1.806	1.773	1.686	1.630	1.590	1.505	1.350	1.118	0.893
190	-	3.885	3.066	2.601	2.099	1.837	1.804	1.716	1.661	1.620	1.535	1.381	1.148	0.917
195	-	3.945	3.102	2.645	2.137	1.868	1.835	1.746	1.691	1.650	1.565	1.411	1.179	0.941
200	-	4.005	3.139	2.689	2.175	1.900	1.866	1.777	1.721	1.680	1.595	1.442	1.209	0.965

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

Issued: 13th May 2014
Revised: 6th June 2024
Valid to: 12th May 2029

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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 5243
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	540	550	575	590	600	620	650	700	750
205	-	4.065	3.175	2.733	2.214	1.931	1.897	1.807	1.751	1.710	1.625	1.472	1.239	0.989
210	-	4.125	3.212	2.777	2.252	1.962	1.928	1.838	1.781	1.740	1.655	1.503	1.269	1.013
215	-	4.185	3.249	2.821	2.290	1.994	1.959	1.868	1.811	1.770	1.685	1.533	1.299	1.037
220	-	4.245	3.285	2.865	2.329	2.025	1.990	1.898	1.842	1.800	1.715	1.564	1.329	1.061
225	-	-	3.322	2.909	2.367	2.056	2.021	1.929	1.872	1.830	1.745	1.594	1.359	1.085
230	-	-	3.358	2.953	2.405	2.088	2.052	1.959	1.902	1.860	1.775	1.624	1.389	1.110
235	-	-	3.395	2.997	2.444	2.119	2.083	1.989	1.932	1.890	1.806	1.655	1.419	1.134
240	-	-	3.431	3.041	2.482	2.151	2.114	2.020	1.962	1.920	1.836	1.685	1.449	1.158
245	-	-	3.468	3.085	2.520	2.182	2.146	2.050	1.992	1.950	1.866	1.716	1.479	1.184
250	-	-	3.504	3.129	2.558	2.213	2.177	2.081	2.023	1.980	1.896	1.746	1.509	1.213
255	-	-	3.541	3.173	2.598	2.245	2.208	2.111	2.053	2.010	1.926	1.777	1.539	1.243
260	-	-	3.577	3.217	2.649	2.276	2.239	2.141	2.083	2.040	1.956	1.807	1.569	1.273
265	-	-	3.614	3.261	2.701	2.307	2.270	2.172	2.113	2.070	1.986	1.837	1.599	1.303
270	-	-	3.650	3.305	2.752	2.339	2.301	2.202	2.143	2.100	2.016	1.868	1.629	1.333
275	-	-	3.687	3.349	2.804	2.370	2.332	2.232	2.174	2.130	2.046	1.898	1.659	1.362
280	-	-	3.724	3.393	2.855	2.401	2.363	2.263	2.204	2.160	2.076	1.929	1.689	1.392
285	-	-	3.760	3.437	2.906	2.433	2.394	2.293	2.234	2.190	2.106	1.959	1.719	1.422
290	-	-	3.797	3.480	2.958	2.464	2.425	2.324	2.264	2.220	2.136	1.990	1.749	1.452
295	-	-	3.833	3.524	3.009	2.495	2.456	2.354	2.294	2.250	2.166	2.020	1.780	1.482
300	-	-	3.870	3.568	3.061	2.527	2.487	2.384	2.324	2.280	2.197	2.051	1.810	1.512
305	-	-	3.906	3.612	3.112	2.558	2.518	2.415	2.355	2.310	2.227	2.081	1.840	1.541
310	-	-	3.943	3.656	3.163	2.589	2.549	2.445	2.385	2.340	2.257	2.111	1.870	1.571
315	-	-	3.979	3.700	3.215	2.650	2.580	2.475	2.415	2.370	2.287	2.142	1.900	1.601
320	-	-	4.016	3.744	3.266	2.715	2.630	2.506	2.445	2.400	2.317	2.172	1.930	1.631
325	-	-	4.052	3.788	3.318	2.779	2.695	2.536	2.475	2.430	2.347	2.203	1.960	1.661
330	-	-	4.089	3.832	3.369	2.844	2.759	2.566	2.505	2.460	2.377	2.233	1.990	1.691

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

CXR53737-1, CXR53737-4, CXR53737-7, CXR53737-2, CXR53737-12, CXR53737-8, CXR53737-11, CXR53737-6

Issued: 13th May 2014
Revised: 6th June 2024
Valid to: 12th May 2029

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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 5243
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	540	550	575	590	600	620	650	700	750
30	2.601	1.651	1.054	0.832	0.651	0.519	0.489	0.418	0.347	0.330	0.298	0.293	0.293	0.293
35	2.864	1.863	1.235	0.993	0.778	0.626	0.592	0.511	0.439	0.417	0.376	0.322	0.293	0.293
40	3.127	2.076	1.381	1.154	0.905	0.733	0.694	0.604	0.530	0.504	0.455	0.389	0.301	0.293
45	3.390	2.288	1.527	1.257	1.032	0.839	0.797	0.697	0.621	0.590	0.533	0.455	0.351	0.293
50	3.653	2.501	1.673	1.352	1.159	0.946	0.899	0.791	0.713	0.677	0.611	0.522	0.401	0.324
55	3.915	2.679	1.818	1.447	1.225	1.052	1.002	0.884	0.804	0.764	0.689	0.589	0.451	0.362
60	4.178	2.832	1.964	1.542	1.283	1.159	1.104	0.977	0.896	0.851	0.767	0.655	0.501	0.399
65	-	2.985	2.110	1.637	1.340	1.214	1.188	1.070	0.987	0.938	0.846	0.722	0.551	0.436
70	-	3.137	2.256	1.732	1.398	1.261	1.233	1.163	1.079	1.025	0.924	0.789	0.601	0.474
75	-	3.290	2.401	1.827	1.456	1.308	1.277	1.208	1.170	1.111	1.002	0.855	0.651	0.511
80	-	3.442	2.547	1.921	1.514	1.356	1.322	1.247	1.208	1.183	1.080	0.922	0.701	0.548
85	-	3.595	2.642	2.016	1.571	1.403	1.367	1.285	1.243	1.216	1.158	0.989	0.751	0.586
90	-	3.747	2.714	2.111	1.629	1.450	1.411	1.324	1.279	1.249	1.199	1.055	0.801	0.623
95	-	3.900	2.786	2.206	1.687	1.497	1.456	1.363	1.314	1.283	1.231	1.122	0.852	0.661
100	-	4.053	2.858	2.301	1.745	1.544	1.501	1.401	1.350	1.316	1.263	1.181	0.902	0.698
105	-	4.205	2.930	2.396	1.802	1.591	1.545	1.440	1.385	1.349	1.294	1.212	0.952	0.735
110	-	-	3.002	2.491	1.860	1.638	1.590	1.479	1.421	1.382	1.326	1.242	1.002	0.773
115	-	-	3.074	2.585	1.918	1.685	1.634	1.517	1.456	1.415	1.358	1.273	1.052	0.810
120	-	-	3.146	2.633	1.975	1.732	1.679	1.556	1.491	1.448	1.389	1.304	1.102	0.847
125	-	-	3.218	2.677	2.033	1.779	1.724	1.595	1.527	1.481	1.421	1.335	1.152	0.885
130	-	-	3.290	2.721	2.091	1.826	1.768	1.633	1.562	1.514	1.453	1.366	1.191	0.922
135	-	-	3.362	2.765	2.149	1.873	1.813	1.672	1.598	1.548	1.484	1.397	1.221	0.960
140	-	-	3.434	2.809	2.206	1.920	1.857	1.711	1.633	1.581	1.516	1.428	1.251	0.997
145	-	-	3.506	2.853	2.264	1.967	1.902	1.749	1.669	1.614	1.548	1.459	1.282	1.034
150	-	-	3.578	2.897	2.322	2.015	1.947	1.788	1.704	1.647	1.579	1.489	1.312	1.072
155	-	-	3.650	2.941	2.380	2.062	1.991	1.827	1.740	1.680	1.611	1.520	1.342	1.109
160	-	-	3.721	2.985	2.437	2.109	2.036	1.865	1.775	1.713	1.643	1.551	1.373	1.147
165	-	-	3.793	3.029	2.495	2.156	2.081	1.904	1.811	1.746	1.674	1.582	1.403	1.182
170	-	-	3.865	3.073	2.553	2.203	2.125	1.943	1.846	1.779	1.706	1.613	1.433	1.212
175	-	-	3.937	3.117	2.606	2.250	2.170	1.981	1.881	1.813	1.738	1.644	1.463	1.242
180	-	-	4.009	3.161	2.650	2.297	2.214	2.020	1.917	1.846	1.769	1.675	1.494	1.272
185	-	-	4.081	3.205	2.694	2.344	2.259	2.059	1.952	1.879	1.801	1.705	1.524	1.302
190	-	-	4.153	3.249	2.737	2.391	2.304	2.097	1.988	1.912	1.833	1.736	1.554	1.332
195	-	-	4.225	3.293	2.781	2.438	2.348	2.136	2.023	1.945	1.864	1.767	1.585	1.362
200	-	-	-	3.337	2.824	2.485	2.393	2.175	2.059	1.978	1.896	1.798	1.615	1.392

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 5243
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	540	550	575	590	600	620	650	700	750
205	-	-	-	3.381	2.868	2.532	2.437	2.213	2.094	2.011	1.928	1.829	1.645	1.422
210	-	-	-	3.425	2.912	2.579	2.482	2.252	2.130	2.044	1.959	1.860	1.676	1.452
215	-	-	-	3.469	2.955	2.627	2.527	2.291	2.165	2.078	1.991	1.891	1.706	1.482
220	-	-	-	3.512	2.999	2.675	2.571	2.329	2.201	2.111	2.023	1.921	1.736	1.512
225	-	-	-	3.556	3.043	2.723	2.618	2.368	2.236	2.144	2.054	1.952	1.767	1.542
230	-	-	-	3.600	3.086	2.771	2.668	2.407	2.271	2.177	2.086	1.983	1.797	1.572
235	-	-	-	3.644	3.130	2.819	2.718	2.445	2.307	2.210	2.118	2.014	1.827	1.602
240	-	-	-	3.688	3.174	2.867	2.767	2.484	2.342	2.243	2.149	2.045	1.858	1.632
245	-	-	-	3.732	3.217	2.915	2.817	2.523	2.378	2.276	2.181	2.076	1.888	1.662
250	-	-	-	3.776	3.261	2.963	2.867	2.561	2.413	2.310	2.213	2.107	1.918	1.692
255	-	-	-	3.820	3.305	3.011	2.916	2.603	2.449	2.343	2.244	2.138	1.948	1.722
260	-	-	-	3.864	3.348	3.059	2.966	2.659	2.484	2.376	2.276	2.168	1.979	1.752
265	-	-	-	3.908	3.392	3.107	3.016	2.715	2.520	2.409	2.308	2.199	2.009	1.782
270	-	-	-	3.952	3.435	3.155	3.065	2.772	2.555	2.442	2.339	2.230	2.039	1.813
275	-	-	-	3.996	3.479	3.202	3.115	2.828	2.591	2.475	2.371	2.261	2.070	1.843
280	-	-	-	4.040	3.523	3.250	3.165	2.884	2.651	2.508	2.403	2.292	2.100	1.873
285	-	-	-	4.084	3.566	3.298	3.214	2.940	2.713	2.541	2.434	2.323	2.130	1.903
290	-	-	-	4.128	3.610	3.346	3.264	2.997	2.775	2.575	2.466	2.354	2.161	1.933
295	-	-	-	4.172	3.654	3.394	3.313	3.053	2.837	2.623	2.498	2.384	2.191	1.963
300	-	-	-	4.216	3.697	3.442	3.363	3.109	2.899	2.692	2.529	2.415	2.221	1.993
305	-	-	-	-	3.741	3.490	3.413	3.165	2.961	2.761	2.561	2.446	2.252	2.023
310	-	-	-	-	3.785	3.538	3.462	3.221	3.023	2.829	2.593	2.477	2.282	2.053
315	-	-	-	-	3.828	3.586	3.512	3.278	3.085	2.898	2.663	2.508	2.312	2.083
320	-	-	-	-	3.872	3.634	3.562	3.334	3.147	2.967	2.734	2.539	2.342	2.113
325	-	-	-	-	3.916	3.682	3.611	3.390	3.209	3.036	2.805	2.570	2.373	2.143
330	-	-	-	-	3.959	3.730	3.661	3.446	3.271	3.104	2.876	2.610	2.403	2.173

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 5243
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	540	550	575	590	600	620	650	700	750
30	3.164	2.299	1.320	1.063	0.857	0.706	0.672	0.595	0.552	0.524	0.469	0.347	0.293	0.293
35	3.521	2.616	1.576	1.241	1.019	0.845	0.806	0.718	0.668	0.636	0.573	0.444	0.336	0.293
40	3.877	2.866	1.833	1.392	1.179	0.983	0.940	0.840	0.784	0.748	0.677	0.542	0.412	0.326
45	4.234	3.117	2.089	1.543	1.283	1.122	1.074	0.963	0.900	0.860	0.780	0.639	0.488	0.385
50	-	3.368	2.345	1.694	1.386	1.220	1.191	1.086	1.017	0.972	0.884	0.737	0.564	0.445
55	-	3.619	2.599	1.846	1.490	1.293	1.257	1.190	1.133	1.084	0.988	0.834	0.640	0.504
60	-	3.870	2.762	1.997	1.594	1.367	1.324	1.245	1.208	1.184	1.092	0.932	0.717	0.564
65	-	4.120	2.926	2.148	1.697	1.440	1.391	1.301	1.260	1.233	1.183	1.029	0.793	0.624
70	-	-	3.089	2.299	1.801	1.514	1.457	1.357	1.312	1.283	1.229	1.127	0.869	0.683
75	-	-	3.253	2.450	1.905	1.588	1.524	1.413	1.364	1.333	1.274	1.194	0.945	0.743
80	-	-	3.416	2.598	2.009	1.661	1.590	1.468	1.416	1.382	1.319	1.233	1.021	0.802
85	-	-	3.580	2.682	2.112	1.735	1.657	1.524	1.468	1.432	1.365	1.272	1.097	0.862
90	-	-	3.744	2.767	2.216	1.808	1.724	1.580	1.520	1.482	1.410	1.311	1.173	0.921
95	-	-	3.907	2.851	2.320	1.882	1.790	1.635	1.572	1.531	1.456	1.350	1.206	0.981
100	-	-	4.071	2.936	2.424	1.955	1.857	1.691	1.624	1.581	1.501	1.389	1.238	1.041
105	-	-	4.234	3.020	2.527	2.029	1.924	1.747	1.676	1.631	1.546	1.428	1.270	1.100
110	-	-	-	3.105	2.612	2.102	1.990	1.803	1.729	1.680	1.592	1.466	1.302	1.160
115	-	-	-	3.189	2.664	2.176	2.057	1.858	1.781	1.730	1.637	1.505	1.334	1.197
120	-	-	-	3.274	2.715	2.250	2.124	1.914	1.833	1.780	1.682	1.544	1.366	1.228
125	-	-	-	3.358	2.767	2.323	2.190	1.970	1.885	1.830	1.728	1.583	1.398	1.259
130	-	-	-	3.443	2.819	2.397	2.257	2.025	1.937	1.879	1.773	1.622	1.430	1.289
135	-	-	-	3.528	2.871	2.470	2.323	2.081	1.989	1.929	1.819	1.661	1.462	1.320
140	-	-	-	3.612	2.923	2.544	2.390	2.137	2.041	1.979	1.864	1.700	1.494	1.351
145	-	-	-	3.697	2.974	2.607	2.457	2.192	2.093	2.028	1.909	1.739	1.526	1.382
150	-	-	-	3.781	3.026	2.648	2.523	2.248	2.145	2.078	1.955	1.778	1.558	1.412
155	-	-	-	3.866	3.078	2.690	2.590	2.304	2.197	2.128	2.000	1.817	1.590	1.443
160	-	-	-	3.950	3.130	2.731	2.634	2.360	2.249	2.177	2.045	1.855	1.623	1.474
165	-	-	-	4.035	3.181	2.773	2.678	2.415	2.302	2.227	2.091	1.894	1.655	1.505
170	-	-	-	4.119	3.233	2.814	2.721	2.471	2.354	2.277	2.136	1.933	1.687	1.535
175	-	-	-	4.204	3.285	2.856	2.764	2.527	2.406	2.326	2.182	1.972	1.719	1.566
180	-	-	-	4.289	3.337	2.898	2.808	2.582	2.458	2.376	2.227	2.011	1.751	1.597
185	-	-	-	-	3.389	2.939	2.851	2.631	2.510	2.426	2.272	2.050	1.783	1.627
190	-	-	-	-	3.440	2.981	2.894	2.678	2.562	2.476	2.318	2.089	1.815	1.658
195	-	-	-	-	3.492	3.022	2.937	2.725	2.613	2.525	2.363	2.128	1.847	1.689
200	-	-	-	-	3.544	3.064	2.981	2.772	2.661	2.575	2.408	2.167	1.879	1.720

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

Issued: 13th May 2014
Revised: 6th June 2024
Valid to: 12th May 2029

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 5243
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	540	550	575	590	600	620	650	700	750
205	-	-	-	-	3.596	3.105	3.024	2.819	2.709	2.624	2.454	2.206	1.911	1.750
210	-	-	-	-	3.647	3.147	3.067	2.866	2.757	2.674	2.499	2.245	1.943	1.781
215	-	-	-	-	3.699	3.188	3.111	2.913	2.806	2.723	2.545	2.283	1.975	1.812
220	-	-	-	-	3.751	3.230	3.154	2.960	2.854	2.773	2.590	2.322	2.007	1.842
225	-	-	-	-	3.803	3.272	3.197	3.007	2.902	2.822	2.641	2.361	2.039	1.873
230	-	-	-	-	3.854	3.313	3.240	3.054	2.951	2.871	2.693	2.400	2.071	1.904
235	-	-	-	-	3.906	3.355	3.284	3.101	2.999	2.921	2.745	2.439	2.103	1.935
240	-	-	-	-	3.958	3.396	3.327	3.148	3.047	2.970	2.797	2.478	2.136	1.965
245	-	-	-	-	4.010	3.438	3.370	3.195	3.095	3.020	2.849	2.517	2.168	1.996
250	-	-	-	-	4.062	3.479	3.414	3.242	3.144	3.069	2.901	2.556	2.200	2.027
255	-	-	-	-	4.113	3.521	3.457	3.289	3.192	3.118	2.952	2.595	2.232	2.057
260	-	-	-	-	4.165	3.562	3.500	3.336	3.240	3.168	3.004	2.654	2.264	2.088
265	-	-	-	-	4.217	3.604	3.544	3.383	3.288	3.217	3.056	2.713	2.296	2.119
270	-	-	-	-	-	3.645	3.587	3.430	3.337	3.267	3.108	2.772	2.328	2.150
275	-	-	-	-	-	3.687	3.630	3.477	3.385	3.316	3.160	2.831	2.360	2.180
280	-	-	-	-	-	3.729	3.673	3.524	3.433	3.365	3.212	2.889	2.392	2.211
285	-	-	-	-	-	3.770	3.717	3.571	3.482	3.415	3.264	2.948	2.424	2.242
290	-	-	-	-	-	3.812	3.760	3.618	3.530	3.464	3.316	3.007	2.456	2.272
295	-	-	-	-	-	3.853	3.803	3.665	3.578	3.514	3.367	3.066	2.488	2.303
300	-	-	-	-	-	3.895	3.847	3.712	3.626	3.563	3.419	3.125	2.520	2.334
305	-	-	-	-	-	3.936	3.890	3.759	3.675	3.612	3.471	3.183	2.552	2.365
310	-	-	-	-	-	3.978	3.933	3.806	3.723	3.662	3.523	3.242	2.584	2.395
315	-	-	-	-	-	4.019	3.976	3.854	3.771	3.711	3.575	3.301	2.647	2.426
320	-	-	-	-	-	4.061	4.020	3.901	3.820	3.761	3.627	3.360	2.720	2.457
325	-	-	-	-	-	4.103	4.063	3.948	3.868	3.810	3.679	3.419	2.794	2.487
330	-	-	-	-	-	4.144	4.106	3.995	3.916	3.859	3.730	3.477	2.867	2.518

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

CXR53737-1, CXR53737-4, CXR53737-7, CXR53737-2, CXR53737-12, CXR53737-8, CXR53737-11, CXR53737-6

Issued: 13th May 2014
Revised: 6th June 2024
Valid to: 12th May 2029

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 5243
JOTUN A/S

I/H Beams: 135 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	540	550	575	590	600	620	650	700	750
30	3.727	2.885	2.125	1.301	1.065	0.894	0.857	0.773	0.725	0.695	0.636	0.548	0.350	0.293
35	-	3.235	2.433	1.552	1.244	1.065	1.022	0.926	0.871	0.836	0.769	0.668	0.454	0.355
40	-	3.585	2.719	1.803	1.401	1.218	1.183	1.079	1.017	0.977	0.901	0.788	0.558	0.438
45	-	3.935	2.979	2.055	1.558	1.339	1.296	1.209	1.162	1.118	1.034	0.908	0.661	0.521
50	-	4.285	3.240	2.306	1.715	1.461	1.409	1.303	1.250	1.220	1.166	1.029	0.765	0.604
55	-	-	3.500	2.558	1.872	1.582	1.522	1.396	1.333	1.296	1.234	1.149	0.869	0.688
60	-	-	3.761	2.753	2.029	1.704	1.635	1.490	1.416	1.372	1.297	1.217	0.973	0.771
65	-	-	4.021	2.938	2.186	1.825	1.749	1.583	1.498	1.448	1.361	1.271	1.077	0.854
70	-	-	-	3.124	2.343	1.947	1.862	1.676	1.581	1.524	1.425	1.326	1.177	0.937
75	-	-	-	3.310	2.500	2.068	1.975	1.770	1.664	1.600	1.488	1.380	1.221	1.021
80	-	-	-	3.495	2.633	2.190	2.088	1.863	1.747	1.676	1.552	1.434	1.265	1.104
85	-	-	-	3.681	2.733	2.311	2.201	1.956	1.829	1.752	1.616	1.489	1.309	1.179
90	-	-	-	3.867	2.833	2.433	2.314	2.050	1.912	1.828	1.679	1.543	1.354	1.213
95	-	-	-	4.053	2.933	2.554	2.427	2.143	1.995	1.904	1.743	1.597	1.398	1.247
100	-	-	-	4.238	3.032	2.642	2.540	2.236	2.078	1.980	1.807	1.652	1.442	1.281
105	-	-	-	-	3.132	2.713	2.628	2.330	2.160	2.056	1.870	1.706	1.486	1.315
110	-	-	-	-	3.232	2.784	2.694	2.423	2.243	2.132	1.934	1.760	1.530	1.349
115	-	-	-	-	3.332	2.855	2.760	2.516	2.326	2.208	1.998	1.815	1.574	1.383
120	-	-	-	-	3.432	2.926	2.826	2.603	2.409	2.284	2.062	1.869	1.619	1.417
125	-	-	-	-	3.531	2.997	2.891	2.657	2.491	2.360	2.125	1.923	1.663	1.451
130	-	-	-	-	3.631	3.068	2.957	2.711	2.574	2.436	2.189	1.978	1.707	1.485
135	-	-	-	-	3.731	3.139	3.023	2.764	2.629	2.512	2.253	2.032	1.751	1.519
140	-	-	-	-	3.831	3.210	3.089	2.818	2.677	2.588	2.316	2.086	1.795	1.552
145	-	-	-	-	3.930	3.281	3.155	2.872	2.724	2.633	2.380	2.141	1.840	1.586
150	-	-	-	-	4.030	3.352	3.220	2.926	2.771	2.676	2.444	2.195	1.884	1.620
155	-	-	-	-	4.130	3.423	3.286	2.980	2.818	2.719	2.507	2.249	1.928	1.654
160	-	-	-	-	4.230	3.494	3.352	3.034	2.865	2.761	2.571	2.304	1.972	1.688
165	-	-	-	-	-	3.565	3.418	3.088	2.912	2.804	2.623	2.358	2.016	1.722
170	-	-	-	-	-	3.636	3.484	3.142	2.960	2.847	2.669	2.412	2.061	1.756
175	-	-	-	-	-	3.707	3.549	3.196	3.007	2.889	2.715	2.466	2.105	1.790
180	-	-	-	-	-	3.778	3.615	3.250	3.054	2.932	2.761	2.521	2.149	1.824
185	-	-	-	-	-	3.849	3.681	3.304	3.101	2.975	2.807	2.575	2.193	1.858
190	-	-	-	-	-	3.920	3.747	3.358	3.148	3.018	2.852	2.626	2.237	1.892
195	-	-	-	-	-	3.991	3.813	3.411	3.196	3.060	2.898	2.675	2.282	1.926
200	-	-	-	-	-	4.062	3.878	3.465	3.243	3.103	2.944	2.723	2.326	1.959

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 5243
JOTUN A/S

I/H Beams: 135 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	540	550	575	590	600	620	650	700	750
205	-	-	-	-	-	4.133	3.944	3.519	3.290	3.146	2.990	2.772	2.370	1.993
210	-	-	-	-	-	4.204	4.010	3.573	3.337	3.189	3.036	2.821	2.414	2.027
215	-	-	-	-	-	-	4.076	3.627	3.384	3.231	3.082	2.870	2.458	2.061
220	-	-	-	-	-	-	4.142	3.681	3.431	3.274	3.128	2.918	2.502	2.095
225	-	-	-	-	-	-	4.208	3.735	3.479	3.317	3.174	2.967	2.547	2.129
230	-	-	-	-	-	-	4.273	3.789	3.526	3.359	3.220	3.016	2.591	2.163
235	-	-	-	-	-	-	-	3.843	3.573	3.402	3.266	3.065	2.645	2.197
240	-	-	-	-	-	-	-	3.897	3.620	3.445	3.312	3.114	2.700	2.231
245	-	-	-	-	-	-	-	3.951	3.667	3.488	3.357	3.162	2.755	2.265
250	-	-	-	-	-	-	-	4.004	3.715	3.530	3.403	3.211	2.810	2.299
255	-	-	-	-	-	-	-	4.058	3.762	3.573	3.449	3.260	2.865	2.333
260	-	-	-	-	-	-	-	4.112	3.809	3.616	3.495	3.309	2.920	2.366
265	-	-	-	-	-	-	-	4.166	3.856	3.658	3.541	3.358	2.974	2.400
270	-	-	-	-	-	-	-	4.220	3.903	3.701	3.587	3.406	3.029	2.434
275	-	-	-	-	-	-	-	4.274	3.950	3.744	3.633	3.455	3.084	2.468
280	-	-	-	-	-	-	-	-	3.998	3.787	3.679	3.504	3.139	2.502
285	-	-	-	-	-	-	-	-	4.045	3.829	3.725	3.553	3.194	2.536
290	-	-	-	-	-	-	-	-	4.092	3.872	3.771	3.601	3.249	2.570
295	-	-	-	-	-	-	-	-	4.139	3.915	3.817	3.650	3.304	2.618
300	-	-	-	-	-	-	-	-	4.186	3.958	3.862	3.699	3.359	2.695
305	-	-	-	-	-	-	-	-	4.233	4.000	3.908	3.748	3.414	2.772
310	-	-	-	-	-	-	-	-	-	4.043	3.954	3.797	3.468	2.849
315	-	-	-	-	-	-	-	-	-	4.086	4.000	3.845	3.523	2.926
320	-	-	-	-	-	-	-	-	-	4.128	4.046	3.894	3.578	3.003
325	-	-	-	-	-	-	-	-	-	4.171	4.092	3.943	3.633	3.080
330	-	-	-	-	-	-	-	-	-	4.214	4.138	3.992	3.688	3.157

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 5243
JOTUN A/S

I/H Beams: 150 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	540	550	575	590	600	620	650	700	750
30	-	3.451	2.693	2.030	1.283	1.084	1.042	0.952	0.899	0.867	0.805	0.714	0.561	0.358
35	-	3.888	3.052	2.330	1.536	1.271	1.229	1.135	1.075	1.038	0.966	0.862	0.686	0.466
40	-	-	3.411	2.628	1.789	1.446	1.394	1.286	1.230	1.198	1.127	1.011	0.811	0.575
45	-	-	3.770	2.908	2.042	1.621	1.559	1.428	1.359	1.319	1.249	1.159	0.936	0.683
50	-	-	4.129	3.187	2.295	1.795	1.724	1.570	1.489	1.439	1.354	1.250	1.061	0.791
55	-	-	-	3.466	2.548	1.970	1.889	1.711	1.618	1.560	1.459	1.333	1.180	0.899
60	-	-	-	3.746	2.768	2.145	2.054	1.853	1.747	1.681	1.564	1.417	1.238	1.007
65	-	-	-	4.025	2.981	2.320	2.219	1.995	1.876	1.801	1.669	1.501	1.296	1.115
70	-	-	-	-	3.193	2.494	2.384	2.137	2.005	1.922	1.774	1.585	1.354	1.196
75	-	-	-	-	3.406	2.656	2.549	2.279	2.134	2.043	1.879	1.669	1.413	1.243
80	-	-	-	-	3.618	2.800	2.684	2.420	2.263	2.163	1.984	1.753	1.471	1.291
85	-	-	-	-	3.831	2.944	2.809	2.562	2.392	2.284	2.089	1.836	1.529	1.339
90	-	-	-	-	4.043	3.088	2.933	2.665	2.521	2.405	2.194	1.920	1.587	1.387
95	-	-	-	-	-	3.233	3.057	2.756	2.630	2.525	2.299	2.004	1.646	1.435
100	-	-	-	-	-	3.377	3.182	2.848	2.714	2.628	2.404	2.088	1.704	1.483
105	-	-	-	-	-	3.521	3.306	2.939	2.798	2.707	2.509	2.172	1.762	1.531
110	-	-	-	-	-	3.666	3.430	3.031	2.883	2.786	2.607	2.256	1.821	1.579
115	-	-	-	-	-	3.810	3.555	3.123	2.967	2.865	2.675	2.339	1.879	1.626
120	-	-	-	-	-	3.954	3.679	3.214	3.051	2.945	2.744	2.423	1.937	1.674
125	-	-	-	-	-	4.098	3.803	3.306	3.135	3.024	2.813	2.507	1.995	1.722
130	-	-	-	-	-	4.243	3.928	3.397	3.219	3.103	2.882	2.591	2.054	1.770
135	-	-	-	-	-	-	4.052	3.489	3.303	3.182	2.951	2.645	2.112	1.818
140	-	-	-	-	-	-	4.176	3.580	3.387	3.261	3.020	2.698	2.170	1.866
145	-	-	-	-	-	-	4.301	3.672	3.471	3.341	3.089	2.751	2.228	1.914
150	-	-	-	-	-	-	-	3.764	3.555	3.420	3.158	2.804	2.287	1.962
155	-	-	-	-	-	-	-	3.855	3.639	3.499	3.227	2.857	2.345	2.009
160	-	-	-	-	-	-	-	3.947	3.723	3.578	3.296	2.911	2.403	2.057
165	-	-	-	-	-	-	-	4.038	3.807	3.658	3.365	2.964	2.461	2.105
170	-	-	-	-	-	-	-	4.130	3.891	3.737	3.434	3.017	2.520	2.153
175	-	-	-	-	-	-	-	4.221	3.975	3.816	3.503	3.070	2.578	2.201
180	-	-	-	-	-	-	-	4.313	4.059	3.895	3.572	3.123	2.629	2.249
185	-	-	-	-	-	-	-	-	4.143	3.975	3.641	3.176	2.678	2.297
190	-	-	-	-	-	-	-	-	4.227	4.054	3.710	3.229	2.727	2.345
195	-	-	-	-	-	-	-	-	-	4.133	3.779	3.283	2.776	2.392
200	-	-	-	-	-	-	-	-	-	4.212	3.848	3.336	2.825	2.440

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 5243
JOTUN A/S

I/H Beams: 150 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	540	550	575	590	600	620	650	700	750
205	-	-	-	-	-	-	-	-	-	-	3.917	3.389	2.874	2.488
210	-	-	-	-	-	-	-	-	-	-	3.985	3.442	2.923	2.536
215	-	-	-	-	-	-	-	-	-	-	4.054	3.495	2.972	2.584
220	-	-	-	-	-	-	-	-	-	-	4.123	3.548	3.021	2.638
225	-	-	-	-	-	-	-	-	-	-	4.192	3.602	3.069	2.694
230	-	-	-	-	-	-	-	-	-	-	4.261	3.655	3.118	2.749
235	-	-	-	-	-	-	-	-	-	-	-	3.708	3.167	2.805
240	-	-	-	-	-	-	-	-	-	-	-	3.761	3.216	2.861
245	-	-	-	-	-	-	-	-	-	-	-	3.814	3.265	2.916
250	-	-	-	-	-	-	-	-	-	-	-	3.867	3.314	2.972
255	-	-	-	-	-	-	-	-	-	-	-	3.920	3.363	3.028
260	-	-	-	-	-	-	-	-	-	-	-	3.974	3.412	3.083
265	-	-	-	-	-	-	-	-	-	-	-	4.027	3.461	3.139
270	-	-	-	-	-	-	-	-	-	-	-	4.080	3.510	3.194
275	-	-	-	-	-	-	-	-	-	-	-	4.133	3.558	3.250
280	-	-	-	-	-	-	-	-	-	-	-	4.186	3.607	3.306
285	-	-	-	-	-	-	-	-	-	-	-	4.239	3.656	3.361
290	-	-	-	-	-	-	-	-	-	-	-	4.292	3.705	3.417
295	-	-	-	-	-	-	-	-	-	-	-	-	3.754	3.473
300	-	-	-	-	-	-	-	-	-	-	-	-	3.803	3.528
305	-	-	-	-	-	-	-	-	-	-	-	-	3.852	3.584
310	-	-	-	-	-	-	-	-	-	-	-	-	3.901	3.640
315	-	-	-	-	-	-	-	-	-	-	-	-	3.950	3.695
320	-	-	-	-	-	-	-	-	-	-	-	-	3.999	3.751
325	-	-	-	-	-	-	-	-	-	-	-	-	4.048	3.806
330	-	-	-	-	-	-	-	-	-	-	-	-	4.096	3.862

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 5243
JOTUN A/S

I/H Beams: 165 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	540	550	575	590	600	620	650	700	750
30	-	-	3.244	2.560	1.963	1.299	1.237	1.135	1.075	1.040	0.975	0.881	0.727	0.597
35	-	-	3.691	2.934	2.264	1.590	1.499	1.332	1.267	1.230	1.165	1.058	0.880	0.726
40	-	-	-	3.307	2.565	1.881	1.760	1.529	1.448	1.400	1.318	1.217	1.034	0.854
45	-	-	-	3.681	2.869	2.173	2.021	1.725	1.628	1.570	1.469	1.342	1.182	0.983
50	-	-	-	-	3.174	2.464	2.283	1.922	1.808	1.740	1.620	1.466	1.270	1.112
55	-	-	-	-	3.478	2.733	2.544	2.118	1.988	1.910	1.771	1.591	1.358	1.205
60	-	-	-	-	3.783	2.985	2.787	2.315	2.169	2.080	1.922	1.716	1.446	1.265
65	-	-	-	-	4.087	3.236	3.026	2.511	2.349	2.250	2.073	1.840	1.534	1.325
70	-	-	-	-	-	3.488	3.265	2.715	2.529	2.420	2.224	1.965	1.622	1.385
75	-	-	-	-	-	3.739	3.504	2.925	2.707	2.590	2.375	2.090	1.710	1.444
80	-	-	-	-	-	3.991	3.743	3.135	2.883	2.747	2.526	2.215	1.798	1.504
85	-	-	-	-	-	-	3.982	3.344	3.060	2.904	2.660	2.339	1.886	1.564
90	-	-	-	-	-	-	-	3.554	3.236	3.060	2.780	2.464	1.974	1.624
95	-	-	-	-	-	-	-	3.764	3.413	3.217	2.901	2.589	2.062	1.684
100	-	-	-	-	-	-	-	3.973	3.589	3.373	3.021	2.681	2.151	1.744
105	-	-	-	-	-	-	-	4.183	3.766	3.530	3.141	2.773	2.239	1.804
110	-	-	-	-	-	-	-	-	3.942	3.686	3.262	2.865	2.327	1.864
115	-	-	-	-	-	-	-	-	4.119	3.843	3.382	2.956	2.415	1.924
120	-	-	-	-	-	-	-	-	4.295	3.999	3.502	3.048	2.503	1.984
125	-	-	-	-	-	-	-	-	-	4.156	3.622	3.139	2.591	2.044
130	-	-	-	-	-	-	-	-	-	-	3.743	3.231	2.657	2.104
135	-	-	-	-	-	-	-	-	-	-	3.863	3.322	2.722	2.163
140	-	-	-	-	-	-	-	-	-	-	3.983	3.414	2.787	2.223
145	-	-	-	-	-	-	-	-	-	-	4.104	3.505	2.853	2.283
150	-	-	-	-	-	-	-	-	-	-	4.224	3.597	2.918	2.343
155	-	-	-	-	-	-	-	-	-	-	-	3.689	2.983	2.403
160	-	-	-	-	-	-	-	-	-	-	-	3.780	3.049	2.463
165	-	-	-	-	-	-	-	-	-	-	-	3.872	3.114	2.523
170	-	-	-	-	-	-	-	-	-	-	-	3.963	3.179	2.583
175	-	-	-	-	-	-	-	-	-	-	-	4.055	3.245	2.636
180	-	-	-	-	-	-	-	-	-	-	-	4.146	3.310	2.687
185	-	-	-	-	-	-	-	-	-	-	-	4.238	3.375	2.738
190	-	-	-	-	-	-	-	-	-	-	-	4.329	3.441	2.789
195	-	-	-	-	-	-	-	-	-	-	-	-	3.506	2.840
200	-	-	-	-	-	-	-	-	-	-	-	-	3.571	2.891

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 5243
JOTUN A/S

I/H Beams: 165 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	540	550	575	590	600	620	650	700	750
205	-	-	-	-	-	-	-	-	-	-	-	-	3.637	2.943
210	-	-	-	-	-	-	-	-	-	-	-	-	3.702	2.994
215	-	-	-	-	-	-	-	-	-	-	-	-	3.767	3.045
220	-	-	-	-	-	-	-	-	-	-	-	-	3.833	3.096
225	-	-	-	-	-	-	-	-	-	-	-	-	3.898	3.147
230	-	-	-	-	-	-	-	-	-	-	-	-	3.963	3.198
235	-	-	-	-	-	-	-	-	-	-	-	-	4.029	3.250
240	-	-	-	-	-	-	-	-	-	-	-	-	4.094	3.301
245	-	-	-	-	-	-	-	-	-	-	-	-	4.159	3.352
250	-	-	-	-	-	-	-	-	-	-	-	-	4.225	3.403
255	-	-	-	-	-	-	-	-	-	-	-	-	4.290	3.454
260	-	-	-	-	-	-	-	-	-	-	-	-	-	3.505
265	-	-	-	-	-	-	-	-	-	-	-	-	-	3.557
270	-	-	-	-	-	-	-	-	-	-	-	-	-	3.608
275	-	-	-	-	-	-	-	-	-	-	-	-	-	3.659
280	-	-	-	-	-	-	-	-	-	-	-	-	-	3.710
285	-	-	-	-	-	-	-	-	-	-	-	-	-	3.761
290	-	-	-	-	-	-	-	-	-	-	-	-	-	3.812
295	-	-	-	-	-	-	-	-	-	-	-	-	-	3.864
300	-	-	-	-	-	-	-	-	-	-	-	-	-	3.915
305	-	-	-	-	-	-	-	-	-	-	-	-	-	3.966
310	-	-	-	-	-	-	-	-	-	-	-	-	-	4.017
315	-	-	-	-	-	-	-	-	-	-	-	-	-	4.068
320	-	-	-	-	-	-	-	-	-	-	-	-	-	4.120
325	-	-	-	-	-	-	-	-	-	-	-	-	-	4.171
330	-	-	-	-	-	-	-	-	-	-	-	-	-	4.222

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

CXR53737-1, CXR53737-4, CXR53737-7, CXR53737-2, CXR53737-12, CXR53737-8, CXR53737-11, CXR53737-6

Issued: 13th May 2014
Revised: 6th June 2024
Valid to: 12th May 2029

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 5243
JOTUN A/S

I/H Beams: 180 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	540	550	575	590	600	620	650	700	750
30	-	-	3.786	3.079	2.460	1.980	1.865	1.367	1.270	1.220	1.147	1.049	0.894	0.770
35	-	-	-	3.547	2.853	2.310	2.180	1.708	1.564	1.483	1.356	1.240	1.076	0.928
40	-	-	-	-	3.250	2.642	2.496	2.048	1.857	1.746	1.565	1.409	1.231	1.087
45	-	-	-	-	3.647	2.984	2.821	2.389	2.150	2.008	1.775	1.578	1.354	1.214
50	-	-	-	-	-	3.327	3.149	2.713	2.443	2.271	1.984	1.747	1.477	1.303
55	-	-	-	-	-	3.669	3.478	3.012	2.731	2.533	2.193	1.916	1.600	1.392
60	-	-	-	-	-	4.011	3.807	3.311	3.015	2.806	2.403	2.085	1.723	1.481
65	-	-	-	-	-	-	4.136	3.611	3.299	3.082	2.617	2.254	1.846	1.570
70	-	-	-	-	-	-	-	3.910	3.582	3.358	2.881	2.423	1.969	1.659
75	-	-	-	-	-	-	-	4.209	3.866	3.634	3.145	2.592	2.092	1.748
80	-	-	-	-	-	-	-	-	4.149	3.910	3.409	2.785	2.215	1.837
85	-	-	-	-	-	-	-	-	-	4.186	3.672	2.977	2.338	1.926
90	-	-	-	-	-	-	-	-	-	-	3.936	3.169	2.461	2.015
95	-	-	-	-	-	-	-	-	-	-	4.200	3.362	2.583	2.104
100	-	-	-	-	-	-	-	-	-	-	-	3.554	2.693	2.193
105	-	-	-	-	-	-	-	-	-	-	-	3.747	2.801	2.282
110	-	-	-	-	-	-	-	-	-	-	-	3.939	2.909	2.371
115	-	-	-	-	-	-	-	-	-	-	-	4.131	3.017	2.460
120	-	-	-	-	-	-	-	-	-	-	-	4.324	3.126	2.549
125	-	-	-	-	-	-	-	-	-	-	-	-	3.234	2.635
130	-	-	-	-	-	-	-	-	-	-	-	-	3.342	2.718
135	-	-	-	-	-	-	-	-	-	-	-	-	3.450	2.801
140	-	-	-	-	-	-	-	-	-	-	-	-	3.558	2.884
145	-	-	-	-	-	-	-	-	-	-	-	-	3.666	2.967
150	-	-	-	-	-	-	-	-	-	-	-	-	3.775	3.050
155	-	-	-	-	-	-	-	-	-	-	-	-	3.883	3.133
160	-	-	-	-	-	-	-	-	-	-	-	-	3.991	3.216
165	-	-	-	-	-	-	-	-	-	-	-	-	4.099	3.299
170	-	-	-	-	-	-	-	-	-	-	-	-	4.207	3.382
175	-	-	-	-	-	-	-	-	-	-	-	-	-	3.466
180	-	-	-	-	-	-	-	-	-	-	-	-	-	3.549
185	-	-	-	-	-	-	-	-	-	-	-	-	-	3.632
190	-	-	-	-	-	-	-	-	-	-	-	-	-	3.715
195	-	-	-	-	-	-	-	-	-	-	-	-	-	3.798
200	-	-	-	-	-	-	-	-	-	-	-	-	-	3.881

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

Issued: 13th May 2014
Revised: 6th June 2024
Valid to: 12th May 2029

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 5243
JOTUN A/S

I/H Beams: 180 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	540	550	575	590	600	620	650	700	750
205	-	-	-	-	-	-	-	-	-	-	-	-	-	3.964
210	-	-	-	-	-	-	-	-	-	-	-	-	-	4.047
215	-	-	-	-	-	-	-	-	-	-	-	-	-	4.130
220	-	-	-	-	-	-	-	-	-	-	-	-	-	4.213
225	-	-	-	-	-	-	-	-	-	-	-	-	-	4.296
230	-	-	-	-	-	-	-	-	-	-	-	-	-	-
235	-	-	-	-	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
245	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
255	-	-	-	-	-	-	-	-	-	-	-	-	-	-
260	-	-	-	-	-	-	-	-	-	-	-	-	-	-
265	-	-	-	-	-	-	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-	-	-	-	-	-	-
275	-	-	-	-	-	-	-	-	-	-	-	-	-	-
280	-	-	-	-	-	-	-	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Issued: 13th May 2014
Revised: 6th June 2024
Valid to: 12th May 2029

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 5243
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	510	530	539	550	560	580	600	650	700	750
30	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
35	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
40	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
45	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
50	0.294	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
55	0.316	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
60	0.337	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
65	0.358	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
70	0.380	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
75	0.401	0.284	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
80	0.422	0.300	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
85	0.443	0.317	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
90	0.465	0.333	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
95	0.486	0.349	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
100	0.507	0.366	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
105	0.528	0.382	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
110	0.550	0.399	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
115	0.571	0.415	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
120	0.592	0.432	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
125	0.614	0.448	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
130	0.635	0.465	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
135	0.656	0.481	0.289	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
140	0.677	0.498	0.304	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
145	0.699	0.514	0.319	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
150	0.720	0.530	0.334	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
155	0.741	0.547	0.349	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
160	0.762	0.563	0.363	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
165	0.784	0.580	0.378	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
170	0.805	0.596	0.393	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
175	0.826	0.613	0.408	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
180	0.847	0.629	0.423	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
185	0.869	0.646	0.437	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
190	0.890	0.662	0.452	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
195	0.911	0.678	0.467	0.285	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
200	0.933	0.695	0.482	0.299	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278

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 limited to a maximum protection thickness of 4.457mm.

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CERTIFICATE No CF 5243
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	510	530	539	550	560	580	600	650	700	750
205	0.954	0.711	0.497	0.314	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
210	0.975	0.728	0.512	0.328	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
215	0.996	0.744	0.526	0.342	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
220	1.018	0.761	0.541	0.357	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
225	1.046	0.777	0.556	0.371	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
230	1.076	0.794	0.571	0.385	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
235	1.106	0.810	0.586	0.399	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
240	1.136	0.827	0.600	0.414	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
245	1.166	0.843	0.615	0.428	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
250	1.196	0.859	0.630	0.442	0.283	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
255	1.226	0.876	0.645	0.457	0.296	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
260	1.256	0.892	0.660	0.471	0.309	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
265	1.286	0.909	0.675	0.485	0.322	0.289	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
270	1.316	0.925	0.689	0.500	0.336	0.302	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
275	1.345	0.942	0.704	0.514	0.349	0.315	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
280	1.375	0.958	0.719	0.528	0.362	0.328	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
285	1.405	0.975	0.734	0.542	0.375	0.341	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
290	1.435	0.991	0.749	0.557	0.388	0.354	0.280	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
295	1.465	1.008	0.764	0.571	0.402	0.367	0.293	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
300	1.495	1.026	0.778	0.585	0.415	0.380	0.306	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
305	1.525	1.051	0.793	0.600	0.428	0.393	0.319	0.283	0.278	0.278	0.278	0.278	0.278	0.278	0.278
310	1.555	1.076	0.808	0.614	0.441	0.406	0.331	0.295	0.278	0.278	0.278	0.278	0.278	0.278	0.278
315	1.585	1.101	0.823	0.628	0.454	0.419	0.344	0.308	0.278	0.278	0.278	0.278	0.278	0.278	0.278
320	1.615	1.127	0.838	0.643	0.467	0.432	0.357	0.320	0.278	0.278	0.278	0.278	0.278	0.278	0.278
325	1.645	1.152	0.852	0.657	0.481	0.445	0.369	0.333	0.288	0.278	0.278	0.278	0.278	0.278	0.278
330	1.675	1.177	0.867	0.671	0.494	0.458	0.382	0.345	0.300	0.279	0.278	0.278	0.278	0.278	0.278
335	1.705	1.202	0.882	0.685	0.507	0.471	0.395	0.358	0.313	0.291	0.278	0.278	0.278	0.278	0.278
340	1.735	1.228	0.897	0.700	0.520	0.484	0.407	0.371	0.325	0.303	0.278	0.278	0.278	0.278	0.278
345	1.764	1.253	0.912	0.714	0.533	0.497	0.420	0.383	0.338	0.315	0.278	0.278	0.278	0.278	0.278
350	1.794	1.278	0.927	0.728	0.546	0.510	0.433	0.396	0.350	0.327	0.285	0.278	0.278	0.278	0.278
355	1.824	1.303	0.941	0.743	0.560	0.523	0.446	0.408	0.363	0.339	0.296	0.278	0.278	0.278	0.278
360	1.854	1.329	0.956	0.757	0.573	0.536	0.458	0.421	0.375	0.351	0.308	0.278	0.278	0.278	0.278
365	1.884	1.354	0.971	0.771	0.586	0.549	0.471	0.434	0.388	0.363	0.319	0.279	0.278	0.278	0.278
370	1.914	1.379	0.986	0.785	0.599	0.562	0.484	0.446	0.400	0.375	0.330	0.289	0.278	0.278	0.278
375	1.944	1.404	1.001	0.800	0.612	0.575	0.496	0.459	0.412	0.387	0.341	0.299	0.278	0.278	0.278
380	1.974	1.430	1.015	0.814	0.626	0.588	0.509	0.471	0.425	0.399	0.352	0.309	0.278	0.278	0.278
385	2.004	1.455	1.036	0.828	0.639	0.601	0.522	0.484	0.437	0.411	0.363	0.319	0.278	0.278	0.278
390	2.034	1.480	1.059	0.843	0.652	0.614	0.535	0.497	0.450	0.423	0.374	0.329	0.278	0.278	0.278

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 limited to a maximum protection thickness of 4.457mm.

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CERTIFICATE No CF 5243
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	510	530	539	550	560	580	600	650	700	750
30	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
35	0.374	0.296	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
40	0.441	0.320	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
45	0.508	0.345	0.287	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
50	0.576	0.370	0.307	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
55	0.643	0.394	0.327	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
60	0.710	0.419	0.347	0.279	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
65	0.778	0.443	0.368	0.296	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
70	0.845	0.468	0.388	0.313	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
75	0.912	0.493	0.408	0.330	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
80	0.980	0.517	0.428	0.347	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
85	1.036	0.542	0.448	0.365	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
90	1.074	0.567	0.468	0.382	0.293	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
95	1.113	0.591	0.488	0.399	0.308	0.289	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
100	1.151	0.616	0.509	0.416	0.323	0.303	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
105	1.189	0.641	0.529	0.433	0.338	0.318	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
110	1.228	0.665	0.549	0.450	0.352	0.332	0.288	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
115	1.266	0.690	0.569	0.467	0.367	0.347	0.302	0.281	0.278	0.278	0.278	0.278	0.278	0.278	0.278
120	1.305	0.714	0.589	0.484	0.382	0.361	0.316	0.295	0.278	0.278	0.278	0.278	0.278	0.278	0.278
125	1.343	0.739	0.609	0.501	0.397	0.376	0.330	0.309	0.280	0.278	0.278	0.278	0.278	0.278	0.278
130	1.381	0.764	0.629	0.518	0.412	0.390	0.344	0.323	0.294	0.278	0.278	0.278	0.278	0.278	0.278
135	1.420	0.788	0.649	0.535	0.427	0.405	0.358	0.337	0.308	0.278	0.278	0.278	0.278	0.278	0.278
140	1.458	0.813	0.670	0.552	0.441	0.419	0.372	0.351	0.322	0.292	0.278	0.278	0.278	0.278	0.278
145	1.496	0.838	0.690	0.569	0.456	0.433	0.387	0.365	0.336	0.306	0.278	0.278	0.278	0.278	0.278
150	1.535	0.862	0.710	0.587	0.471	0.448	0.401	0.379	0.350	0.320	0.278	0.278	0.278	0.278	0.278
155	1.573	0.887	0.730	0.604	0.486	0.462	0.415	0.393	0.364	0.334	0.278	0.278	0.278	0.278	0.278
160	1.612	0.912	0.750	0.621	0.501	0.477	0.429	0.407	0.378	0.348	0.281	0.278	0.278	0.278	0.278
165	1.650	0.936	0.770	0.638	0.515	0.491	0.443	0.421	0.391	0.362	0.295	0.278	0.278	0.278	0.278
170	1.688	0.961	0.790	0.655	0.530	0.506	0.457	0.435	0.405	0.375	0.309	0.278	0.278	0.278	0.278
175	1.727	0.985	0.811	0.672	0.545	0.520	0.471	0.449	0.419	0.389	0.323	0.291	0.278	0.278	0.278
180	1.765	1.010	0.831	0.689	0.560	0.535	0.485	0.463	0.433	0.403	0.337	0.304	0.278	0.278	0.278
185	1.804	1.041	0.851	0.706	0.575	0.549	0.499	0.477	0.447	0.417	0.351	0.317	0.278	0.278	0.278
190	1.842	1.076	0.871	0.723	0.590	0.563	0.513	0.490	0.461	0.431	0.365	0.331	0.278	0.278	0.278
195	1.880	1.112	0.891	0.740	0.604	0.578	0.527	0.504	0.475	0.445	0.379	0.344	0.278	0.278	0.278
200	1.919	1.148	0.911	0.757	0.619	0.592	0.541	0.518	0.489	0.459	0.393	0.357	0.278	0.278	0.278

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 limited to a maximum protection thickness of 4.457mm.

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CERTIFICATE No CF 5243
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	510	530	539	550	560	580	600	650	700	750
205	1.957	1.183	0.931	0.774	0.634	0.607	0.555	0.532	0.503	0.473	0.406	0.370	0.278	0.278	0.278
210	1.995	1.219	0.952	0.791	0.649	0.621	0.569	0.546	0.516	0.486	0.420	0.384	0.289	0.278	0.278
215	2.034	1.254	0.972	0.808	0.664	0.636	0.583	0.560	0.530	0.500	0.434	0.397	0.301	0.278	0.278
220	2.072	1.290	0.992	0.826	0.679	0.650	0.597	0.574	0.544	0.514	0.448	0.410	0.313	0.278	0.278
225	2.111	1.326	1.012	0.843	0.693	0.665	0.612	0.588	0.558	0.528	0.462	0.423	0.325	0.278	0.278
230	2.149	1.361	1.039	0.860	0.708	0.679	0.626	0.602	0.572	0.542	0.476	0.437	0.336	0.278	0.278
235	2.187	1.397	1.071	0.877	0.723	0.693	0.640	0.616	0.586	0.556	0.490	0.450	0.348	0.278	0.278
240	2.226	1.432	1.103	0.894	0.738	0.708	0.654	0.630	0.600	0.570	0.504	0.463	0.360	0.278	0.278
245	2.264	1.468	1.135	0.911	0.753	0.722	0.668	0.644	0.614	0.584	0.518	0.476	0.372	0.278	0.278
250	2.302	1.504	1.167	0.928	0.767	0.737	0.682	0.658	0.628	0.597	0.532	0.490	0.383	0.278	0.278
255	2.341	1.539	1.199	0.945	0.782	0.751	0.696	0.672	0.642	0.611	0.546	0.503	0.395	0.278	0.278
260	2.379	1.575	1.231	0.962	0.797	0.766	0.710	0.686	0.655	0.625	0.560	0.516	0.407	0.287	0.278
265	2.418	1.610	1.263	0.979	0.812	0.780	0.724	0.700	0.669	0.639	0.574	0.529	0.419	0.298	0.278
270	2.456	1.646	1.295	0.996	0.827	0.795	0.738	0.714	0.683	0.653	0.587	0.543	0.431	0.308	0.278
275	2.494	1.682	1.327	1.013	0.842	0.809	0.752	0.728	0.697	0.667	0.601	0.556	0.442	0.318	0.278
280	2.530	1.717	1.359	1.038	0.856	0.823	0.766	0.742	0.711	0.681	0.615	0.569	0.454	0.329	0.278
285	2.563	1.753	1.391	1.068	0.871	0.838	0.780	0.756	0.725	0.695	0.629	0.582	0.466	0.339	0.278
290	2.595	1.788	1.423	1.099	0.886	0.852	0.794	0.770	0.739	0.708	0.643	0.596	0.478	0.349	0.278
295	2.628	1.824	1.455	1.129	0.901	0.867	0.808	0.784	0.753	0.722	0.657	0.609	0.489	0.360	0.278
300	2.661	1.860	1.487	1.160	0.916	0.881	0.822	0.798	0.767	0.736	0.671	0.622	0.501	0.370	0.278
305	2.694	1.895	1.519	1.190	0.930	0.896	0.837	0.812	0.781	0.750	0.685	0.635	0.513	0.380	0.278
310	2.726	1.931	1.551	1.221	0.945	0.910	0.851	0.825	0.794	0.764	0.699	0.649	0.525	0.391	0.278
315	2.759	1.966	1.583	1.252	0.960	0.925	0.865	0.839	0.808	0.778	0.713	0.662	0.537	0.401	0.278
320	2.792	2.002	1.615	1.282	0.975	0.939	0.879	0.853	0.822	0.792	0.727	0.675	0.548	0.411	0.278
325	2.824	2.037	1.647	1.313	0.990	0.953	0.893	0.867	0.836	0.806	0.741	0.688	0.560	0.421	0.278
330	2.857	2.073	1.679	1.343	1.005	0.968	0.907	0.881	0.850	0.820	0.755	0.702	0.572	0.432	0.278
335	2.890	2.109	1.711	1.374	1.019	0.982	0.921	0.895	0.864	0.833	0.768	0.715	0.584	0.442	0.284
340	2.923	2.144	1.743	1.404	1.047	0.997	0.935	0.909	0.878	0.847	0.782	0.728	0.595	0.452	0.293
345	2.955	2.180	1.775	1.435	1.077	1.011	0.949	0.923	0.892	0.861	0.796	0.741	0.607	0.463	0.302
350	2.988	2.215	1.807	1.465	1.106	1.031	0.963	0.937	0.906	0.875	0.810	0.755	0.619	0.473	0.310
355	3.021	2.251	1.839	1.496	1.135	1.060	0.977	0.951	0.919	0.889	0.824	0.768	0.631	0.483	0.319
360	3.054	2.287	1.871	1.526	1.165	1.089	0.991	0.965	0.933	0.903	0.838	0.781	0.643	0.494	0.328
365	3.086	2.322	1.903	1.557	1.194	1.118	1.005	0.979	0.947	0.917	0.852	0.794	0.654	0.504	0.337
370	3.119	2.358	1.935	1.587	1.224	1.147	1.019	0.993	0.961	0.931	0.866	0.808	0.666	0.514	0.346
375	3.152	2.393	1.967	1.618	1.253	1.177	1.046	1.007	0.975	0.944	0.880	0.821	0.678	0.524	0.355
380	3.185	2.429	1.999	1.648	1.282	1.206	1.075	1.021	0.989	0.958	0.894	0.834	0.690	0.535	0.363
385	3.217	2.465	2.031	1.679	1.312	1.235	1.103	1.049	1.003	0.972	0.908	0.847	0.701	0.545	0.372
390	3.250	2.500	2.063	1.709	1.341	1.264	1.132	1.077	1.017	0.986	0.922	0.861	0.713	0.555	0.381

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 limited to a maximum protection thickness of 4.457mm.

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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 5243
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	510	530	539	550	560	580	600	650	700	750
30	0.707	0.375	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
35	0.844	0.460	0.336	0.294	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
40	0.981	0.545	0.376	0.317	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
45	1.060	0.630	0.415	0.340	0.295	0.286	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
50	1.116	0.715	0.455	0.363	0.315	0.305	0.286	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
55	1.172	0.801	0.495	0.386	0.334	0.324	0.305	0.296	0.285	0.278	0.278	0.278	0.278	0.278	0.278
60	1.228	0.886	0.534	0.409	0.354	0.344	0.323	0.314	0.303	0.292	0.278	0.278	0.278	0.278	0.278
65	1.283	0.971	0.574	0.433	0.374	0.363	0.341	0.332	0.320	0.309	0.287	0.278	0.278	0.278	0.278
70	1.339	1.038	0.613	0.456	0.394	0.382	0.359	0.350	0.337	0.326	0.303	0.281	0.278	0.278	0.278
75	1.395	1.079	0.653	0.479	0.414	0.402	0.378	0.367	0.355	0.343	0.319	0.297	0.278	0.278	0.278
80	1.451	1.121	0.692	0.502	0.434	0.421	0.396	0.385	0.372	0.360	0.335	0.312	0.278	0.278	0.278
85	1.506	1.162	0.732	0.525	0.454	0.440	0.414	0.403	0.389	0.377	0.351	0.327	0.278	0.278	0.278
90	1.562	1.203	0.771	0.548	0.474	0.460	0.433	0.421	0.407	0.394	0.367	0.342	0.278	0.278	0.278
95	1.618	1.245	0.811	0.572	0.493	0.479	0.451	0.439	0.424	0.410	0.383	0.357	0.285	0.278	0.278
100	1.674	1.286	0.851	0.595	0.513	0.498	0.469	0.457	0.441	0.427	0.399	0.372	0.299	0.278	0.278
105	1.729	1.327	0.890	0.618	0.533	0.518	0.488	0.475	0.459	0.444	0.415	0.387	0.312	0.278	0.278
110	1.785	1.369	0.930	0.641	0.553	0.537	0.506	0.492	0.476	0.461	0.431	0.402	0.325	0.278	0.278
115	1.841	1.410	0.969	0.664	0.573	0.557	0.524	0.510	0.493	0.478	0.447	0.417	0.339	0.278	0.278
120	1.897	1.451	1.009	0.687	0.593	0.576	0.543	0.528	0.511	0.495	0.463	0.433	0.352	0.278	0.278
125	1.952	1.493	1.046	0.710	0.613	0.595	0.561	0.546	0.528	0.512	0.479	0.448	0.366	0.278	0.278
130	2.008	1.534	1.082	0.734	0.633	0.615	0.579	0.564	0.545	0.529	0.495	0.463	0.379	0.278	0.278
135	2.064	1.575	1.118	0.757	0.652	0.634	0.598	0.582	0.563	0.546	0.511	0.478	0.392	0.283	0.278
140	2.120	1.617	1.154	0.780	0.672	0.653	0.616	0.600	0.580	0.562	0.527	0.493	0.406	0.296	0.278
145	2.175	1.658	1.190	0.803	0.692	0.673	0.634	0.618	0.597	0.579	0.543	0.508	0.419	0.309	0.278
150	2.231	1.699	1.226	0.826	0.712	0.692	0.653	0.635	0.615	0.596	0.559	0.523	0.433	0.322	0.278
155	2.287	1.741	1.262	0.849	0.732	0.711	0.671	0.653	0.632	0.613	0.575	0.538	0.446	0.334	0.278
160	2.343	1.782	1.298	0.873	0.752	0.731	0.689	0.671	0.649	0.630	0.591	0.553	0.459	0.347	0.278
165	2.398	1.823	1.334	0.896	0.772	0.750	0.707	0.689	0.667	0.647	0.607	0.569	0.473	0.360	0.278
170	2.454	1.865	1.370	0.919	0.792	0.769	0.726	0.707	0.684	0.664	0.623	0.584	0.486	0.372	0.278
175	2.510	1.906	1.406	0.942	0.811	0.789	0.744	0.725	0.701	0.681	0.639	0.599	0.500	0.385	0.278
180	2.548	1.947	1.442	0.965	0.831	0.808	0.762	0.743	0.719	0.698	0.655	0.614	0.513	0.398	0.278
185	2.585	1.989	1.478	0.988	0.851	0.827	0.781	0.760	0.736	0.714	0.671	0.629	0.526	0.411	0.290
190	2.622	2.030	1.514	1.012	0.871	0.847	0.799	0.778	0.753	0.731	0.687	0.644	0.540	0.423	0.301
195	2.659	2.071	1.550	1.044	0.891	0.866	0.817	0.796	0.771	0.748	0.703	0.659	0.553	0.436	0.313
200	2.696	2.113	1.586	1.082	0.911	0.885	0.836	0.814	0.788	0.765	0.719	0.674	0.566	0.449	0.325

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 limited to a maximum protection thickness of 4.457mm.

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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 5243
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	510	530	539	550	560	580	600	650	700	750
205	2.733	2.154	1.622	1.120	0.931	0.905	0.854	0.832	0.805	0.782	0.735	0.689	0.580	0.461	0.337
210	2.770	2.195	1.657	1.159	0.951	0.924	0.872	0.850	0.823	0.799	0.751	0.705	0.593	0.474	0.349
215	2.807	2.237	1.693	1.197	0.971	0.943	0.891	0.868	0.840	0.816	0.767	0.720	0.607	0.487	0.360
220	2.844	2.278	1.729	1.236	0.990	0.963	0.909	0.885	0.857	0.833	0.783	0.735	0.620	0.499	0.372
225	2.881	2.319	1.765	1.274	1.010	0.982	0.927	0.903	0.875	0.850	0.799	0.750	0.633	0.512	0.384
230	2.918	2.361	1.801	1.312	1.038	1.001	0.946	0.921	0.892	0.866	0.815	0.765	0.647	0.525	0.396
235	2.955	2.402	1.837	1.351	1.074	1.021	0.964	0.939	0.909	0.883	0.831	0.780	0.660	0.538	0.408
240	2.992	2.443	1.873	1.389	1.110	1.056	0.982	0.957	0.927	0.900	0.847	0.795	0.674	0.550	0.419
245	3.029	2.485	1.909	1.427	1.146	1.091	1.001	0.975	0.944	0.917	0.863	0.810	0.687	0.563	0.431
250	3.066	2.524	1.945	1.466	1.182	1.127	1.019	0.993	0.962	0.934	0.879	0.825	0.700	0.576	0.443
255	3.103	2.559	1.981	1.504	1.218	1.163	1.052	1.010	0.979	0.951	0.895	0.841	0.714	0.588	0.455
260	3.140	2.594	2.017	1.542	1.254	1.198	1.087	1.035	0.996	0.968	0.911	0.856	0.727	0.601	0.467
265	3.177	2.629	2.053	1.581	1.290	1.234	1.122	1.070	1.014	0.985	0.927	0.871	0.740	0.614	0.478
270	3.214	2.664	2.089	1.619	1.327	1.270	1.157	1.104	1.040	1.002	0.943	0.886	0.754	0.627	0.490
275	3.251	2.699	2.125	1.657	1.363	1.305	1.192	1.139	1.075	1.018	0.959	0.901	0.767	0.639	0.502
280	3.288	2.733	2.161	1.696	1.399	1.341	1.227	1.173	1.109	1.050	0.975	0.916	0.781	0.652	0.514
285	3.325	2.768	2.197	1.734	1.435	1.377	1.261	1.208	1.143	1.084	0.991	0.931	0.794	0.665	0.526
290	3.362	2.803	2.233	1.773	1.471	1.412	1.296	1.243	1.177	1.117	1.007	0.946	0.807	0.677	0.537
295	3.399	2.838	2.269	1.811	1.507	1.448	1.331	1.277	1.211	1.151	1.026	0.961	0.821	0.690	0.549
300	3.436	2.873	2.305	1.849	1.543	1.484	1.366	1.312	1.246	1.185	1.059	0.977	0.834	0.703	0.561
305	3.473	2.908	2.341	1.888	1.579	1.519	1.401	1.346	1.280	1.219	1.092	0.992	0.848	0.716	0.573
310	3.510	2.943	2.377	1.926	1.615	1.555	1.436	1.381	1.314	1.253	1.125	1.007	0.861	0.728	0.585
315	3.547	2.978	2.413	1.964	1.652	1.591	1.471	1.416	1.348	1.287	1.158	1.023	0.874	0.741	0.596
320	3.584	3.013	2.449	2.003	1.688	1.626	1.506	1.450	1.382	1.320	1.192	1.056	0.888	0.754	0.608
325	3.621	3.048	2.485	2.041	1.724	1.662	1.541	1.485	1.416	1.354	1.225	1.089	0.901	0.766	0.620
330	3.658	3.083	2.521	2.079	1.760	1.698	1.576	1.519	1.451	1.388	1.258	1.121	0.914	0.779	0.632
335	3.695	3.118	2.560	2.118	1.796	1.733	1.611	1.554	1.485	1.422	1.291	1.154	0.928	0.792	0.644
340	3.732	3.153	2.598	2.156	1.832	1.769	1.646	1.589	1.519	1.456	1.325	1.187	0.941	0.805	0.655
345	3.769	3.188	2.637	2.194	1.868	1.805	1.681	1.623	1.553	1.490	1.358	1.219	0.955	0.817	0.667
350	3.806	3.223	2.675	2.233	1.904	1.840	1.715	1.658	1.587	1.524	1.391	1.252	0.968	0.830	0.679
355	3.843	3.257	2.714	2.271	1.941	1.876	1.750	1.692	1.622	1.557	1.424	1.285	0.981	0.843	0.691
360	3.879	3.292	2.752	2.310	1.977	1.912	1.785	1.727	1.656	1.591	1.458	1.318	0.995	0.855	0.703
365	3.916	3.327	2.791	2.348	2.013	1.947	1.820	1.761	1.690	1.625	1.491	1.350	1.008	0.868	0.714
370	3.953	3.362	2.829	2.386	2.049	1.983	1.855	1.796	1.724	1.659	1.524	1.383	1.022	0.881	0.726
375	3.990	3.397	2.868	2.425	2.085	2.019	1.890	1.831	1.758	1.693	1.557	1.416	1.054	0.893	0.738
380	4.027	3.432	2.906	2.463	2.121	2.054	1.925	1.865	1.792	1.727	1.590	1.449	1.085	0.906	0.750
385	4.080	3.467	2.945	2.501	2.157	2.090	1.960	1.900	1.827	1.761	1.624	1.481	1.117	0.919	0.762
390	4.136	3.502	2.983	2.541	2.193	2.126	1.995	1.934	1.861	1.794	1.657	1.514	1.148	0.932	0.773

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 limited to a maximum protection thickness of 4.457mm.

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CERTIFICATE No CF 5243
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	510	530	539	550	560	580	600	650	700	750
30	1.118	0.749	0.522	0.331	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
35	1.322	0.881	0.609	0.388	0.321	0.315	0.301	0.295	0.287	0.281	0.278	0.278	0.278	0.278	0.278
40	1.527	1.012	0.695	0.446	0.349	0.340	0.324	0.318	0.310	0.302	0.288	0.278	0.278	0.278	0.278
45	1.732	1.074	0.782	0.503	0.376	0.364	0.348	0.341	0.332	0.324	0.308	0.294	0.278	0.278	0.278
50	1.937	1.130	0.869	0.561	0.404	0.389	0.371	0.364	0.354	0.346	0.329	0.313	0.278	0.278	0.278
55	2.142	1.187	0.956	0.619	0.431	0.414	0.395	0.387	0.377	0.368	0.350	0.333	0.289	0.278	0.278
60	2.347	1.243	1.032	0.676	0.459	0.439	0.418	0.410	0.399	0.390	0.371	0.353	0.306	0.278	0.278
65	2.522	1.300	1.078	0.734	0.486	0.464	0.442	0.433	0.421	0.411	0.391	0.373	0.324	0.278	0.278
70	2.570	1.356	1.124	0.791	0.514	0.488	0.466	0.456	0.444	0.433	0.412	0.392	0.341	0.286	0.278
75	2.618	1.413	1.170	0.849	0.541	0.513	0.489	0.479	0.466	0.455	0.433	0.412	0.358	0.301	0.278
80	2.667	1.470	1.216	0.907	0.569	0.538	0.513	0.502	0.488	0.477	0.454	0.432	0.376	0.316	0.278
85	2.715	1.526	1.262	0.964	0.596	0.563	0.536	0.525	0.511	0.499	0.475	0.452	0.393	0.331	0.278
90	2.763	1.583	1.308	1.022	0.623	0.588	0.560	0.548	0.533	0.521	0.495	0.471	0.410	0.346	0.278
95	2.811	1.639	1.354	1.063	0.651	0.612	0.583	0.571	0.555	0.542	0.516	0.491	0.427	0.362	0.288
100	2.859	1.696	1.399	1.104	0.678	0.637	0.607	0.594	0.578	0.564	0.537	0.511	0.445	0.377	0.301
105	2.908	1.752	1.445	1.145	0.706	0.662	0.630	0.617	0.600	0.586	0.558	0.531	0.462	0.392	0.314
110	2.956	1.809	1.491	1.186	0.733	0.687	0.654	0.640	0.622	0.608	0.578	0.550	0.479	0.407	0.328
115	3.004	1.865	1.537	1.227	0.761	0.711	0.677	0.663	0.645	0.630	0.599	0.570	0.497	0.422	0.341
120	3.052	1.922	1.583	1.268	0.788	0.736	0.701	0.686	0.667	0.651	0.620	0.590	0.514	0.437	0.355
125	3.100	1.978	1.629	1.309	0.816	0.761	0.724	0.709	0.689	0.673	0.641	0.610	0.531	0.452	0.368
130	3.149	2.035	1.675	1.350	0.843	0.786	0.748	0.732	0.712	0.695	0.661	0.629	0.548	0.467	0.381
135	3.197	2.091	1.721	1.391	0.871	0.811	0.771	0.754	0.734	0.717	0.682	0.649	0.566	0.482	0.395
140	3.245	2.148	1.766	1.431	0.898	0.835	0.795	0.777	0.756	0.739	0.703	0.669	0.583	0.497	0.408
145	3.293	2.205	1.812	1.472	0.925	0.860	0.819	0.800	0.779	0.760	0.724	0.689	0.600	0.512	0.422
150	3.341	2.261	1.858	1.513	0.953	0.885	0.842	0.823	0.801	0.782	0.744	0.708	0.618	0.527	0.435
155	3.390	2.318	1.904	1.554	0.980	0.910	0.866	0.846	0.824	0.804	0.765	0.728	0.635	0.542	0.448
160	3.438	2.374	1.950	1.595	1.008	0.935	0.889	0.869	0.846	0.826	0.786	0.748	0.652	0.557	0.462
165	3.486	2.431	1.996	1.636	1.044	0.959	0.913	0.892	0.868	0.848	0.807	0.768	0.669	0.572	0.475
170	3.534	2.487	2.042	1.677	1.088	0.984	0.936	0.915	0.891	0.869	0.827	0.787	0.687	0.587	0.489
175	3.582	2.534	2.088	1.718	1.131	1.009	0.960	0.938	0.913	0.891	0.848	0.807	0.704	0.602	0.502
180	3.630	2.572	2.133	1.759	1.175	1.044	0.983	0.961	0.935	0.913	0.869	0.827	0.721	0.617	0.515
185	3.679	2.610	2.179	1.800	1.219	1.088	1.007	0.984	0.958	0.935	0.890	0.847	0.739	0.633	0.529
190	3.727	2.648	2.225	1.841	1.263	1.132	1.038	1.007	0.980	0.957	0.910	0.866	0.756	0.648	0.542
195	3.775	2.686	2.271	1.882	1.307	1.176	1.079	1.038	1.002	0.979	0.931	0.886	0.773	0.663	0.556
200	3.823	2.724	2.317	1.923	1.351	1.220	1.121	1.079	1.028	1.000	0.952	0.906	0.790	0.678	0.569

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 limited to a maximum protection thickness of 4.457mm.

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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 5243
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	510	530	539	550	560	580	600	650	700	750
205	3.871	2.763	2.363	1.964	1.394	1.264	1.163	1.120	1.068	1.023	0.973	0.926	0.808	0.693	0.582
210	3.920	2.801	2.409	2.005	1.438	1.308	1.205	1.161	1.109	1.063	0.993	0.945	0.825	0.708	0.596
215	3.968	2.839	2.455	2.046	1.482	1.353	1.246	1.203	1.150	1.103	1.014	0.965	0.842	0.723	0.609
220	4.016	2.877	2.500	2.087	1.526	1.397	1.288	1.244	1.190	1.144	1.047	0.985	0.860	0.738	0.623
225	4.058	2.915	2.541	2.128	1.570	1.441	1.330	1.285	1.231	1.184	1.086	1.005	0.877	0.753	0.636
230	4.097	2.953	2.579	2.169	1.614	1.485	1.372	1.326	1.272	1.224	1.125	1.028	0.894	0.768	0.649
235	4.136	2.991	2.618	2.210	1.657	1.529	1.413	1.368	1.312	1.264	1.165	1.066	0.911	0.783	0.663
240	4.175	3.030	2.656	2.251	1.701	1.573	1.455	1.409	1.353	1.304	1.204	1.104	0.929	0.798	0.676
245	4.215	3.068	2.695	2.292	1.745	1.617	1.497	1.450	1.394	1.344	1.243	1.142	0.946	0.813	0.690
250	4.254	3.106	2.733	2.333	1.789	1.662	1.539	1.492	1.434	1.384	1.282	1.180	0.963	0.828	0.703
255	4.293	3.144	2.771	2.374	1.833	1.706	1.581	1.533	1.475	1.424	1.321	1.218	0.981	0.843	0.716
260	4.332	3.182	2.810	2.415	1.877	1.750	1.622	1.574	1.516	1.465	1.360	1.256	0.998	0.858	0.730
265	4.371	3.220	2.848	2.456	1.920	1.794	1.664	1.615	1.556	1.505	1.399	1.295	1.015	0.873	0.743
270	4.410	3.258	2.887	2.497	1.964	1.838	1.706	1.657	1.597	1.545	1.438	1.333	1.045	0.889	0.757
275	4.449	3.297	2.925	2.538	2.008	1.882	1.748	1.698	1.638	1.585	1.477	1.371	1.082	0.904	0.770
280	4.488	3.335	2.964	2.580	2.052	1.926	1.789	1.739	1.678	1.625	1.516	1.409	1.119	0.919	0.783
285	4.527	3.373	3.002	2.621	2.096	1.971	1.831	1.780	1.719	1.665	1.556	1.447	1.155	0.934	0.797
290	4.566	3.411	3.041	2.662	2.140	2.015	1.873	1.822	1.760	1.705	1.595	1.485	1.192	0.949	0.810
295	4.605	3.449	3.079	2.703	2.183	2.059	1.915	1.863	1.800	1.745	1.634	1.523	1.228	0.964	0.824
300	4.645	3.487	3.117	2.745	2.227	2.103	1.957	1.904	1.841	1.786	1.673	1.561	1.265	0.979	0.837
305	4.684	3.525	3.156	2.786	2.271	2.147	1.998	1.946	1.882	1.826	1.712	1.600	1.302	0.994	0.850
310	4.723	3.564	3.194	2.827	2.315	2.191	2.040	1.987	1.922	1.866	1.751	1.638	1.338	1.009	0.864
315	4.762	3.602	3.233	2.868	2.359	2.235	2.082	2.028	1.963	1.906	1.790	1.676	1.375	1.028	0.877
320	4.801	3.640	3.271	2.910	2.403	2.280	2.124	2.069	2.004	1.946	1.829	1.714	1.412	1.064	0.891
325	4.840	3.678	3.310	2.951	2.446	2.324	2.165	2.111	2.044	1.986	1.868	1.752	1.448	1.099	0.904
330	4.879	3.716	3.348	2.992	2.490	2.368	2.207	2.152	2.085	2.026	1.907	1.790	1.485	1.134	0.917
335	4.918	3.754	3.386	3.033	2.535	2.412	2.249	2.193	2.126	2.067	1.947	1.828	1.521	1.170	0.931
340	4.957	3.792	3.425	3.075	2.582	2.456	2.291	2.234	2.166	2.107	1.986	1.866	1.558	1.205	0.944
345	4.996	3.831	3.463	3.116	2.629	2.500	2.332	2.276	2.207	2.147	2.025	1.905	1.595	1.241	0.958
350	5.036	3.869	3.502	3.157	2.676	2.547	2.374	2.317	2.248	2.187	2.064	1.943	1.631	1.276	0.971
355	5.075	3.907	3.540	3.198	2.723	2.596	2.416	2.358	2.288	2.227	2.103	1.981	1.668	1.312	0.984
360	5.114	3.945	3.579	3.240	2.769	2.644	2.458	2.399	2.329	2.267	2.142	2.019	1.705	1.347	0.998
365	5.153	3.983	3.617	3.281	2.816	2.693	2.500	2.441	2.370	2.307	2.181	2.057	1.741	1.382	1.011
370	5.192	4.021	3.655	3.322	2.863	2.741	2.546	2.482	2.410	2.347	2.220	2.095	1.778	1.418	1.030
375	5.231	4.082	3.694	3.363	2.910	2.789	2.596	2.525	2.451	2.388	2.259	2.133	1.814	1.453	1.063
380	5.270	4.152	3.732	3.405	2.957	2.838	2.645	2.574	2.492	2.428	2.298	2.171	1.851	1.489	1.096
385	5.309	4.221	3.771	3.446	3.003	2.886	2.694	2.623	2.536	2.468	2.338	2.210	1.888	1.524	1.129
390	5.348	4.291	3.809	3.487	3.050	2.935	2.743	2.672	2.585	2.508	2.377	2.248	1.924	1.559	1.162

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 limited to a maximum protection thickness of 4.457mm.

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

CERTIFICATE No CF 5243
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	510	530	539	550	560	580	600	650	700	750
30	1.942	1.069	0.789	0.590	0.365	0.348	0.322	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
35	2.255	1.253	0.922	0.686	0.439	0.414	0.375	0.361	0.346	0.335	0.319	0.308	0.278	0.278	0.278
40	2.531	1.436	1.039	0.782	0.512	0.480	0.427	0.408	0.388	0.372	0.348	0.332	0.297	0.278	0.278
45	2.636	1.619	1.113	0.878	0.585	0.546	0.480	0.456	0.429	0.409	0.376	0.357	0.318	0.279	0.278
50	2.741	1.802	1.186	0.973	0.659	0.612	0.533	0.504	0.471	0.447	0.404	0.381	0.340	0.298	0.278
55	2.846	1.986	1.259	1.046	0.732	0.678	0.586	0.551	0.513	0.484	0.433	0.406	0.362	0.317	0.278
60	2.951	2.169	1.333	1.096	0.805	0.744	0.639	0.599	0.555	0.521	0.461	0.430	0.383	0.336	0.290
65	3.056	2.352	1.406	1.146	0.879	0.810	0.692	0.647	0.596	0.558	0.489	0.455	0.405	0.355	0.307
70	3.161	2.519	1.479	1.196	0.952	0.876	0.745	0.694	0.638	0.595	0.518	0.480	0.427	0.375	0.324
75	3.266	2.566	1.552	1.246	1.024	0.942	0.798	0.742	0.680	0.632	0.546	0.504	0.449	0.394	0.341
80	3.371	2.614	1.626	1.296	1.069	1.008	0.851	0.790	0.722	0.669	0.574	0.529	0.470	0.413	0.358
85	3.476	2.661	1.699	1.346	1.113	1.057	0.904	0.837	0.764	0.706	0.603	0.553	0.492	0.432	0.375
90	3.581	2.709	1.772	1.396	1.158	1.101	0.957	0.885	0.805	0.743	0.631	0.578	0.514	0.451	0.392
95	3.685	2.757	1.846	1.446	1.203	1.145	1.010	0.933	0.847	0.780	0.660	0.602	0.535	0.470	0.409
100	3.790	2.804	1.919	1.496	1.248	1.190	1.055	0.980	0.889	0.817	0.688	0.627	0.557	0.489	0.426
105	3.895	2.852	1.992	1.546	1.293	1.234	1.099	1.027	0.931	0.854	0.716	0.652	0.579	0.508	0.443
110	4.000	2.899	2.065	1.596	1.338	1.278	1.143	1.071	0.972	0.891	0.745	0.676	0.600	0.527	0.460
115	4.063	2.947	2.139	1.646	1.383	1.322	1.186	1.115	1.014	0.929	0.773	0.701	0.622	0.547	0.477
120	4.108	2.994	2.212	1.697	1.428	1.367	1.230	1.158	1.058	0.966	0.801	0.725	0.644	0.566	0.494
125	4.152	3.042	2.285	1.747	1.473	1.411	1.274	1.202	1.101	1.003	0.830	0.750	0.665	0.585	0.511
130	4.197	3.089	2.359	1.797	1.517	1.455	1.317	1.245	1.145	1.043	0.858	0.774	0.687	0.604	0.528
135	4.242	3.137	2.432	1.847	1.562	1.500	1.361	1.289	1.189	1.088	0.886	0.799	0.709	0.623	0.545
140	4.286	3.184	2.505	1.897	1.607	1.544	1.405	1.333	1.233	1.132	0.915	0.824	0.730	0.642	0.562
145	4.331	3.232	2.550	1.947	1.652	1.588	1.448	1.376	1.277	1.176	0.943	0.848	0.752	0.661	0.579
150	4.376	3.280	2.591	1.997	1.697	1.632	1.492	1.420	1.320	1.220	0.971	0.873	0.774	0.680	0.596
155	4.420	3.327	2.633	2.047	1.742	1.677	1.535	1.463	1.364	1.264	1.000	0.897	0.795	0.700	0.613
160	4.465	3.375	2.674	2.097	1.787	1.721	1.579	1.507	1.408	1.309	1.033	0.922	0.817	0.719	0.630
165	4.510	3.422	2.716	2.147	1.832	1.765	1.623	1.550	1.452	1.353	1.080	0.947	0.839	0.738	0.647
170	4.554	3.470	2.757	2.197	1.877	1.810	1.666	1.594	1.495	1.397	1.127	0.971	0.860	0.757	0.665
175	4.599	3.517	2.799	2.247	1.922	1.854	1.710	1.638	1.539	1.441	1.174	0.996	0.882	0.776	0.682
180	4.644	3.565	2.840	2.297	1.966	1.898	1.754	1.681	1.583	1.485	1.220	1.020	0.904	0.795	0.699
185	4.688	3.612	2.882	2.347	2.011	1.943	1.797	1.725	1.627	1.530	1.267	1.066	0.926	0.814	0.716
190	4.733	3.660	2.923	2.397	2.056	1.987	1.841	1.768	1.671	1.574	1.314	1.112	0.947	0.833	0.733
195	4.778	3.707	2.964	2.447	2.101	2.031	1.885	1.812	1.714	1.618	1.361	1.158	0.969	0.852	0.750
200	4.822	3.755	3.006	2.497	2.146	2.075	1.928	1.856	1.758	1.662	1.408	1.204	0.991	0.872	0.767

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 limited to a maximum protection thickness of 4.457mm.

CXR53737-1, CXR53737-4, CXR53737-7, CXR53737-2, CXR53737-12, CXR53737-8, CXR53737-11, CXR53737-6

Issued: 13th May 2014
Revised: 6th June 2024
Valid to: 12th May 2029

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

CERTIFICATE No CF 5243
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	510	530	539	550	560	580	600	650	700	750
205	4.867	3.803	3.047	2.542	2.191	2.120	1.972	1.899	1.802	1.707	1.455	1.250	1.012	0.891	0.784
210	4.911	3.850	3.089	2.585	2.236	2.164	2.016	1.943	1.846	1.751	1.502	1.296	1.046	0.910	0.801
215	4.956	3.898	3.130	2.628	2.281	2.208	2.059	1.986	1.890	1.795	1.548	1.342	1.088	0.929	0.818
220	5.001	3.945	3.172	2.671	2.326	2.253	2.103	2.030	1.933	1.839	1.595	1.389	1.130	0.948	0.835
225	5.045	3.993	3.213	2.714	2.370	2.297	2.147	2.073	1.977	1.883	1.642	1.435	1.173	0.967	0.852
230	5.090	4.040	3.255	2.757	2.415	2.341	2.190	2.117	2.021	1.928	1.689	1.481	1.215	0.986	0.869
235	5.135	4.084	3.296	2.800	2.460	2.385	2.234	2.161	2.065	1.972	1.736	1.527	1.257	1.005	0.886
240	5.179	4.128	3.338	2.843	2.505	2.430	2.278	2.204	2.109	2.016	1.783	1.573	1.299	1.028	0.903
245	5.224	4.172	3.379	2.886	2.550	2.474	2.321	2.248	2.152	2.060	1.830	1.619	1.341	1.069	0.920
250	5.269	4.216	3.420	2.929	2.595	2.519	2.365	2.291	2.196	2.104	1.876	1.665	1.383	1.109	0.937
255	5.313	4.260	3.462	2.972	2.640	2.564	2.409	2.335	2.240	2.149	1.923	1.711	1.425	1.149	0.954
260	5.358	4.304	3.503	3.015	2.685	2.609	2.452	2.379	2.284	2.193	1.970	1.757	1.468	1.190	0.971
265	5.403	4.348	3.545	3.058	2.730	2.655	2.496	2.422	2.328	2.237	2.017	1.804	1.510	1.230	0.988
270	5.447	4.392	3.586	3.101	2.775	2.700	2.541	2.466	2.371	2.281	2.064	1.850	1.552	1.270	1.005
275	5.492	4.436	3.628	3.144	2.820	2.746	2.588	2.509	2.415	2.326	2.111	1.896	1.594	1.310	1.024
280	5.537	4.480	3.669	3.187	2.865	2.791	2.634	2.556	2.459	2.370	2.158	1.942	1.636	1.351	1.062
285	5.581	4.524	3.711	3.230	2.910	2.837	2.681	2.603	2.503	2.414	2.204	1.988	1.678	1.391	1.099
290	5.626	4.568	3.752	3.273	2.955	2.882	2.727	2.650	2.550	2.458	2.251	2.034	1.720	1.431	1.136
295	5.671	4.612	3.793	3.316	3.000	2.928	2.774	2.697	2.597	2.502	2.298	2.080	1.762	1.471	1.174
300	5.715	4.656	3.835	3.359	3.045	2.973	2.820	2.744	2.645	2.550	2.345	2.126	1.805	1.512	1.211
305	5.760	4.700	3.876	3.402	3.090	3.019	2.867	2.791	2.693	2.599	2.392	2.172	1.847	1.552	1.248
310	-	4.744	3.918	3.445	3.135	3.064	2.913	2.839	2.741	2.647	2.439	2.219	1.889	1.592	1.286
315	-	4.788	3.959	3.488	3.180	3.110	2.960	2.886	2.789	2.696	2.486	2.265	1.931	1.633	1.323
320	-	4.832	4.001	3.531	3.225	3.155	3.006	2.933	2.837	2.744	2.534	2.311	1.973	1.673	1.361
325	-	4.876	4.048	3.574	3.270	3.201	3.052	2.980	2.884	2.793	2.584	2.357	2.015	1.713	1.398
330	-	4.920	4.113	3.617	3.315	3.246	3.099	3.027	2.932	2.841	2.635	2.403	2.057	1.753	1.435
335	-	4.964	4.178	3.660	3.360	3.292	3.145	3.074	2.980	2.890	2.685	2.449	2.100	1.794	1.473
340	-	5.008	4.243	3.703	3.405	3.337	3.192	3.121	3.028	2.939	2.736	2.495	2.142	1.834	1.510
345	-	5.052	4.308	3.746	3.450	3.383	3.238	3.168	3.076	2.987	2.786	2.546	2.184	1.874	1.548
350	-	5.096	4.373	3.789	3.495	3.428	3.285	3.215	3.124	3.036	2.836	2.599	2.226	1.915	1.585
355	-	5.140	4.438	3.832	3.540	3.474	3.331	3.262	3.172	3.084	2.887	2.652	2.268	1.955	1.622
360	-	5.184	4.504	3.875	3.585	3.519	3.378	3.309	3.219	3.133	2.937	2.705	2.310	1.995	1.660
365	-	5.228	4.569	3.918	3.630	3.565	3.424	3.356	3.267	3.182	2.988	2.758	2.352	2.035	1.697
370	-	5.272	4.634	3.961	3.675	3.610	3.471	3.403	3.315	3.230	3.038	2.811	2.394	2.076	1.735
375	-	5.316	4.699	4.004	3.720	3.656	3.517	3.451	3.363	3.279	3.089	2.864	2.437	2.116	1.772
380	-	5.360	4.764	4.059	3.765	3.701	3.564	3.498	3.411	3.327	3.139	2.917	2.479	2.156	1.809
385	-	5.404	4.829	4.136	3.810	3.747	3.610	3.545	3.459	3.376	3.189	2.970	2.523	2.197	1.847
390	-	5.448	4.894	4.213	3.855	3.792	3.657	3.592	3.506	3.425	3.240	3.023	2.574	2.237	1.884

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 limited to a maximum protection thickness of 4.457mm.

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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 5243
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	510	530	539	550	560	580	600	650	700	750
30	2.592	1.765	1.062	0.828	0.639	0.602	0.533	0.505	0.470	0.375	0.342	0.318	0.278	0.278	0.278
35	2.809	2.043	1.250	0.965	0.742	0.700	0.619	0.586	0.546	0.454	0.409	0.374	0.317	0.285	0.278
40	3.025	2.321	1.438	1.075	0.845	0.797	0.705	0.667	0.621	0.533	0.476	0.430	0.348	0.309	0.278
45	3.241	2.540	1.626	1.167	0.949	0.894	0.791	0.748	0.697	0.613	0.543	0.486	0.379	0.332	0.296
50	3.457	2.626	1.814	1.258	1.037	0.991	0.876	0.829	0.773	0.692	0.610	0.542	0.410	0.355	0.317
55	3.673	2.713	2.002	1.350	1.090	1.057	0.962	0.910	0.848	0.772	0.677	0.598	0.441	0.379	0.338
60	3.889	2.799	2.190	1.442	1.143	1.109	1.037	0.991	0.924	0.851	0.743	0.654	0.472	0.402	0.359
65	4.068	2.886	2.378	1.534	1.196	1.161	1.087	1.052	1.000	0.930	0.810	0.710	0.503	0.425	0.380
70	4.174	2.972	2.529	1.625	1.250	1.213	1.137	1.101	1.056	1.010	0.877	0.766	0.534	0.448	0.401
75	4.280	3.058	2.586	1.717	1.303	1.265	1.187	1.151	1.104	1.062	0.944	0.822	0.565	0.472	0.422
80	4.386	3.145	2.643	1.809	1.356	1.317	1.237	1.200	1.153	1.110	1.011	0.878	0.596	0.495	0.443
85	4.492	3.231	2.700	1.901	1.409	1.369	1.287	1.249	1.201	1.157	1.061	0.935	0.627	0.518	0.464
90	4.598	3.318	2.758	1.992	1.462	1.421	1.338	1.299	1.250	1.205	1.107	0.991	0.658	0.541	0.485
95	4.704	3.404	2.815	2.084	1.515	1.473	1.388	1.348	1.298	1.253	1.154	1.042	0.689	0.565	0.506
100	4.810	3.490	2.872	2.176	1.569	1.526	1.438	1.397	1.347	1.300	1.200	1.087	0.720	0.588	0.527
105	4.916	3.577	2.929	2.268	1.622	1.578	1.488	1.447	1.395	1.348	1.247	1.133	0.751	0.611	0.548
110	5.022	3.663	2.986	2.359	1.675	1.630	1.538	1.496	1.443	1.396	1.293	1.178	0.782	0.635	0.569
115	5.128	3.750	3.043	2.451	1.728	1.682	1.588	1.545	1.492	1.444	1.339	1.223	0.813	0.658	0.590
120	5.234	3.836	3.100	2.531	1.781	1.734	1.638	1.595	1.540	1.491	1.386	1.269	0.844	0.681	0.612
125	5.340	3.922	3.158	2.588	1.834	1.786	1.689	1.644	1.589	1.539	1.432	1.314	0.875	0.704	0.633
130	5.446	4.009	3.215	2.644	1.888	1.838	1.739	1.694	1.637	1.587	1.479	1.360	0.906	0.728	0.654
135	5.552	4.069	3.272	2.701	1.941	1.890	1.789	1.743	1.686	1.634	1.525	1.405	0.937	0.751	0.675
140	5.658	4.119	3.329	2.758	1.994	1.942	1.839	1.792	1.734	1.682	1.572	1.451	0.968	0.774	0.696
145	5.764	4.169	3.386	2.814	2.047	1.994	1.889	1.842	1.783	1.730	1.618	1.496	0.999	0.797	0.717
150	-	4.220	3.443	2.871	2.100	2.046	1.939	1.891	1.831	1.777	1.665	1.541	1.035	0.821	0.738
155	-	4.270	3.500	2.927	2.153	2.098	1.989	1.940	1.880	1.825	1.711	1.587	1.084	0.844	0.759
160	-	4.320	3.558	2.984	2.207	2.150	2.040	1.990	1.928	1.873	1.758	1.632	1.133	0.867	0.780
165	-	4.371	3.615	3.040	2.260	2.202	2.090	2.039	1.977	1.921	1.804	1.678	1.182	0.891	0.801
170	-	4.421	3.672	3.097	2.313	2.255	2.140	2.088	2.025	1.968	1.850	1.723	1.231	0.914	0.822
175	-	4.471	3.729	3.153	2.366	2.307	2.190	2.138	2.074	2.016	1.897	1.769	1.281	0.937	0.843
180	-	4.521	3.786	3.210	2.419	2.359	2.240	2.187	2.122	2.064	1.943	1.814	1.330	0.960	0.864
185	-	4.572	3.843	3.266	2.472	2.411	2.290	2.236	2.170	2.111	1.990	1.859	1.379	0.984	0.885
190	-	4.622	3.900	3.323	2.526	2.463	2.340	2.286	2.219	2.159	2.036	1.905	1.428	1.007	0.906
195	-	4.672	3.958	3.379	2.580	2.515	2.391	2.335	2.267	2.207	2.083	1.950	1.477	1.039	0.928
200	-	4.723	4.015	3.436	2.635	2.564	2.441	2.385	2.316	2.254	2.129	1.996	1.526	1.085	0.949

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 limited to a maximum protection thickness of 4.457mm.

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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 5243
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	510	530	539	550	560	580	600	650	700	750
205	-	4.773	4.062	3.492	2.690	2.614	2.491	2.434	2.364	2.302	2.176	2.041	1.575	1.131	0.970
210	-	4.823	4.105	3.549	2.744	2.663	2.540	2.483	2.413	2.350	2.222	2.087	1.625	1.177	0.991
215	-	4.873	4.148	3.605	2.799	2.713	2.587	2.532	2.461	2.398	2.268	2.132	1.674	1.223	1.012
220	-	4.924	4.190	3.662	2.853	2.762	2.635	2.580	2.510	2.445	2.315	2.177	1.723	1.269	1.045
225	-	4.974	4.233	3.718	2.908	2.812	2.682	2.628	2.558	2.493	2.361	2.223	1.772	1.315	1.087
230	-	5.024	4.276	3.775	2.962	2.861	2.730	2.675	2.606	2.541	2.408	2.268	1.821	1.361	1.129
235	-	5.075	4.319	3.832	3.017	2.911	2.778	2.723	2.654	2.589	2.454	2.314	1.870	1.407	1.171
240	-	5.125	4.362	3.888	3.071	2.960	2.825	2.771	2.702	2.637	2.501	2.359	1.920	1.453	1.214
245	-	5.175	4.405	3.945	3.126	3.009	2.873	2.819	2.749	2.685	2.549	2.405	1.969	1.499	1.256
250	-	5.226	4.448	4.001	3.181	3.059	2.921	2.866	2.797	2.733	2.597	2.450	2.018	1.545	1.298
255	-	5.276	4.491	4.054	3.235	3.108	2.968	2.914	2.845	2.781	2.646	2.495	2.067	1.591	1.340
260	-	5.326	4.533	4.102	3.290	3.158	3.016	2.962	2.893	2.829	2.694	2.543	2.116	1.637	1.382
265	-	5.376	4.576	4.151	3.344	3.207	3.063	3.010	2.941	2.878	2.742	2.592	2.165	1.683	1.424
270	-	5.427	4.619	4.199	3.399	3.257	3.111	3.058	2.989	2.926	2.791	2.641	2.214	1.729	1.467
275	-	5.477	4.662	4.247	3.453	3.306	3.159	3.105	3.037	2.974	2.839	2.690	2.264	1.775	1.509
280	-	5.527	4.705	4.296	3.508	3.356	3.206	3.153	3.085	3.022	2.888	2.739	2.313	1.821	1.551
285	-	5.578	4.748	4.344	3.562	3.405	3.254	3.201	3.133	3.070	2.936	2.789	2.362	1.867	1.593
290	-	5.628	4.791	4.393	3.617	3.455	3.302	3.249	3.181	3.118	2.984	2.838	2.411	1.913	1.635
295	-	5.678	4.834	4.441	3.671	3.504	3.349	3.296	3.229	3.166	3.033	2.887	2.460	1.959	1.678
300	-	5.729	4.876	4.489	3.726	3.554	3.397	3.344	3.277	3.214	3.081	2.936	2.509	2.005	1.720
305	-	5.779	4.919	4.538	3.781	3.603	3.444	3.392	3.325	3.262	3.130	2.985	2.560	2.052	1.762
310	-	-	4.962	4.586	3.835	3.653	3.492	3.440	3.373	3.311	3.178	3.034	2.611	2.098	1.804
315	-	-	5.005	4.635	3.890	3.702	3.540	3.487	3.421	3.359	3.227	3.083	2.662	2.144	1.846
320	-	-	5.048	4.683	3.944	3.751	3.587	3.535	3.469	3.407	3.275	3.132	2.713	2.190	1.888
325	-	-	5.091	4.731	3.999	3.801	3.635	3.583	3.517	3.455	3.323	3.181	2.764	2.236	1.931
330	-	-	5.134	4.780	4.058	3.850	3.683	3.631	3.565	3.503	3.372	3.230	2.814	2.282	1.973
335	-	-	5.176	4.828	4.126	3.900	3.730	3.679	3.612	3.551	3.420	3.279	2.865	2.328	2.015
340	-	-	5.219	4.876	4.194	3.949	3.778	3.726	3.660	3.599	3.469	3.329	2.916	2.374	2.057
345	-	-	5.262	4.925	4.261	3.999	3.825	3.774	3.708	3.647	3.517	3.378	2.967	2.420	2.099
350	-	-	5.305	4.973	4.329	4.057	3.873	3.822	3.756	3.695	3.566	3.427	3.018	2.466	2.142
355	-	-	5.348	5.022	4.396	4.135	3.921	3.870	3.804	3.743	3.614	3.476	3.069	2.512	2.184
360	-	-	5.391	5.070	4.464	4.212	3.968	3.917	3.852	3.792	3.662	3.525	3.120	2.566	2.226
365	-	-	5.434	5.118	4.532	4.289	4.016	3.965	3.900	3.840	3.711	3.574	3.170	2.620	2.268
370	-	-	5.477	5.167	4.599	4.366	4.086	4.013	3.948	3.888	3.759	3.623	3.221	2.674	2.310
375	-	-	5.519	5.215	4.667	4.443	4.167	4.080	3.996	3.936	3.808	3.672	3.272	2.729	2.352
380	-	-	5.562	5.264	4.735	4.520	4.247	4.160	4.052	3.984	3.856	3.721	3.323	2.783	2.395
385	-	-	5.605	5.312	4.802	4.597	4.328	4.240	4.131	4.032	3.904	3.770	3.374	2.837	2.437
390	-	-	5.648	5.360	4.870	4.674	4.409	4.320	4.210	4.110	3.953	3.819	3.425	2.892	2.479

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 limited to a maximum protection thickness of 4.457mm.

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CERTIFICATE No CF 5243
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	510	530	539	550	560	580	600	650	700	750
30	3.183	2.388	1.678	1.075	0.855	0.813	0.733	0.701	0.662	0.629	0.565	0.506	0.327	0.278	0.278
35	3.482	2.640	1.949	1.274	0.995	0.946	0.853	0.815	0.770	0.733	0.660	0.592	0.395	0.322	0.294
40	3.781	2.828	2.221	1.472	1.110	1.062	0.974	0.930	0.879	0.836	0.754	0.678	0.463	0.363	0.319
45	4.068	3.016	2.493	1.671	1.219	1.157	1.063	1.033	0.987	0.940	0.849	0.764	0.532	0.403	0.344
50	4.297	3.204	2.619	1.870	1.327	1.252	1.133	1.093	1.060	1.033	0.943	0.850	0.600	0.444	0.369
55	4.526	3.393	2.733	2.069	1.436	1.347	1.203	1.153	1.116	1.088	1.030	0.936	0.668	0.484	0.394
60	4.755	3.581	2.847	2.267	1.545	1.442	1.273	1.213	1.172	1.143	1.083	1.022	0.736	0.525	0.419
65	4.983	3.769	2.961	2.466	1.654	1.537	1.343	1.273	1.229	1.198	1.137	1.073	0.805	0.565	0.445
70	5.212	3.957	3.075	2.566	1.762	1.631	1.413	1.333	1.285	1.254	1.190	1.124	0.873	0.606	0.470
75	5.441	4.081	3.189	2.636	1.871	1.726	1.483	1.393	1.341	1.309	1.243	1.175	0.941	0.646	0.495
80	5.670	4.163	3.303	2.706	1.980	1.821	1.553	1.453	1.397	1.364	1.296	1.226	1.009	0.687	0.520
85	5.898	4.245	3.417	2.776	2.089	1.916	1.622	1.512	1.454	1.419	1.349	1.277	1.061	0.727	0.545
90	-	4.327	3.531	2.846	2.197	2.011	1.692	1.572	1.510	1.474	1.402	1.328	1.108	0.768	0.570
95	-	4.409	3.645	2.915	2.306	2.106	1.762	1.632	1.566	1.529	1.456	1.380	1.156	0.809	0.595
100	-	4.490	3.760	2.985	2.415	2.200	1.832	1.692	1.622	1.585	1.509	1.431	1.204	0.849	0.621
105	-	4.572	3.874	3.055	2.520	2.295	1.902	1.752	1.679	1.640	1.562	1.482	1.252	0.890	0.646
110	-	4.654	3.988	3.125	2.590	2.390	1.972	1.812	1.735	1.695	1.615	1.533	1.300	0.930	0.671
115	-	4.736	4.068	3.195	2.660	2.485	2.042	1.872	1.791	1.750	1.668	1.584	1.348	0.971	0.696
120	-	4.818	4.126	3.265	2.730	2.564	2.112	1.932	1.848	1.805	1.721	1.635	1.396	1.011	0.721
125	-	4.900	4.184	3.335	2.800	2.635	2.182	1.992	1.904	1.860	1.775	1.687	1.444	1.058	0.746
130	-	4.981	4.243	3.404	2.871	2.707	2.252	2.052	1.960	1.916	1.828	1.738	1.491	1.107	0.771
135	-	5.063	4.301	3.474	2.941	2.779	2.321	2.111	2.016	1.971	1.881	1.789	1.539	1.155	0.797
140	-	5.145	4.359	3.544	3.011	2.850	2.391	2.171	2.073	2.026	1.934	1.840	1.587	1.204	0.822
145	-	5.227	4.417	3.614	3.081	2.922	2.461	2.231	2.129	2.081	1.987	1.891	1.635	1.253	0.847
150	-	5.309	4.476	3.684	3.151	2.994	2.534	2.291	2.185	2.136	2.040	1.942	1.683	1.301	0.872
155	-	5.391	4.534	3.754	3.221	3.065	2.615	2.351	2.241	2.191	2.093	1.993	1.731	1.350	0.897
160	-	5.472	4.592	3.823	3.291	3.137	2.695	2.411	2.298	2.247	2.147	2.045	1.779	1.399	0.922
165	-	5.554	4.650	3.893	3.362	3.209	2.776	2.471	2.354	2.302	2.200	2.096	1.827	1.447	0.947
170	-	5.636	4.709	3.963	3.432	3.280	2.857	2.540	2.410	2.357	2.253	2.147	1.874	1.496	0.973
175	-	5.718	4.767	4.033	3.502	3.352	2.938	2.629	2.466	2.412	2.306	2.198	1.922	1.545	0.998
180	-	5.800	4.825	4.078	3.572	3.424	3.018	2.719	2.528	2.467	2.359	2.249	1.970	1.593	1.025
185	-	-	4.884	4.123	3.642	3.495	3.099	2.808	2.614	2.526	2.412	2.300	2.018	1.642	1.077
190	-	-	4.942	4.168	3.712	3.567	3.180	2.897	2.699	2.604	2.466	2.351	2.066	1.691	1.129
195	-	-	5.000	4.213	3.782	3.639	3.260	2.987	2.785	2.682	2.520	2.403	2.114	1.739	1.180
200	-	-	5.058	4.258	3.853	3.711	3.341	3.076	2.871	2.759	2.582	2.454	2.162	1.788	1.232

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 limited to a maximum protection thickness of 4.457mm.

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 5243
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	510	530	539	550	560	580	600	650	700	750
205	-	-	5.117	4.303	3.923	3.782	3.422	3.166	2.957	2.837	2.645	2.505	2.210	1.836	1.284
210	-	-	5.175	4.348	3.993	3.854	3.503	3.255	3.043	2.915	2.707	2.555	2.257	1.885	1.336
215	-	-	5.233	4.393	4.051	3.926	3.583	3.345	3.128	2.992	2.770	2.605	2.305	1.934	1.388
220	-	-	5.291	4.438	4.095	3.997	3.664	3.434	3.214	3.070	2.832	2.655	2.353	1.982	1.440
225	-	-	5.350	4.483	4.139	4.055	3.745	3.523	3.300	3.148	2.895	2.705	2.401	2.031	1.492
230	-	-	5.408	4.528	4.183	4.100	3.825	3.613	3.386	3.225	2.957	2.755	2.449	2.080	1.544
235	-	-	5.466	4.573	4.227	4.145	3.906	3.702	3.472	3.303	3.020	2.805	2.497	2.128	1.595
240	-	-	5.525	4.618	4.271	4.190	3.987	3.792	3.557	3.381	3.082	2.855	2.546	2.177	1.647
245	-	-	5.583	4.663	4.315	4.235	4.053	3.881	3.643	3.458	3.145	2.905	2.596	2.226	1.699
250	-	-	5.641	4.708	4.358	4.280	4.100	3.971	3.729	3.536	3.207	2.956	2.645	2.274	1.751
255	-	-	5.699	4.753	4.402	4.324	4.147	4.047	3.815	3.614	3.270	3.006	2.695	2.323	1.803
260	-	-	5.758	4.798	4.446	4.369	4.195	4.096	3.901	3.691	3.332	3.056	2.745	2.372	1.855
265	-	-	-	4.843	4.490	4.414	4.242	4.145	3.986	3.769	3.395	3.106	2.795	2.420	1.907
270	-	-	-	4.888	4.534	4.459	4.289	4.194	4.056	3.847	3.457	3.156	2.844	2.469	1.958
275	-	-	-	4.933	4.578	4.504	4.337	4.243	4.108	3.924	3.520	3.206	2.894	2.518	2.010
280	-	-	-	4.978	4.622	4.549	4.384	4.292	4.159	4.002	3.582	3.256	2.944	2.568	2.062
285	-	-	-	5.023	4.666	4.594	4.431	4.341	4.211	4.066	3.645	3.306	2.994	2.618	2.114
290	-	-	-	5.068	4.709	4.639	4.479	4.390	4.262	4.120	3.707	3.356	3.043	2.668	2.166
295	-	-	-	5.113	4.753	4.683	4.526	4.439	4.314	4.175	3.770	3.406	3.093	2.718	2.218
300	-	-	-	5.158	4.797	4.728	4.573	4.488	4.365	4.229	3.832	3.456	3.143	2.768	2.270
305	-	-	-	5.203	4.841	4.773	4.621	4.537	4.417	4.284	3.895	3.506	3.193	2.818	2.321
310	-	-	-	5.248	4.885	4.818	4.668	4.586	4.468	4.338	3.957	3.556	3.242	2.868	2.373
315	-	-	-	5.293	4.929	4.863	4.715	4.635	4.520	4.393	4.020	3.606	3.292	2.918	2.425
320	-	-	-	5.338	4.973	4.908	4.763	4.684	4.571	4.447	4.084	3.656	3.342	2.968	2.477
325	-	-	-	5.383	5.017	4.953	4.810	4.733	4.623	4.502	4.148	3.706	3.392	3.018	2.529
330	-	-	-	5.428	5.060	4.998	4.857	4.782	4.674	4.556	4.213	3.756	3.441	3.068	2.580
335	-	-	-	5.473	5.104	5.042	4.905	4.831	4.726	4.611	4.277	3.806	3.491	3.118	2.632
340	-	-	-	5.518	5.148	5.087	4.952	4.880	4.777	4.665	4.342	3.856	3.541	3.168	2.683
345	-	-	-	5.563	5.192	5.132	4.999	4.929	4.829	4.720	4.406	3.906	3.591	3.218	2.734
350	-	-	-	5.608	5.236	5.177	5.047	4.978	4.880	4.774	4.471	3.956	3.640	3.268	2.786
355	-	-	-	5.653	5.280	5.222	5.094	5.027	4.932	4.829	4.535	4.007	3.690	3.318	2.837
360	-	-	-	5.698	5.324	5.267	5.141	5.076	4.984	4.883	4.600	4.074	3.740	3.368	2.889
365	-	-	-	5.743	5.368	5.312	5.189	5.125	5.035	4.938	4.664	4.159	3.790	3.417	2.940
370	-	-	-	5.788	5.411	5.357	5.236	5.174	5.087	4.992	4.729	4.244	3.839	3.467	2.992
375	-	-	-	-	5.455	5.401	5.283	5.223	5.138	5.047	4.793	4.330	3.889	3.517	3.043
380	-	-	-	-	5.499	5.446	5.331	5.272	5.190	5.101	4.858	4.415	3.939	3.567	3.094
385	-	-	-	-	5.543	5.491	5.378	5.321	5.241	5.156	4.922	4.500	3.989	3.617	3.146
390	-	-	-	-	5.587	5.536	5.425	5.370	5.293	5.210	4.987	4.585	4.043	3.667	3.197

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 limited to a maximum protection thickness of 4.457mm.

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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 5243
JOTUN A/S

I/H Columns: 135 minutes															
Required Thickness (mm) for a Design Temperature (°C)															
Section Factor (m^{-1})	300	350	400	450	500	510	530	539	550	560	580	600	650	700	750
30	3.724	2.829	2.228	1.645	1.084	1.027	0.936	0.899	0.856	0.820	0.751	0.687	0.531	0.327	0.278
35	4.110	3.136	2.560	1.918	1.295	1.219	1.092	1.046	0.997	0.956	0.877	0.804	0.627	0.408	0.331
40	4.485	3.443	2.771	2.190	1.506	1.411	1.249	1.190	1.126	1.080	1.003	0.921	0.723	0.490	0.387
45	4.859	3.750	2.983	2.462	1.717	1.603	1.407	1.333	1.253	1.192	1.096	1.030	0.819	0.571	0.443
50	5.233	4.047	3.195	2.637	1.928	1.796	1.565	1.476	1.380	1.305	1.184	1.095	0.915	0.652	0.499
55	5.608	4.234	3.406	2.788	2.139	1.988	1.723	1.620	1.507	1.418	1.272	1.160	1.010	0.733	0.555
60	-	4.421	3.618	2.940	2.350	2.180	1.880	1.763	1.634	1.531	1.360	1.226	1.069	0.814	0.611
65	-	4.607	3.830	3.092	2.537	2.372	2.038	1.906	1.760	1.644	1.447	1.291	1.122	0.895	0.667
70	-	4.794	4.036	3.244	2.642	2.539	2.196	2.050	1.887	1.756	1.535	1.356	1.175	0.976	0.723
75	-	4.981	4.133	3.395	2.747	2.634	2.353	2.193	2.014	1.869	1.623	1.421	1.229	1.043	0.779
80	-	5.167	4.229	3.547	2.853	2.730	2.511	2.337	2.141	1.982	1.711	1.486	1.282	1.092	0.835
85	-	5.354	4.326	3.699	2.958	2.826	2.592	2.480	2.268	2.095	1.799	1.551	1.335	1.142	0.891
90	-	5.541	4.422	3.851	3.063	2.921	2.672	2.575	2.394	2.207	1.886	1.616	1.389	1.191	0.947
95	-	5.727	4.518	4.003	3.168	3.017	2.752	2.655	2.518	2.320	1.974	1.681	1.442	1.241	1.003
100	-	-	4.615	4.088	3.273	3.113	2.833	2.735	2.599	2.433	2.062	1.746	1.496	1.290	1.052
105	-	-	4.711	4.157	3.378	3.209	2.913	2.815	2.680	2.537	2.150	1.812	1.549	1.339	1.098
110	-	-	4.808	4.227	3.483	3.304	2.993	2.895	2.761	2.619	2.238	1.877	1.602	1.389	1.143
115	-	-	4.904	4.296	3.589	3.400	3.073	2.976	2.842	2.701	2.325	1.942	1.656	1.438	1.189
120	-	-	5.001	4.366	3.694	3.496	3.153	3.056	2.923	2.783	2.413	2.007	1.709	1.488	1.234
125	-	-	5.097	4.435	3.799	3.591	3.233	3.136	3.004	2.865	2.501	2.072	1.762	1.537	1.280
130	-	-	5.194	4.505	3.904	3.687	3.314	3.216	3.085	2.947	2.588	2.137	1.816	1.587	1.325
135	-	-	5.290	4.574	4.009	3.783	3.394	3.297	3.165	3.029	2.675	2.202	1.869	1.636	1.371
140	-	-	5.387	4.643	4.076	3.878	3.474	3.377	3.246	3.111	2.761	2.267	1.923	1.685	1.416
145	-	-	5.483	4.713	4.132	3.974	3.554	3.457	3.327	3.193	2.848	2.332	1.976	1.735	1.462
150	-	-	5.579	4.782	4.189	4.053	3.634	3.537	3.408	3.275	2.935	2.397	2.029	1.784	1.507
155	-	-	5.676	4.852	4.245	4.107	3.714	3.617	3.489	3.358	3.022	2.463	2.083	1.834	1.553
160	-	-	5.772	4.921	4.301	4.160	3.795	3.698	3.570	3.440	3.109	2.536	2.136	1.883	1.598
165	-	-	5.869	4.991	4.357	4.214	3.875	3.778	3.651	3.522	3.195	2.638	2.190	1.932	1.644
170	-	-	-	5.060	4.413	4.267	3.955	3.858	3.732	3.604	3.282	2.741	2.243	1.982	1.689
175	-	-	-	5.129	4.470	4.321	4.034	3.938	3.813	3.686	3.369	2.843	2.296	2.031	1.735
180	-	-	-	5.199	4.526	4.375	4.080	4.018	3.894	3.768	3.456	2.946	2.350	2.081	1.780
185	-	-	-	5.268	4.582	4.428	4.126	4.067	3.975	3.850	3.543	3.048	2.403	2.130	1.826
190	-	-	-	5.338	4.638	4.482	4.173	4.108	4.044	3.932	3.629	3.151	2.456	2.180	1.871
195	-	-	-	5.407	4.695	4.535	4.219	4.150	4.086	4.014	3.716	3.253	2.510	2.229	1.917
200	-	-	-	5.477	4.751	4.589	4.265	4.192	4.129	4.065	3.803	3.355	2.578	2.278	1.962

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 limited to a maximum protection thickness of 4.457mm.

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CERTIFICATE No CF 5243
JOTUN A/S

I/H Columns: 135 minutes															
Required Thickness (mm) for a Design Temperature (°C)															
Section Factor (m^{-1})	300	350	400	450	500	510	530	539	550	560	580	600	650	700	750
205	-	-	-	5.546	4.807	4.642	4.312	4.233	4.171	4.108	3.890	3.458	2.647	2.328	2.008
210	-	-	-	5.616	4.863	4.696	4.358	4.275	4.213	4.151	3.976	3.560	2.717	2.377	2.053
215	-	-	-	5.685	4.919	4.750	4.404	4.317	4.255	4.193	4.048	3.663	2.786	2.427	2.098
220	-	-	-	5.754	4.976	4.803	4.451	4.359	4.297	4.236	4.092	3.765	2.855	2.476	2.144
225	-	-	-	5.824	5.032	4.857	4.497	4.400	4.339	4.278	4.136	3.867	2.925	2.526	2.189
230	-	-	-	-	5.088	4.910	4.543	4.442	4.381	4.321	4.180	3.970	2.994	2.576	2.235
235	-	-	-	-	5.144	4.964	4.589	4.484	4.423	4.364	4.224	4.050	3.063	2.626	2.280
240	-	-	-	-	5.201	5.017	4.636	4.525	4.466	4.406	4.268	4.097	3.133	2.677	2.326
245	-	-	-	-	5.257	5.071	4.682	4.567	4.508	4.449	4.312	4.143	3.202	2.727	2.371
250	-	-	-	-	5.313	5.124	4.728	4.609	4.550	4.492	4.356	4.189	3.271	2.777	2.417
255	-	-	-	-	5.369	5.178	4.775	4.650	4.592	4.534	4.401	4.235	3.341	2.828	2.462
260	-	-	-	-	5.425	5.232	4.821	4.692	4.634	4.577	4.445	4.282	3.410	2.878	2.508
265	-	-	-	-	5.482	5.285	4.867	4.734	4.676	4.619	4.489	4.328	3.479	2.928	2.558
270	-	-	-	-	5.538	5.339	4.914	4.776	4.718	4.662	4.533	4.374	3.549	2.979	2.608
275	-	-	-	-	5.594	5.392	4.960	4.817	4.761	4.705	4.577	4.421	3.618	3.029	2.658
280	-	-	-	-	5.650	5.446	5.006	4.859	4.803	4.747	4.621	4.467	3.687	3.079	2.708
285	-	-	-	-	5.707	5.499	5.052	4.901	4.845	4.790	4.665	4.513	3.756	3.130	2.759
290	-	-	-	-	5.763	5.553	5.099	4.942	4.887	4.833	4.709	4.560	3.826	3.180	2.809
295	-	-	-	-	5.819	5.607	5.145	4.984	4.929	4.875	4.753	4.606	3.895	3.230	2.859
300	-	-	-	-	-	5.660	5.191	5.026	4.971	4.918	4.797	4.652	3.964	3.281	2.909
305	-	-	-	-	-	5.714	5.238	5.068	5.013	4.960	4.841	4.699	4.034	3.331	2.960
310	-	-	-	-	-	5.767	5.284	5.109	5.056	5.003	4.886	4.745	4.096	3.381	3.010
315	-	-	-	-	-	5.821	5.330	5.151	5.098	5.046	4.930	4.791	4.158	3.432	3.060
320	-	-	-	-	-	-	5.377	5.193	5.140	5.088	4.974	4.838	4.220	3.482	3.111
325	-	-	-	-	-	-	5.423	5.234	5.182	5.131	5.018	4.884	4.282	3.532	3.161
330	-	-	-	-	-	-	5.469	5.276	5.224	5.173	5.062	4.930	4.344	3.583	3.211
335	-	-	-	-	-	-	5.515	5.318	5.266	5.216	5.106	4.977	4.406	3.633	3.261
340	-	-	-	-	-	-	5.562	5.360	5.308	5.259	5.150	5.023	4.468	3.683	3.312
345	-	-	-	-	-	-	5.608	5.401	5.350	5.301	5.194	5.069	4.530	3.734	3.362
350	-	-	-	-	-	-	5.654	5.443	5.393	5.344	5.238	5.116	4.592	3.784	3.412
355	-	-	-	-	-	-	5.701	5.485	5.435	5.387	5.282	5.162	4.654	3.834	3.462
360	-	-	-	-	-	-	5.747	5.526	5.477	5.429	5.326	5.208	4.716	3.885	3.513
365	-	-	-	-	-	-	5.793	5.568	5.519	5.472	5.370	5.255	4.778	3.935	3.563
370	-	-	-	-	-	-	-	5.610	5.561	5.514	5.415	5.301	4.840	3.985	3.613
375	-	-	-	-	-	-	-	5.651	5.603	5.557	5.459	5.347	4.902	4.038	3.663
380	-	-	-	-	-	-	-	5.693	5.645	5.600	5.503	5.394	4.964	4.127	3.714
385	-	-	-	-	-	-	-	5.735	5.688	5.642	5.547	5.440	5.026	4.215	3.764
390	-	-	-	-	-	-	-	5.777	5.730	5.685	5.591	5.486	5.088	4.303	3.814

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 limited to a maximum protection thickness of 4.457mm.

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CERTIFICATE No CF 5243
JOTUN A/S

I/H Columns: 150 minutes															
Required Thickness (mm) for a Design Temperature (°C)															
Section Factor (m^{-1})	300	350	400	450	500	510	530	539	550	560	580	600	650	700	750
30	4.293	3.462	2.702	2.143	1.625	1.522	1.189	1.127	1.060	1.010	0.938	0.869	0.710	0.542	0.335
35	4.828	3.826	3.024	2.501	1.903	1.787	1.456	1.375	1.287	1.218	1.104	1.017	0.836	0.651	0.438
40	5.364	4.168	3.345	2.750	2.181	2.053	1.723	1.624	1.514	1.426	1.277	1.160	0.963	0.760	0.542
45	5.900	4.481	3.666	2.996	2.459	2.318	1.990	1.873	1.741	1.634	1.451	1.302	1.064	0.869	0.646
50	-	4.793	3.988	3.242	2.666	2.560	2.258	2.122	1.968	1.842	1.625	1.444	1.142	0.977	0.750
55	-	5.105	4.199	3.487	2.855	2.739	2.520	2.370	2.195	2.050	1.799	1.586	1.221	1.054	0.853
60	-	5.417	4.393	3.733	3.044	2.917	2.679	2.577	2.422	2.258	1.972	1.728	1.300	1.108	0.957
65	-	5.730	4.586	3.979	3.234	3.095	2.838	2.727	2.596	2.466	2.146	1.870	1.379	1.163	1.039
70	-	-	4.780	4.133	3.423	3.274	2.997	2.876	2.735	2.614	2.320	2.012	1.458	1.217	1.088
75	-	-	4.974	4.261	3.612	3.452	3.156	3.026	2.874	2.743	2.494	2.154	1.536	1.272	1.136
80	-	-	5.168	4.390	3.801	3.630	3.315	3.176	3.013	2.873	2.611	2.296	1.615	1.326	1.184
85	-	-	5.361	4.518	3.991	3.809	3.474	3.326	3.152	3.003	2.721	2.438	1.694	1.381	1.232
90	-	-	5.555	4.647	4.097	3.987	3.633	3.476	3.292	3.132	2.832	2.557	1.773	1.435	1.280
95	-	-	5.749	4.776	4.180	4.093	3.792	3.625	3.431	3.262	2.942	2.649	1.852	1.490	1.328
100	-	-	-	4.904	4.263	4.174	3.951	3.775	3.570	3.391	3.053	2.741	1.930	1.544	1.376
105	-	-	-	5.033	4.345	4.255	4.069	3.925	3.709	3.521	3.163	2.834	2.009	1.599	1.424
110	-	-	-	5.161	4.428	4.337	4.145	4.053	3.848	3.651	3.273	2.926	2.088	1.653	1.472
115	-	-	-	5.290	4.511	4.418	4.220	4.126	3.987	3.780	3.384	3.018	2.167	1.708	1.521
120	-	-	-	5.418	4.594	4.499	4.296	4.199	4.079	3.910	3.494	3.110	2.246	1.763	1.569
125	-	-	-	5.547	4.677	4.580	4.371	4.272	4.148	4.036	3.605	3.203	2.325	1.817	1.617
130	-	-	-	5.676	4.760	4.662	4.447	4.344	4.217	4.101	3.715	3.295	2.403	1.872	1.665
135	-	-	-	5.804	4.843	4.743	4.522	4.417	4.287	4.167	3.825	3.387	2.482	1.926	1.713
140	-	-	-	-	4.926	4.824	4.598	4.490	4.356	4.233	3.936	3.480	2.575	1.981	1.761
145	-	-	-	-	5.009	4.905	4.673	4.563	4.425	4.298	4.039	3.572	2.676	2.035	1.809
150	-	-	-	-	5.091	4.987	4.749	4.636	4.494	4.364	4.097	3.664	2.778	2.090	1.857
155	-	-	-	-	5.174	5.068	4.824	4.709	4.564	4.430	4.154	3.756	2.879	2.144	1.905
160	-	-	-	-	5.257	5.149	4.900	4.782	4.633	4.495	4.212	3.849	2.981	2.199	1.954
165	-	-	-	-	5.340	5.230	4.975	4.855	4.702	4.561	4.269	3.941	3.083	2.253	2.002
170	-	-	-	-	5.423	5.312	5.051	4.928	4.771	4.627	4.326	4.033	3.184	2.308	2.050
175	-	-	-	-	5.506	5.393	5.126	5.001	4.841	4.692	4.384	4.081	3.286	2.362	2.098
180	-	-	-	-	5.589	5.474	5.202	5.074	4.910	4.758	4.441	4.130	3.387	2.417	2.146
185	-	-	-	-	5.672	5.555	5.277	5.147	4.979	4.824	4.499	4.178	3.489	2.471	2.194
190	-	-	-	-	5.755	5.637	5.353	5.220	5.049	4.889	4.556	4.227	3.590	2.534	2.242
195	-	-	-	-	5.837	5.718	5.428	5.293	5.118	4.955	4.614	4.275	3.692	2.621	2.290
200	-	-	-	-	-	5.799	5.504	5.365	5.187	5.021	4.671	4.324	3.794	2.709	2.338

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 limited to a maximum protection thickness of 4.457mm.

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 5243
JOTUN A/S

I/H Columns: 150 minutes															
Required Thickness (mm) for a Design Temperature (°C)															
Section Factor (m^{-1})	300	350	400	450	500	510	530	539	550	560	580	600	650	700	750
205	-	-	-	-	-	-	5.579	5.438	5.256	5.086	4.729	4.372	3.895	2.796	2.387
210	-	-	-	-	-	-	5.655	5.511	5.326	5.152	4.786	4.420	3.997	2.883	2.435
215	-	-	-	-	-	-	5.730	5.584	5.395	5.217	4.843	4.469	4.061	2.971	2.483
220	-	-	-	-	-	-	5.806	5.657	5.464	5.283	4.901	4.517	4.105	3.058	2.532
225	-	-	-	-	-	-	5.881	5.730	5.533	5.349	4.958	4.566	4.149	3.145	2.584
230	-	-	-	-	-	-	-	5.803	5.603	5.414	5.016	4.614	4.193	3.233	2.635
235	-	-	-	-	-	-	-	-	5.672	5.480	5.073	4.663	4.237	3.320	2.687
240	-	-	-	-	-	-	-	-	5.741	5.546	5.131	4.711	4.282	3.407	2.738
245	-	-	-	-	-	-	-	-	5.811	5.611	5.188	4.760	4.326	3.495	2.790
250	-	-	-	-	-	-	-	-	-	5.677	5.245	4.808	4.370	3.582	2.841
255	-	-	-	-	-	-	-	-	-	5.743	5.303	4.857	4.414	3.669	2.893
260	-	-	-	-	-	-	-	-	-	5.808	5.360	4.905	4.458	3.757	2.944
265	-	-	-	-	-	-	-	-	-	-	5.418	4.954	4.502	3.844	2.996
270	-	-	-	-	-	-	-	-	-	-	5.475	5.002	4.546	3.931	3.048
275	-	-	-	-	-	-	-	-	-	-	5.533	5.050	4.591	4.019	3.099
280	-	-	-	-	-	-	-	-	-	-	5.590	5.099	4.635	4.079	3.151
285	-	-	-	-	-	-	-	-	-	-	5.647	5.147	4.679	4.135	3.202
290	-	-	-	-	-	-	-	-	-	-	5.705	5.196	4.723	4.190	3.254
295	-	-	-	-	-	-	-	-	-	-	5.762	5.244	4.767	4.246	3.305
300	-	-	-	-	-	-	-	-	-	-	5.820	5.293	4.811	4.302	3.357
305	-	-	-	-	-	-	-	-	-	-	-	5.341	4.855	4.357	3.408
310	-	-	-	-	-	-	-	-	-	-	-	5.390	4.900	4.413	3.460
315	-	-	-	-	-	-	-	-	-	-	-	5.438	4.944	4.469	3.511
320	-	-	-	-	-	-	-	-	-	-	-	5.487	4.988	4.524	3.563
325	-	-	-	-	-	-	-	-	-	-	-	5.535	5.032	4.580	3.614
330	-	-	-	-	-	-	-	-	-	-	-	5.584	5.076	4.635	3.666
335	-	-	-	-	-	-	-	-	-	-	-	5.632	5.120	4.691	3.717
340	-	-	-	-	-	-	-	-	-	-	-	5.681	5.164	4.747	3.769
345	-	-	-	-	-	-	-	-	-	-	-	5.729	5.209	4.802	3.821
350	-	-	-	-	-	-	-	-	-	-	-	5.777	5.253	4.858	3.872
355	-	-	-	-	-	-	-	-	-	-	-	5.826	5.297	4.914	3.924
360	-	-	-	-	-	-	-	-	-	-	-	-	5.341	4.969	3.975
365	-	-	-	-	-	-	-	-	-	-	-	-	5.385	5.025	4.027
370	-	-	-	-	-	-	-	-	-	-	-	-	5.429	5.081	4.122
375	-	-	-	-	-	-	-	-	-	-	-	-	5.473	5.136	4.222
380	-	-	-	-	-	-	-	-	-	-	-	-	5.518	5.192	4.322
385	-	-	-	-	-	-	-	-	-	-	-	-	5.562	5.247	4.423
390	-	-	-	-	-	-	-	-	-	-	-	-	5.606	5.303	4.523

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 limited to a maximum protection thickness of 4.457mm.

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 5243
JOTUN A/S

I/H Columns: 165 minutes															
Required Thickness (mm) for a Design Temperature (°C)															
Section Factor (m^{-1})	300	350	400	450	500	510	530	539	550	560	580	600	650	700	750
30	5.052	3.981	3.269	2.617	2.090	1.983	1.771	1.679	1.569	1.474	1.176	1.064	0.890	0.727	0.580
35	-	4.433	3.658	2.964	2.448	2.327	2.090	1.986	1.862	1.754	1.454	1.302	1.047	0.868	0.711
40	-	4.885	4.044	3.311	2.743	2.636	2.409	2.294	2.155	2.034	1.733	1.539	1.200	1.008	0.842
45	-	5.337	4.353	3.658	3.023	2.905	2.678	2.580	2.448	2.314	2.011	1.777	1.353	1.100	0.973
50	-	5.789	4.661	4.005	3.304	3.174	2.924	2.815	2.686	2.574	2.290	2.014	1.505	1.187	1.054
55	-	-	4.969	4.239	3.585	3.443	3.170	3.050	2.909	2.786	2.551	2.252	1.658	1.274	1.107
60	-	-	5.278	4.463	3.866	3.711	3.415	3.286	3.131	2.998	2.741	2.489	1.811	1.361	1.160
65	-	-	5.586	4.687	4.098	3.980	3.661	3.521	3.354	3.210	2.931	2.665	1.964	1.448	1.213
70	-	-	-	4.911	4.259	4.155	3.907	3.756	3.576	3.422	3.121	2.835	2.117	1.535	1.266
75	-	-	-	5.135	4.419	4.309	4.097	3.991	3.799	3.634	3.311	3.004	2.270	1.621	1.319
80	-	-	-	5.359	4.580	4.462	4.229	4.135	4.021	3.845	3.501	3.174	2.423	1.708	1.372
85	-	-	-	5.584	4.741	4.615	4.361	4.259	4.141	4.045	3.691	3.343	2.561	1.795	1.425
90	-	-	-	5.808	4.902	4.768	4.493	4.383	4.256	4.151	3.881	3.513	2.678	1.882	1.478
95	-	-	-	-	5.063	4.921	4.626	4.508	4.371	4.257	4.051	3.682	2.794	1.969	1.531
100	-	-	-	-	5.224	5.074	4.758	4.632	4.485	4.364	4.140	3.851	2.911	2.056	1.584
105	-	-	-	-	5.385	5.227	4.890	4.757	4.600	4.470	4.230	4.021	3.028	2.143	1.637
110	-	-	-	-	5.545	5.380	5.022	4.881	4.715	4.576	4.320	4.109	3.145	2.230	1.690
115	-	-	-	-	5.706	5.533	5.155	5.005	4.830	4.682	4.410	4.191	3.261	2.317	1.743
120	-	-	-	-	5.867	5.687	5.287	5.130	4.944	4.789	4.499	4.273	3.378	2.404	1.796
125	-	-	-	-	-	5.840	5.419	5.254	5.059	4.895	4.589	4.355	3.495	2.491	1.849
130	-	-	-	-	-	-	5.551	5.379	5.174	5.001	4.679	4.437	3.612	2.590	1.902
135	-	-	-	-	-	-	5.684	5.503	5.288	5.107	4.769	4.519	3.728	2.693	1.955
140	-	-	-	-	-	-	5.816	5.627	5.403	5.214	4.858	4.601	3.845	2.796	2.008
145	-	-	-	-	-	-	-	5.752	5.518	5.320	4.948	4.683	3.962	2.899	2.061
150	-	-	-	-	-	-	-	5.876	5.633	5.426	5.038	4.765	4.055	3.002	2.114
155	-	-	-	-	-	-	-	-	5.747	5.532	5.128	4.847	4.114	3.105	2.167
160	-	-	-	-	-	-	-	-	-	5.639	5.217	4.929	4.173	3.208	2.220
165	-	-	-	-	-	-	-	-	-	5.745	5.307	5.011	4.231	3.311	2.273
170	-	-	-	-	-	-	-	-	-	5.851	5.397	5.093	4.290	3.414	2.326
175	-	-	-	-	-	-	-	-	-	-	5.487	5.175	4.349	3.517	2.379
180	-	-	-	-	-	-	-	-	-	-	5.576	5.257	4.407	3.620	2.432
185	-	-	-	-	-	-	-	-	-	-	5.666	5.339	4.466	3.723	2.485
190	-	-	-	-	-	-	-	-	-	-	5.756	5.421	4.524	3.826	2.562
195	-	-	-	-	-	-	-	-	-	-	5.846	5.503	4.583	3.929	2.664
200	-	-	-	-	-	-	-	-	-	-	-	5.585	4.642	4.032	2.767

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 limited to a maximum protection thickness of 4.457mm.

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CERTIFICATE No CF 5243
JOTUN A/S

I/H Columns: 165 minutes															
Required Thickness (mm) for a Design Temperature (°C)															
Section Factor (m^{-1})	300	350	400	450	500	510	530	539	550	560	580	600	650	700	750
205	-	-	-	-	-	-	-	-	-	-	-	5.667	4.700	4.076	2.869
210	-	-	-	-	-	-	-	-	-	-	-	5.749	4.759	4.120	2.971
215	-	-	-	-	-	-	-	-	-	-	-	5.831	4.818	4.163	3.073
220	-	-	-	-	-	-	-	-	-	-	-	5.913	4.876	4.207	3.175
225	-	-	-	-	-	-	-	-	-	-	-	-	4.935	4.251	3.278
230	-	-	-	-	-	-	-	-	-	-	-	-	4.993	4.295	3.380
235	-	-	-	-	-	-	-	-	-	-	-	-	5.052	4.339	3.482
240	-	-	-	-	-	-	-	-	-	-	-	-	5.111	4.383	3.584
245	-	-	-	-	-	-	-	-	-	-	-	-	5.169	4.426	3.686
250	-	-	-	-	-	-	-	-	-	-	-	-	5.228	4.470	3.789
255	-	-	-	-	-	-	-	-	-	-	-	-	5.287	4.514	3.891
260	-	-	-	-	-	-	-	-	-	-	-	-	5.345	4.558	3.993
265	-	-	-	-	-	-	-	-	-	-	-	-	5.404	4.602	4.066
270	-	-	-	-	-	-	-	-	-	-	-	-	5.462	4.646	4.122
275	-	-	-	-	-	-	-	-	-	-	-	-	5.521	4.689	4.178
280	-	-	-	-	-	-	-	-	-	-	-	-	5.580	4.733	4.233
285	-	-	-	-	-	-	-	-	-	-	-	-	5.638	4.777	4.289
290	-	-	-	-	-	-	-	-	-	-	-	-	5.697	4.821	4.344
295	-	-	-	-	-	-	-	-	-	-	-	-	5.756	4.865	4.400
300	-	-	-	-	-	-	-	-	-	-	-	-	5.814	4.909	4.455
305	-	-	-	-	-	-	-	-	-	-	-	-	-	4.952	4.511
310	-	-	-	-	-	-	-	-	-	-	-	-	-	4.996	4.567
315	-	-	-	-	-	-	-	-	-	-	-	-	-	5.040	4.622
320	-	-	-	-	-	-	-	-	-	-	-	-	-	5.084	4.678
325	-	-	-	-	-	-	-	-	-	-	-	-	-	5.128	4.733
330	-	-	-	-	-	-	-	-	-	-	-	-	-	5.171	4.789
335	-	-	-	-	-	-	-	-	-	-	-	-	-	5.215	4.844
340	-	-	-	-	-	-	-	-	-	-	-	-	-	5.259	4.900
345	-	-	-	-	-	-	-	-	-	-	-	-	-	5.303	4.956
350	-	-	-	-	-	-	-	-	-	-	-	-	-	5.347	5.011
355	-	-	-	-	-	-	-	-	-	-	-	-	-	5.391	5.067
360	-	-	-	-	-	-	-	-	-	-	-	-	-	5.434	5.122
365	-	-	-	-	-	-	-	-	-	-	-	-	-	5.478	5.178
370	-	-	-	-	-	-	-	-	-	-	-	-	-	5.522	5.233
375	-	-	-	-	-	-	-	-	-	-	-	-	-	5.566	5.289
380	-	-	-	-	-	-	-	-	-	-	-	-	-	5.610	5.345
385	-	-	-	-	-	-	-	-	-	-	-	-	-	5.654	5.400
390	-	-	-	-	-	-	-	-	-	-	-	-	-	5.697	5.456

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 limited to a maximum protection thickness of 4.457mm.

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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 5243
JOTUN A/S

I/H Columns: 180 minutes															
Required Thickness (mm) for a Design Temperature (°C)															
Section Factor (m^{-1})	300	350	400	450	500	510	530	539	550	560	580	600	650	700	750
30	-	4.556	3.771	3.132	2.553	2.448	2.229	2.133	2.018	1.917	1.725	1.546	1.087	0.914	0.781
35	-	5.158	4.227	3.552	2.930	2.821	2.609	2.517	2.388	2.273	2.053	1.845	1.329	1.080	0.946
40	-	-	4.662	3.971	3.307	3.185	2.946	2.842	2.719	2.610	2.380	2.143	1.570	1.237	1.066
45	-	-	5.098	4.317	3.683	3.548	3.282	3.167	3.029	2.909	2.676	2.442	1.812	1.394	1.149
50	-	-	5.534	4.650	4.051	3.912	3.619	3.492	3.339	3.208	2.951	2.705	2.054	1.552	1.231
55	-	-	-	4.984	4.303	4.195	3.956	3.817	3.650	3.507	3.226	2.957	2.296	1.709	1.313
60	-	-	-	5.317	4.556	4.438	4.198	4.101	3.960	3.806	3.501	3.209	2.533	1.866	1.395
65	-	-	-	5.650	4.808	4.681	4.413	4.306	4.180	4.076	3.776	3.461	2.726	2.023	1.478
70	-	-	-	-	5.060	4.924	4.628	4.511	4.373	4.258	4.043	3.713	2.919	2.180	1.560
75	-	-	-	-	5.313	5.168	4.843	4.716	4.566	4.440	4.203	3.965	3.112	2.337	1.642
80	-	-	-	-	5.565	5.411	5.057	4.921	4.759	4.622	4.364	4.136	3.305	2.494	1.724
85	-	-	-	-	5.817	5.654	5.272	5.126	4.952	4.803	4.524	4.276	3.498	2.629	1.807
90	-	-	-	-	-	5.897	5.487	5.330	5.144	4.985	4.684	4.417	3.690	2.760	1.889
95	-	-	-	-	-	-	5.702	5.535	5.337	5.167	4.844	4.558	3.883	2.892	1.971
100	-	-	-	-	-	-	5.917	5.740	5.530	5.349	5.004	4.698	4.054	3.024	2.054
105	-	-	-	-	-	-	-	-	5.723	5.531	5.165	4.839	4.149	3.156	2.136
110	-	-	-	-	-	-	-	-	-	5.713	5.325	4.980	4.244	3.288	2.218
115	-	-	-	-	-	-	-	-	-	-	5.485	5.120	4.339	3.419	2.300
120	-	-	-	-	-	-	-	-	-	-	5.645	5.261	4.434	3.551	2.383
125	-	-	-	-	-	-	-	-	-	-	5.805	5.402	4.529	3.683	2.465
130	-	-	-	-	-	-	-	-	-	-	5.966	5.543	4.624	3.815	2.559
135	-	-	-	-	-	-	-	-	-	-	-	5.683	4.719	3.946	2.670
140	-	-	-	-	-	-	-	-	-	-	-	5.824	4.814	4.058	2.782
145	-	-	-	-	-	-	-	-	-	-	-	-	4.909	4.132	2.893
150	-	-	-	-	-	-	-	-	-	-	-	-	5.004	4.206	3.004
155	-	-	-	-	-	-	-	-	-	-	-	-	5.099	4.280	3.116
160	-	-	-	-	-	-	-	-	-	-	-	-	5.195	4.353	3.227
165	-	-	-	-	-	-	-	-	-	-	-	-	5.290	4.427	3.338
170	-	-	-	-	-	-	-	-	-	-	-	-	5.385	4.501	3.449
175	-	-	-	-	-	-	-	-	-	-	-	-	5.480	4.575	3.561
180	-	-	-	-	-	-	-	-	-	-	-	-	5.575	4.649	3.672
185	-	-	-	-	-	-	-	-	-	-	-	-	5.670	4.723	3.783
190	-	-	-	-	-	-	-	-	-	-	-	-	5.765	4.797	3.895
195	-	-	-	-	-	-	-	-	-	-	-	-	5.860	4.870	4.006
200	-	-	-	-	-	-	-	-	-	-	-	-	-	4.944	4.067

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 limited to a maximum protection thickness of 4.457mm.

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 5243
JOTUN A/S

I/H Columns: 180 minutes															
Required Thickness (mm) for a Design Temperature (°C)															
Section Factor (m^{-1})	300	350	400	450	500	510	530	539	550	560	580	600	650	700	750
205	-	-	-	-	-	-	-	-	-	-	-	-	-	5.018	4.112
210	-	-	-	-	-	-	-	-	-	-	-	-	-	5.092	4.158
215	-	-	-	-	-	-	-	-	-	-	-	-	-	5.166	4.203
220	-	-	-	-	-	-	-	-	-	-	-	-	-	5.240	4.249
225	-	-	-	-	-	-	-	-	-	-	-	-	-	5.314	4.294
230	-	-	-	-	-	-	-	-	-	-	-	-	-	5.388	4.340
235	-	-	-	-	-	-	-	-	-	-	-	-	-	5.461	4.385
240	-	-	-	-	-	-	-	-	-	-	-	-	-	5.535	4.431
245	-	-	-	-	-	-	-	-	-	-	-	-	-	5.609	4.476
250	-	-	-	-	-	-	-	-	-	-	-	-	-	5.683	4.522
255	-	-	-	-	-	-	-	-	-	-	-	-	-	5.757	4.567
260	-	-	-	-	-	-	-	-	-	-	-	-	-	5.831	4.612
265	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.658
270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.703
275	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.749
280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.794
285	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.840
290	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.885
295	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.931
300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.976
305	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.022
310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.067
315	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.113
320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.158
325	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.204
330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.249
335	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.295
340	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.340
345	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.385
350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.431
355	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.476
360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.522
365	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.567
370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.613
375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.658
380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.704
385	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.749
390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.795

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 limited to a maximum protection thickness of 4.457mm.

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 5243
JOTUN A/S

Rectangular/Square Hollow Columns: 30 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
55	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
60	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
65	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
70	0.727	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
75	0.760	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
80	0.793	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
85	0.827	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
90	0.860	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
95	0.893	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
100	0.926	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
105	0.959	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
110	0.992	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
115	1.026	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
120	1.059	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
125	1.092	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
130	1.125	0.755	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
135	1.158	0.787	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
140	1.192	0.820	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
145	1.225	0.852	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
150	1.258	0.884	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
155	1.291	0.917	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
160	1.324	0.949	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
165	1.358	0.981	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
170	1.391	1.014	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
175	1.424	1.046	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
180	1.457	1.078	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
185	1.490	1.110	0.739	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
190	1.524	1.143	0.771	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
195	1.557	1.175	0.802	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
200	1.590	1.207	0.834	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
205	1.623	1.240	0.866	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
210	1.656	1.272	0.898	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
215	1.690	1.304	0.930	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
220	1.723	1.336	0.962	0.732	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
225	1.756	1.369	0.993	0.760	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
230	1.789	1.401	1.025	0.788	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
235	1.822	1.433	1.057	0.816	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
240	1.856	1.466	1.089	0.844	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
245	1.889	1.498	1.121	0.871	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726

Thickness is intumescent only. Results apply to Rectangular/Square hollow columns exposed to fire on all sides. Results also apply to Rectangular/Square hollow beams exposed on all sides limited to a maximum protection thickness of 3.286mm.

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 5243
JOTUN A/S

Rectangular/Square Hollow Columns: 45 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	1.071	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
55	1.125	0.780	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
60	1.178	0.821	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
65	1.232	0.861	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
70	1.285	0.902	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
75	1.338	0.943	0.752	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
80	1.392	0.983	0.788	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
85	1.445	1.024	0.824	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
90	1.499	1.065	0.859	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
95	1.552	1.106	0.895	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
100	1.605	1.146	0.930	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
105	1.659	1.187	0.966	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
110	1.712	1.228	1.002	0.727	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
115	1.766	1.269	1.037	0.762	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
120	1.819	1.309	1.073	0.798	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
125	1.872	1.350	1.109	0.833	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
130	1.926	1.391	1.144	0.868	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
135	1.979	1.431	1.180	0.904	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
140	2.033	1.472	1.216	0.939	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
145	2.080	1.513	1.251	0.974	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
150	2.128	1.554	1.287	1.010	0.760	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
155	2.176	1.594	1.323	1.045	0.794	0.739	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
160	2.223	1.635	1.358	1.081	0.828	0.773	0.737	0.726	0.726	0.726	0.726	0.726	0.726	0.726
165	2.271	1.676	1.394	1.116	0.862	0.806	0.770	0.726	0.726	0.726	0.726	0.726	0.726	0.726
170	2.318	1.716	1.430	1.151	0.896	0.840	0.803	0.726	0.726	0.726	0.726	0.726	0.726	0.726
175	2.366	1.757	1.465	1.187	0.930	0.873	0.837	0.726	0.726	0.726	0.726	0.726	0.726	0.726
180	2.413	1.798	1.501	1.222	0.964	0.907	0.870	0.740	0.726	0.726	0.726	0.726	0.726	0.726
185	2.461	1.839	1.537	1.258	0.998	0.940	0.903	0.772	0.726	0.726	0.726	0.726	0.726	0.726
190	2.508	1.879	1.572	1.293	1.032	0.974	0.936	0.804	0.726	0.726	0.726	0.726	0.726	0.726
195	2.556	1.920	1.608	1.328	1.066	1.007	0.969	0.835	0.748	0.726	0.726	0.726	0.726	0.726
200	2.603	1.961	1.644	1.364	1.099	1.041	1.002	0.867	0.778	0.726	0.726	0.726	0.726	0.726
205	2.651	2.002	1.679	1.399	1.133	1.074	1.035	0.899	0.808	0.743	0.726	0.726	0.726	0.726
210	2.699	2.046	1.715	1.434	1.167	1.108	1.069	0.930	0.838	0.770	0.726	0.726	0.726	0.726
215	2.746	2.102	1.751	1.470	1.201	1.141	1.102	0.962	0.868	0.798	0.747	0.726	0.726	0.726
220	2.794	2.159	1.786	1.505	1.235	1.175	1.135	0.994	0.897	0.825	0.773	0.726	0.726	0.726
225	2.841	2.216	1.822	1.541	1.269	1.208	1.168	1.025	0.927	0.853	0.799	0.726	0.726	0.726
230	2.889	2.273	1.858	1.576	1.303	1.242	1.201	1.057	0.957	0.880	0.825	0.746	0.726	0.726
235	2.936	2.329	1.893	1.611	1.337	1.276	1.234	1.089	0.987	0.908	0.851	0.770	0.726	0.726
240	2.984	2.386	1.929	1.647	1.371	1.309	1.267	1.120	1.017	0.935	0.877	0.793	0.726	0.726
245	3.031	2.443	1.965	1.682	1.405	1.343	1.301	1.152	1.046	0.963	0.903	0.817	0.726	0.726

Thickness is intumescent only. Results apply to Rectangular/Square hollow columns exposed to fire on all sides. Results also apply to Rectangular/Square hollow beams exposed on all sides limited to a maximum protection thickness of 3.286mm.

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

CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Columns: 60 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	1.684	1.235	0.828	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
55	1.791	1.299	0.882	0.744	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
60	1.898	1.364	0.936	0.785	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
65	2.005	1.429	0.990	0.826	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
70	2.080	1.493	1.044	0.866	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
75	2.142	1.558	1.098	0.907	0.744	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
80	2.205	1.622	1.151	0.947	0.781	0.734	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
85	2.267	1.687	1.205	0.988	0.818	0.771	0.736	0.726	0.726	0.726	0.726	0.726	0.726	0.726
90	2.330	1.752	1.259	1.029	0.856	0.808	0.773	0.726	0.726	0.726	0.726	0.726	0.726	0.726
95	2.393	1.816	1.313	1.069	0.893	0.845	0.809	0.726	0.726	0.726	0.726	0.726	0.726	0.726
100	2.455	1.881	1.367	1.110	0.930	0.881	0.846	0.726	0.726	0.726	0.726	0.726	0.726	0.726
105	2.518	1.945	1.421	1.150	0.967	0.918	0.883	0.726	0.726	0.726	0.726	0.726	0.726	0.726
110	2.580	2.010	1.475	1.191	1.004	0.955	0.920	0.759	0.726	0.726	0.726	0.726	0.726	0.726
115	2.643	2.065	1.529	1.232	1.041	0.992	0.957	0.797	0.726	0.726	0.726	0.726	0.726	0.726
120	2.706	2.113	1.583	1.272	1.078	1.029	0.993	0.834	0.726	0.726	0.726	0.726	0.726	0.726
125	2.768	2.162	1.637	1.313	1.115	1.066	1.030	0.871	0.736	0.726	0.726	0.726	0.726	0.726
130	2.831	2.211	1.691	1.353	1.152	1.103	1.067	0.908	0.773	0.726	0.726	0.726	0.726	0.726
135	2.893	2.260	1.745	1.394	1.189	1.140	1.104	0.946	0.810	0.728	0.726	0.726	0.726	0.726
140	2.956	2.308	1.799	1.435	1.226	1.177	1.141	0.983	0.848	0.764	0.726	0.726	0.726	0.726
145	3.019	2.357	1.853	1.475	1.264	1.213	1.177	1.020	0.885	0.799	0.735	0.726	0.726	0.726
150	3.081	2.406	1.907	1.516	1.301	1.250	1.214	1.057	0.922	0.835	0.770	0.726	0.726	0.726
155	3.144	2.455	1.961	1.556	1.338	1.287	1.251	1.095	0.960	0.871	0.805	0.726	0.726	0.726
160	3.207	2.504	2.014	1.597	1.375	1.324	1.288	1.132	0.997	0.906	0.839	0.740	0.726	0.726
165	3.284	2.552	2.069	1.637	1.412	1.361	1.325	1.169	1.034	0.942	0.874	0.773	0.726	0.726
170	3.371	2.601	2.124	1.678	1.449	1.398	1.361	1.206	1.072	0.978	0.909	0.806	0.726	0.726
175	3.457	2.650	2.179	1.719	1.486	1.435	1.398	1.244	1.109	1.014	0.943	0.839	0.726	0.726
180	3.544	2.699	2.234	1.759	1.523	1.472	1.435	1.281	1.147	1.049	0.978	0.872	0.740	0.726
185	3.630	2.747	2.289	1.800	1.560	1.509	1.472	1.318	1.184	1.085	1.013	0.905	0.768	0.726
190	3.717	2.796	2.344	1.840	1.597	1.545	1.509	1.355	1.221	1.121	1.047	0.937	0.797	0.726
195	3.803	2.845	2.399	1.881	1.635	1.582	1.545	1.393	1.259	1.157	1.082	0.970	0.826	0.726
200	3.890	2.894	2.454	1.922	1.672	1.619	1.582	1.430	1.296	1.192	1.117	1.003	0.854	0.726
205	3.976	2.942	2.509	1.962	1.709	1.656	1.619	1.467	1.333	1.228	1.152	1.036	0.883	0.739
210	4.063	2.991	2.564	2.003	1.746	1.693	1.656	1.504	1.371	1.264	1.186	1.069	0.912	0.761
215	4.149	3.040	2.619	2.049	1.783	1.730	1.693	1.542	1.408	1.299	1.221	1.102	0.940	0.784
220	4.236	3.089	2.674	2.111	1.820	1.767	1.729	1.579	1.445	1.335	1.256	1.135	0.969	0.807
225	4.322	3.138	2.729	2.174	1.857	1.804	1.766	1.616	1.483	1.371	1.290	1.167	0.998	0.830
230	4.409	3.186	2.784	2.237	1.894	1.841	1.803	1.653	1.520	1.407	1.325	1.200	1.026	0.853
235	4.495	3.248	2.839	2.300	1.931	1.877	1.840	1.691	1.558	1.442	1.360	1.233	1.055	0.876
240	4.713	3.399	2.894	2.362	1.968	1.914	1.877	1.728	1.595	1.478	1.394	1.266	1.083	0.898
245	4.969	3.551	2.949	2.425	2.006	1.951	1.913	1.765	1.632	1.514	1.429	1.299	1.112	0.921

Thickness is intumescent only. Results apply to Rectangular/Square hollow columns exposed to fire on all sides. Results also apply to Rectangular/Square hollow beams exposed on all sides limited to a maximum protection thickness of 3.286mm.

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CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Columns: 75 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	2.400	1.786	1.385	1.049	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
55	2.529	1.904	1.464	1.104	0.826	0.795	0.775	0.726	0.726	0.726	0.726	0.726	0.726	0.726
60	2.657	2.022	1.543	1.160	0.877	0.844	0.822	0.747	0.726	0.726	0.726	0.726	0.726	0.726
65	2.785	2.099	1.622	1.216	0.928	0.892	0.869	0.787	0.726	0.726	0.726	0.726	0.726	0.726
70	2.914	2.171	1.701	1.272	0.979	0.940	0.915	0.827	0.752	0.726	0.726	0.726	0.726	0.726
75	3.042	2.243	1.781	1.327	1.030	0.989	0.962	0.867	0.791	0.726	0.726	0.726	0.726	0.726
80	3.170	2.315	1.860	1.383	1.081	1.037	1.008	0.908	0.830	0.740	0.726	0.726	0.726	0.726
85	3.291	2.387	1.939	1.439	1.132	1.085	1.055	0.948	0.869	0.779	0.726	0.726	0.726	0.726
90	3.404	2.459	2.018	1.495	1.183	1.134	1.101	0.988	0.908	0.817	0.726	0.726	0.726	0.726
95	3.517	2.531	2.077	1.551	1.234	1.182	1.148	1.028	0.947	0.855	0.765	0.726	0.726	0.726
100	3.630	2.604	2.130	1.606	1.285	1.230	1.194	1.068	0.986	0.894	0.804	0.726	0.726	0.726
105	3.743	2.676	2.183	1.662	1.336	1.278	1.241	1.108	1.025	0.932	0.842	0.726	0.726	0.726
110	3.856	2.748	2.237	1.718	1.387	1.327	1.287	1.148	1.063	0.970	0.881	0.726	0.726	0.726
115	3.969	2.820	2.290	1.774	1.438	1.375	1.334	1.188	1.102	1.009	0.920	0.726	0.726	0.726
120	4.082	2.892	2.344	1.829	1.489	1.423	1.380	1.228	1.141	1.047	0.958	0.728	0.726	0.726
125	4.195	2.964	2.397	1.885	1.540	1.472	1.427	1.269	1.180	1.085	0.997	0.770	0.726	0.726
130	4.308	3.036	2.450	1.941	1.591	1.520	1.473	1.309	1.219	1.123	1.035	0.811	0.726	0.726
135	4.421	3.108	2.504	1.997	1.642	1.568	1.520	1.349	1.258	1.162	1.074	0.853	0.726	0.726
140	4.532	3.180	2.557	2.052	1.693	1.617	1.566	1.389	1.297	1.200	1.113	0.895	0.758	0.726
145	4.635	3.257	2.611	2.108	1.744	1.665	1.613	1.429	1.336	1.238	1.151	0.936	0.795	0.726
150	4.737	3.345	2.664	2.164	1.795	1.713	1.659	1.469	1.375	1.277	1.190	0.978	0.833	0.726
155	4.839	3.433	2.717	2.220	1.846	1.762	1.706	1.509	1.413	1.315	1.229	1.020	0.871	0.738
160	4.942	3.520	2.771	2.276	1.897	1.810	1.752	1.549	1.452	1.353	1.267	1.062	0.908	0.769
165	5.044	3.608	2.824	2.331	1.948	1.858	1.799	1.589	1.491	1.392	1.306	1.103	0.946	0.800
170	5.146	3.696	2.877	2.387	1.999	1.906	1.845	1.630	1.530	1.430	1.345	1.145	0.983	0.831
175	5.249	3.783	2.931	2.443	2.053	1.955	1.892	1.670	1.569	1.468	1.383	1.187	1.021	0.862
180	5.351	3.871	2.984	2.499	2.110	2.003	1.939	1.710	1.608	1.507	1.422	1.228	1.058	0.893
185	5.453	3.959	3.038	2.554	2.168	2.055	1.985	1.750	1.647	1.545	1.461	1.270	1.096	0.924
190	5.556	4.047	3.091	2.610	2.226	2.114	2.032	1.790	1.686	1.583	1.499	1.312	1.133	0.955
195	5.658	4.134	3.144	2.666	2.283	2.173	2.091	1.830	1.725	1.621	1.538	1.353	1.171	0.987
200	5.767	4.222	3.198	2.722	2.341	2.232	2.151	1.870	1.763	1.660	1.577	1.395	1.208	1.018
205	5.888	4.310	3.287	2.777	2.399	2.291	2.211	1.910	1.802	1.698	1.615	1.437	1.246	1.049
210	6.010	4.397	3.428	2.833	2.457	2.350	2.271	1.950	1.841	1.736	1.654	1.478	1.284	1.080
215	6.132	4.485	3.568	2.889	2.514	2.409	2.331	1.991	1.880	1.775	1.692	1.520	1.321	1.111
220	6.254	4.685	3.709	2.945	2.572	2.468	2.391	2.031	1.919	1.813	1.731	1.562	1.359	1.142
225	6.375	4.944	3.849	3.000	2.630	2.527	2.451	2.096	1.958	1.851	1.770	1.603	1.396	1.173
230	6.497	5.202	3.990	3.056	2.688	2.586	2.511	2.163	1.997	1.890	1.808	1.645	1.434	1.204
235	6.619	5.461	4.130	3.112	2.745	2.645	2.571	2.230	2.037	1.928	1.847	1.687	1.471	1.235
240	6.741	5.719	4.271	3.168	2.803	2.703	2.631	2.297	2.102	1.966	1.886	1.728	1.509	1.266
245	6.862	5.847	4.411	3.223	2.861	2.762	2.691	2.364	2.166	2.005	1.924	1.770	1.546	1.297

Thickness is intumescent only. Results apply to Rectangular/Square hollow columns exposed to fire on all sides. Results also apply to Rectangular/Square hollow beams exposed on all sides limited to a maximum protection thickness of 3.286mm.

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CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Columns: 90 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	3.176	2.448	1.880	1.509	1.190	1.117	1.068	0.836	0.726	0.726	0.726	0.726	0.726	0.726
55	3.339	2.581	2.008	1.601	1.254	1.175	1.126	0.896	0.830	0.768	0.726	0.726	0.726	0.726
60	3.502	2.715	2.098	1.694	1.318	1.233	1.184	0.956	0.884	0.817	0.766	0.726	0.726	0.726
65	3.665	2.848	2.177	1.786	1.383	1.291	1.242	1.016	0.939	0.866	0.811	0.726	0.726	0.726
70	3.828	2.981	2.257	1.879	1.447	1.350	1.300	1.076	0.993	0.915	0.856	0.757	0.726	0.726
75	3.991	3.115	2.337	1.971	1.511	1.408	1.357	1.137	1.048	0.964	0.902	0.798	0.726	0.726
80	4.154	3.247	2.417	2.054	1.575	1.466	1.415	1.197	1.102	1.013	0.947	0.839	0.726	0.726
85	4.317	3.376	2.497	2.117	1.640	1.524	1.473	1.257	1.157	1.062	0.992	0.880	0.726	0.726
90	4.480	3.504	2.577	2.179	1.704	1.582	1.531	1.317	1.211	1.111	1.037	0.921	0.726	0.726
95	4.595	3.632	2.657	2.241	1.768	1.640	1.589	1.377	1.266	1.160	1.082	0.962	0.750	0.726
100	4.698	3.760	2.737	2.304	1.832	1.698	1.647	1.437	1.320	1.209	1.128	1.003	0.791	0.726
105	4.801	3.888	2.817	2.366	1.896	1.757	1.705	1.498	1.375	1.258	1.173	1.044	0.833	0.726
110	4.903	4.016	2.897	2.428	1.961	1.815	1.763	1.558	1.429	1.307	1.218	1.085	0.874	0.726
115	5.006	4.144	2.976	2.491	2.025	1.873	1.820	1.618	1.484	1.356	1.263	1.126	0.915	0.726
120	5.108	4.272	3.056	2.553	2.079	1.931	1.878	1.678	1.538	1.405	1.308	1.166	0.956	0.726
125	5.211	4.400	3.136	2.615	2.132	1.989	1.936	1.738	1.593	1.454	1.354	1.207	0.998	0.737
130	5.314	4.526	3.216	2.678	2.184	2.047	1.994	1.798	1.647	1.503	1.399	1.248	1.039	0.776
135	5.416	4.633	3.345	2.740	2.237	2.103	2.052	1.858	1.701	1.552	1.444	1.289	1.080	0.815
140	5.519	4.740	3.483	2.802	2.290	2.159	2.108	1.919	1.756	1.601	1.489	1.330	1.121	0.855
145	5.621	4.848	3.621	2.864	2.342	2.215	2.164	1.979	1.810	1.650	1.535	1.371	1.162	0.894
150	5.724	4.955	3.759	2.927	2.395	2.271	2.220	2.039	1.865	1.699	1.580	1.412	1.204	0.933
155	5.854	5.062	3.897	2.989	2.448	2.327	2.277	2.095	1.919	1.748	1.625	1.453	1.245	0.973
160	5.985	5.169	4.035	3.051	2.500	2.383	2.333	2.152	1.974	1.797	1.670	1.494	1.286	1.012
165	6.116	5.277	4.173	3.114	2.553	2.439	2.389	2.208	2.028	1.846	1.715	1.535	1.327	1.051
170	6.247	5.384	4.311	3.176	2.606	2.495	2.446	2.265	2.086	1.895	1.761	1.576	1.369	1.091
175	6.378	5.491	4.449	3.247	2.658	2.551	2.502	2.321	2.143	1.944	1.806	1.617	1.410	1.130
180	6.509	5.599	4.584	3.363	2.711	2.608	2.558	2.377	2.201	1.993	1.851	1.658	1.451	1.169
185	6.639	5.706	4.717	3.479	2.764	2.664	2.614	2.434	2.259	2.044	1.896	1.699	1.492	1.209
190	6.770	5.818	4.851	3.595	2.816	2.720	2.671	2.490	2.316	2.104	1.941	1.740	1.534	1.248
195	6.901	5.932	4.984	3.712	2.869	2.776	2.727	2.547	2.374	2.165	1.987	1.781	1.575	1.287
200	7.032	6.046	5.117	3.828	2.922	2.832	2.783	2.603	2.431	2.225	2.032	1.822	1.616	1.327
205	7.163	6.160	5.251	3.944	2.974	2.888	2.840	2.660	2.489	2.285	2.094	1.863	1.657	1.366
210	7.294	6.274	5.384	4.060	3.027	2.944	2.896	2.716	2.547	2.346	2.157	1.904	1.699	1.405
215	7.425	6.388	5.517	4.177	3.080	3.000	2.952	2.773	2.604	2.406	2.220	1.945	1.740	1.444
220	7.555	6.502	5.650	4.293	3.132	3.056	3.008	2.829	2.662	2.466	2.283	1.986	1.781	1.484
225	-	6.616	5.788	4.409	3.185	3.112	3.065	2.886	2.720	2.527	2.346	2.027	1.822	1.523
230	-	6.729	5.930	4.548	3.272	3.168	3.121	2.942	2.777	2.587	2.410	2.090	1.864	1.562
235	-	6.843	6.072	4.921	3.533	3.224	3.177	2.999	2.835	2.647	2.473	2.158	1.905	1.602
240	-	6.957	6.214	5.295	3.794	3.472	3.251	3.055	2.892	2.708	2.536	2.225	1.946	1.641
245	-	7.071	6.356	5.668	4.055	3.735	3.513	3.112	2.950	2.768	2.599	2.293	1.987	1.680

Thickness is intumescent only. Results apply to Rectangular/Square hollow columns exposed to fire on all sides. Results also apply to Rectangular/Square hollow beams exposed on all sides limited to a maximum protection thickness of 3.286mm.

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CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Columns: 105 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	3.743	3.141	2.503	1.979	1.612	1.534	1.483	1.299	1.151	0.886	0.838	0.726	0.726	0.726
55	3.963	3.308	2.647	2.078	1.718	1.632	1.577	1.379	1.219	0.955	0.902	0.819	0.726	0.726
60	4.184	3.475	2.791	2.177	1.823	1.731	1.672	1.459	1.287	1.024	0.966	0.878	0.726	0.726
65	4.404	3.643	2.935	2.276	1.929	1.830	1.767	1.538	1.355	1.092	1.031	0.936	0.773	0.726
70	4.586	3.810	3.079	2.375	2.034	1.929	1.861	1.618	1.423	1.161	1.095	0.994	0.822	0.726
75	4.730	3.978	3.223	2.474	2.104	2.027	1.956	1.698	1.491	1.230	1.159	1.052	0.870	0.726
80	4.874	4.145	3.368	2.572	2.174	2.096	2.045	1.777	1.559	1.298	1.224	1.110	0.918	0.735
85	5.018	4.312	3.514	2.671	2.245	2.162	2.109	1.857	1.627	1.367	1.288	1.168	0.966	0.775
90	5.162	4.480	3.660	2.770	2.315	2.229	2.173	1.937	1.695	1.436	1.353	1.227	1.014	0.816
95	5.306	4.601	3.805	2.869	2.385	2.295	2.237	2.016	1.763	1.504	1.417	1.285	1.063	0.856
100	5.450	4.711	3.951	2.968	2.455	2.362	2.300	2.076	1.831	1.573	1.481	1.343	1.111	0.896
105	5.594	4.820	4.097	3.067	2.526	2.428	2.364	2.130	1.900	1.642	1.546	1.401	1.159	0.937
110	5.738	4.929	4.242	3.166	2.596	2.494	2.428	2.184	1.968	1.710	1.610	1.459	1.207	0.977
115	5.883	5.039	4.388	3.283	2.666	2.561	2.492	2.239	2.035	1.779	1.674	1.517	1.255	1.018
120	6.028	5.148	4.529	3.434	2.736	2.627	2.556	2.293	2.088	1.848	1.739	1.576	1.304	1.058
125	6.173	5.257	4.643	3.585	2.807	2.694	2.620	2.347	2.140	1.916	1.803	1.634	1.352	1.098
130	6.318	5.367	4.757	3.736	2.877	2.760	2.683	2.401	2.193	1.985	1.867	1.692	1.400	1.139
135	6.463	5.476	4.871	3.887	2.947	2.826	2.747	2.455	2.245	2.050	1.932	1.750	1.448	1.179
140	6.607	5.585	4.985	4.038	3.017	2.893	2.811	2.509	2.297	2.106	1.996	1.808	1.497	1.219
145	6.752	5.694	5.099	4.189	3.088	2.959	2.875	2.563	2.350	2.162	2.057	1.866	1.545	1.260
150	6.897	5.821	5.214	4.340	3.158	3.025	2.939	2.617	2.402	2.218	2.113	1.925	1.593	1.300
155	7.042	5.955	5.328	4.491	3.228	3.092	3.002	2.672	2.455	2.274	2.169	1.983	1.641	1.340
160	7.187	6.088	5.442	4.626	3.357	3.158	3.066	2.726	2.507	2.330	2.225	2.041	1.689	1.381
165	7.332	6.222	5.556	4.758	3.487	3.225	3.130	2.780	2.560	2.386	2.280	2.097	1.738	1.421
170	7.477	6.356	5.670	4.890	3.617	3.340	3.194	2.834	2.612	2.442	2.336	2.154	1.786	1.461
175	-	6.490	5.783	5.021	3.746	3.459	3.284	2.888	2.664	2.498	2.392	2.210	1.834	1.502
180	-	6.623	5.897	5.153	3.876	3.578	3.407	2.942	2.717	2.554	2.448	2.267	1.882	1.542
185	-	6.757	6.011	5.285	4.006	3.697	3.530	2.996	2.769	2.610	2.504	2.323	1.930	1.582
190	-	6.891	6.124	5.417	4.135	3.816	3.653	3.050	2.822	2.666	2.560	2.379	1.979	1.623
195	-	7.024	6.238	5.549	4.265	3.935	3.776	3.104	2.874	2.722	2.616	2.436	2.027	1.663
200	-	7.158	6.352	5.680	4.395	4.054	3.898	3.159	2.927	2.778	2.672	2.492	2.084	1.703
205	-	7.292	6.465	5.814	4.532	4.173	4.021	3.213	2.979	2.833	2.727	2.549	2.142	1.744
210	-	7.425	6.579	5.949	4.767	4.292	4.144	3.369	3.031	2.889	2.783	2.605	2.200	1.784
215	-	7.559	6.693	6.084	5.001	4.411	4.267	3.570	3.084	2.945	2.839	2.662	2.259	1.824
220	-	7.693	6.806	6.219	5.236	4.561	4.390	3.771	3.136	3.001	2.895	2.718	2.317	1.865
225	-	-	6.920	6.354	5.470	4.934	4.513	3.972	3.189	3.057	2.951	2.774	2.375	1.905
230	-	-	7.034	6.489	5.704	5.308	4.940	4.173	3.298	3.113	3.007	2.831	2.434	1.945
235	-	-	7.147	6.624	5.870	5.682	5.373	4.374	3.596	3.169	3.063	2.887	2.492	1.986
240	-	-	7.261	6.759	6.029	5.865	5.755	4.645	3.894	3.225	3.118	2.944	2.550	2.026
245	-	-	7.375	6.894	6.187	6.022	5.912	5.082	4.193	3.497	3.174	3.000	2.609	2.085

Thickness is intumescent only. Results apply to Rectangular/Square hollow columns exposed to fire on all sides. Results also apply to Rectangular/Square hollow beams exposed on all sides limited to a maximum protection thickness of 3.286mm.

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 5243
JOTUN A/S

Rectangular/Square Hollow Columns: 120 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	4.313	3.637	3.136	2.563	2.030	1.945	1.890	1.693	1.534	1.381	1.262	1.084	0.726	0.726
55	4.587	3.854	3.313	2.719	2.148	2.071	2.024	1.811	1.639	1.475	1.348	1.158	0.851	0.726
60	4.851	4.071	3.490	2.876	2.267	2.176	2.123	1.929	1.745	1.570	1.434	1.232	0.917	0.764
65	5.115	4.289	3.667	3.033	2.386	2.281	2.220	2.043	1.850	1.664	1.520	1.306	0.984	0.814
70	5.379	4.506	3.844	3.190	2.504	2.386	2.316	2.121	1.955	1.758	1.606	1.381	1.050	0.865
75	5.643	4.659	4.021	3.346	2.623	2.491	2.413	2.199	2.052	1.853	1.692	1.455	1.116	0.916
80	5.826	4.809	4.198	3.502	2.742	2.595	2.509	2.277	2.122	1.947	1.778	1.529	1.182	0.966
85	5.973	4.959	4.375	3.658	2.860	2.700	2.605	2.356	2.192	2.039	1.864	1.603	1.248	1.017
90	6.119	5.109	4.540	3.814	2.979	2.805	2.702	2.434	2.263	2.101	1.950	1.678	1.314	1.068
95	6.266	5.260	4.657	3.971	3.098	2.910	2.798	2.512	2.333	2.163	2.035	1.752	1.380	1.118
100	6.412	5.410	4.774	4.127	3.216	3.015	2.894	2.590	2.403	2.224	2.090	1.826	1.447	1.169
105	6.559	5.560	4.892	4.283	3.366	3.120	2.991	2.669	2.473	2.286	2.145	1.900	1.513	1.220
110	6.705	5.710	5.009	4.439	3.520	3.224	3.087	2.747	2.543	2.348	2.200	1.975	1.579	1.270
115	6.852	5.862	5.126	4.577	3.674	3.382	3.183	2.825	2.614	2.410	2.255	2.044	1.645	1.321
120	6.998	6.015	5.243	4.698	3.828	3.543	3.317	2.903	2.684	2.472	2.309	2.096	1.711	1.372
125	7.145	6.167	5.361	4.819	3.982	3.703	3.483	2.982	2.754	2.534	2.364	2.148	1.777	1.422
130	7.291	6.319	5.478	4.940	4.135	3.863	3.649	3.060	2.824	2.595	2.419	2.199	1.843	1.473
135	7.438	6.472	5.595	5.061	4.289	4.024	3.815	3.138	2.895	2.657	2.474	2.251	1.910	1.524
140	-	6.624	5.712	5.181	4.443	4.184	3.981	3.216	2.965	2.719	2.529	2.303	1.976	1.574
145	-	6.777	5.866	5.302	4.586	4.345	4.148	3.364	3.035	2.781	2.584	2.354	2.040	1.625
150	-	6.929	6.025	5.423	4.721	4.505	4.314	3.525	3.105	2.843	2.639	2.406	2.093	1.676
155	-	7.081	6.184	5.544	4.855	4.645	4.480	3.686	3.175	2.904	2.693	2.458	2.147	1.727
160	-	7.234	6.342	5.665	4.989	4.783	4.627	3.847	3.260	2.966	2.748	2.509	2.200	1.777
165	-	7.386	6.501	5.789	5.123	4.921	4.769	4.008	3.392	3.028	2.803	2.561	2.253	1.828
170	-	7.538	6.660	5.917	5.258	5.060	4.911	4.169	3.524	3.090	2.858	2.613	2.306	1.879
175	-	-	6.819	6.044	5.392	5.198	5.052	4.330	3.656	3.152	2.913	2.664	2.359	1.929
180	-	-	6.977	6.172	5.526	5.336	5.194	4.491	3.787	3.214	2.968	2.716	2.412	1.980
185	-	-	7.136	6.299	5.660	5.474	5.336	4.655	3.919	3.332	3.023	2.768	2.465	2.031
190	-	-	7.295	6.426	5.793	5.613	5.478	4.819	4.051	3.469	3.077	2.819	2.518	2.089
195	-	-	7.454	6.554	5.926	5.751	5.620	4.984	4.183	3.606	3.132	2.871	2.571	2.147
200	-	-	7.612	6.681	6.058	5.889	5.762	5.148	4.314	3.743	3.187	2.922	2.624	2.206
205	-	-	-	6.809	6.190	6.026	5.904	5.312	4.446	3.880	3.275	2.974	2.677	2.264
210	-	-	-	6.936	6.322	6.164	6.047	5.477	4.647	4.017	3.470	3.026	2.731	2.323
215	-	-	-	7.063	6.454	6.302	6.189	5.641	4.925	4.154	3.664	3.077	2.784	2.381
220	-	-	-	7.191	6.586	6.439	6.331	5.807	5.202	4.291	3.858	3.129	2.837	2.440
225	-	-	-	7.318	6.719	6.577	6.474	5.973	5.479	4.429	4.053	3.181	2.890	2.498
230	-	-	-	7.446	6.851	6.715	6.616	6.140	5.745	4.710	4.247	3.249	2.943	2.557
235	-	-	-	7.573	6.983	6.853	6.759	6.307	5.917	5.239	4.441	3.555	2.996	2.615
240	-	-	-	-	7.115	6.990	6.901	6.473	6.090	5.739	4.852	3.861	3.049	2.674
245	-	-	-	-	7.247	7.128	7.044	6.640	6.263	5.909	5.394	4.167	3.102	2.732

Thickness is intumescent only. Results apply to Rectangular/Square hollow columns exposed to fire on all sides. Results also apply to Rectangular/Square hollow beams exposed on all sides limited to a maximum protection thickness of 3.286mm.

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

CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Columns: 135 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	5.109	4.134	3.586	3.156	2.619	2.500	2.296	2.076	1.912	1.749	1.621	1.427	1.105	0.802
55	5.458	4.401	3.809	3.340	2.788	2.659	2.473	2.213	2.050	1.879	1.741	1.535	1.192	0.870
60	5.782	4.663	4.031	3.524	2.957	2.818	2.649	2.351	2.160	2.009	1.862	1.642	1.279	0.939
65	6.024	4.920	4.254	3.707	3.126	2.977	2.826	2.489	2.271	2.104	1.983	1.750	1.367	1.008
70	6.265	5.177	4.476	3.891	3.294	3.137	3.003	2.626	2.381	2.191	2.080	1.857	1.454	1.077
75	6.507	5.435	4.651	4.075	3.458	3.297	3.179	2.764	2.492	2.277	2.160	1.965	1.542	1.146
80	6.749	5.692	4.816	4.258	3.622	3.458	3.344	2.902	2.602	2.364	2.239	2.059	1.629	1.215
85	6.990	5.861	4.981	4.442	3.787	3.619	3.503	3.039	2.713	2.450	2.319	2.128	1.716	1.283
90	7.232	6.017	5.146	4.589	3.951	3.781	3.663	3.177	2.823	2.537	2.399	2.197	1.804	1.352
95	7.474	6.173	5.311	4.713	4.116	3.942	3.823	3.327	2.934	2.623	2.479	2.267	1.891	1.421
100	-	6.328	5.476	4.836	4.280	4.104	3.983	3.485	3.044	2.710	2.558	2.336	1.978	1.490
105	-	6.484	5.641	4.960	4.445	4.265	4.142	3.643	3.155	2.797	2.638	2.405	2.052	1.559
110	-	6.640	5.807	5.083	4.587	4.426	4.302	3.801	3.283	2.883	2.718	2.474	2.100	1.628
115	-	6.795	5.973	5.206	4.713	4.573	4.462	3.959	3.448	2.970	2.797	2.544	2.149	1.697
120	-	6.951	6.139	5.330	4.839	4.701	4.601	4.117	3.613	3.056	2.877	2.613	2.198	1.765
125	-	7.107	6.305	5.453	4.966	4.829	4.730	4.275	3.778	3.143	2.957	2.682	2.247	1.834
130	-	7.263	6.471	5.576	5.092	4.956	4.860	4.433	3.943	3.230	3.037	2.751	2.295	1.903
135	-	7.418	6.638	5.700	5.218	5.084	4.989	4.580	4.108	3.413	3.116	2.821	2.344	1.972
140	-	-	6.804	5.881	5.344	5.212	5.118	4.716	4.273	3.597	3.196	2.890	2.393	2.039
145	-	-	6.970	6.077	5.470	5.340	5.247	4.851	4.438	3.780	3.322	2.959	2.442	2.093
150	-	-	7.136	6.274	5.596	5.468	5.376	4.986	4.591	3.964	3.481	3.028	2.491	2.146
155	-	-	7.302	6.470	5.722	5.596	5.505	5.121	4.733	4.147	3.640	3.098	2.539	2.200
160	-	-	7.468	6.667	5.878	5.724	5.635	5.257	4.875	4.331	3.799	3.167	2.588	2.253
165	-	-	7.635	6.863	6.034	5.870	5.767	5.392	5.017	4.514	3.958	3.242	2.637	2.307
170	-	-	-	7.060	6.190	6.016	5.907	5.527	5.158	4.670	4.117	3.363	2.686	2.360
175	-	-	-	7.256	6.346	6.162	6.047	5.662	5.300	4.825	4.276	3.485	2.734	2.414
180	-	-	-	7.453	6.502	6.308	6.187	5.795	5.442	4.981	4.435	3.607	2.783	2.467
185	-	-	-	-	6.659	6.454	6.327	5.926	5.584	5.136	4.604	3.728	2.832	2.521
190	-	-	-	-	6.815	6.600	6.467	6.056	5.726	5.291	4.783	3.850	2.881	2.574
195	-	-	-	-	6.971	6.746	6.607	6.187	5.866	5.447	4.962	3.972	2.929	2.628
200	-	-	-	-	7.127	6.893	6.747	6.317	6.007	5.602	5.140	4.093	2.978	2.682
205	-	-	-	-	7.284	7.039	6.887	6.448	6.147	5.758	5.319	4.215	3.027	2.735
210	-	-	-	-	7.440	7.185	7.027	6.579	6.288	5.913	5.498	4.337	3.076	2.789
215	-	-	-	-	7.596	7.331	7.167	6.709	6.428	6.069	5.676	4.458	3.124	2.842
220	-	-	-	-	-	7.477	7.307	6.840	6.569	6.225	5.852	4.762	3.173	2.896
225	-	-	-	-	-	-	7.447	6.970	6.709	6.381	6.028	5.226	3.222	2.949
230	-	-	-	-	-	-	7.587	7.101	6.850	6.537	6.203	5.689	3.549	3.003
235	-	-	-	-	-	-	7.727	7.232	6.990	6.692	6.378	5.894	3.922	3.056
240	-	-	-	-	-	-	-	7.362	7.131	6.848	6.553	6.077	4.296	3.110
245	-	-	-	-	-	-	-	7.493	7.271	7.004	6.728	6.260	4.812	3.163

Thickness is intumescent only. Results apply to Rectangular/Square hollow columns exposed to fire on all sides. Results also apply to Rectangular/Square hollow beams exposed on all sides limited to a maximum protection thickness of 3.286mm.

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CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Columns: 150 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	5.881	4.660	4.038	3.568	3.175	3.039	2.955	2.657	2.297	2.107	1.983	1.766	1.420	1.128
55	6.230	5.055	4.306	3.794	3.365	3.249	3.161	2.838	2.484	2.263	2.116	1.907	1.538	1.219
60	6.579	5.450	4.572	4.021	3.554	3.434	3.351	3.020	2.671	2.419	2.249	2.044	1.656	1.310
65	6.928	5.798	4.831	4.247	3.744	3.619	3.533	3.201	2.858	2.574	2.382	2.147	1.774	1.401
70	7.277	6.036	5.091	4.473	3.934	3.804	3.715	3.375	3.045	2.730	2.515	2.250	1.892	1.493
75	-	6.274	5.351	4.659	4.123	3.988	3.897	3.548	3.231	2.885	2.648	2.352	2.010	1.584
80	-	6.513	5.610	4.835	4.313	4.173	4.079	3.721	3.399	3.041	2.781	2.455	2.093	1.675
85	-	6.751	5.827	5.011	4.502	4.358	4.261	3.894	3.566	3.196	2.913	2.558	2.167	1.766
90	-	6.989	6.010	5.188	4.635	4.535	4.443	4.067	3.734	3.360	3.046	2.661	2.241	1.857
95	-	7.228	6.193	5.364	4.764	4.664	4.593	4.240	3.901	3.526	3.179	2.764	2.315	1.948
100	-	7.466	6.376	5.540	4.893	4.792	4.722	4.413	4.068	3.691	3.334	2.866	2.389	2.037
105	-	-	6.558	5.717	5.022	4.921	4.851	4.568	4.236	3.857	3.503	2.969	2.463	2.085
110	-	-	6.741	5.903	5.150	5.050	4.980	4.698	4.403	4.023	3.671	3.072	2.537	2.134
115	-	-	6.924	6.090	5.279	5.179	5.109	4.827	4.559	4.188	3.840	3.175	2.611	2.182
120	-	-	7.107	6.277	5.408	5.308	5.238	4.957	4.690	4.354	4.008	3.313	2.685	2.231
125	-	-	7.289	6.465	5.537	5.437	5.367	5.086	4.822	4.519	4.176	3.490	2.759	2.279
130	-	-	7.472	6.652	5.666	5.566	5.496	5.216	4.953	4.653	4.345	3.668	2.833	2.328
135	-	-	-	6.839	5.851	5.695	5.625	5.346	5.085	4.788	4.513	3.845	2.907	2.376
140	-	-	-	7.026	6.087	5.895	5.772	5.475	5.216	4.922	4.651	4.023	2.981	2.425
145	-	-	-	7.213	6.322	6.117	5.987	5.605	5.348	5.056	4.788	4.200	3.055	2.473
150	-	-	-	7.400	6.558	6.340	6.201	5.738	5.479	5.191	4.925	4.378	3.129	2.522
155	-	-	-	7.587	6.794	6.562	6.416	5.923	5.611	5.325	5.062	4.549	3.203	2.570
160	-	-	-	-	7.029	6.785	6.630	6.108	5.746	5.459	5.200	4.698	3.320	2.618
165	-	-	-	-	7.265	7.007	6.844	6.293	5.906	5.594	5.337	4.847	3.461	2.667
170	-	-	-	-	-	7.230	7.059	6.478	6.066	5.728	5.474	4.997	3.601	2.715
175	-	-	-	-	-	7.452	7.273	6.663	6.226	5.865	5.611	5.146	3.742	2.764
180	-	-	-	-	-	7.675	7.488	6.848	6.386	6.003	5.748	5.295	3.882	2.812
185	-	-	-	-	-	-	-	7.033	6.546	6.140	5.884	5.444	4.023	2.861
190	-	-	-	-	-	-	-	7.218	6.706	6.277	6.020	5.593	4.163	2.909
195	-	-	-	-	-	-	-	7.403	6.866	6.415	6.157	5.743	4.303	2.958
200	-	-	-	-	-	-	-	-	7.026	6.552	6.293	5.893	4.444	3.006
205	-	-	-	-	-	-	-	-	7.186	6.690	6.429	6.043	4.653	3.055
210	-	-	-	-	-	-	-	-	7.346	6.827	6.565	6.193	4.933	3.103
215	-	-	-	-	-	-	-	-	7.506	6.964	6.701	6.343	5.214	3.152
220	-	-	-	-	-	-	-	-	7.666	7.102	6.837	6.493	5.494	3.200
225	-	-	-	-	-	-	-	-	-	7.239	6.973	6.643	5.759	3.338
230	-	-	-	-	-	-	-	-	-	7.376	7.110	6.793	5.952	3.609
235	-	-	-	-	-	-	-	-	-	7.514	7.246	6.943	6.144	3.881
240	-	-	-	-	-	-	-	-	-	7.651	7.382	7.093	6.337	4.152
245	-	-	-	-	-	-	-	-	-	-	7.518	7.243	6.529	4.424

Thickness is intumescent only. Results apply to Rectangular/Square hollow columns exposed to fire on all sides. Results also apply to Rectangular/Square hollow beams exposed on all sides limited to a maximum protection thickness of 3.286mm.

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 5243
JOTUN A/S

Rectangular/Square Hollow Columns: 165 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	6.686	5.571	4.485	3.986	3.554	3.506	3.437	3.181	2.920	2.675	2.356	2.101	1.732	1.433
55	7.355	5.900	4.860	4.254	3.784	3.717	3.645	3.377	3.133	2.868	2.565	2.273	1.880	1.553
60	-	6.229	5.235	4.522	4.014	3.929	3.853	3.573	3.332	3.062	2.775	2.444	2.028	1.674
65	-	6.557	5.610	4.782	4.244	4.141	4.061	3.769	3.519	3.254	2.984	2.615	2.145	1.795
70	-	6.886	5.905	5.043	4.474	4.352	4.269	3.965	3.706	3.434	3.194	2.787	2.261	1.916
75	-	7.215	6.163	5.304	4.671	4.556	4.478	4.161	3.893	3.615	3.376	2.958	2.376	2.035
80	-	7.544	6.422	5.564	4.862	4.732	4.652	4.357	4.080	3.795	3.553	3.129	2.492	2.109
85	-	-	6.680	5.809	5.053	4.908	4.819	4.541	4.267	3.976	3.730	3.303	2.608	2.182
90	-	-	6.939	6.028	5.243	5.084	4.985	4.676	4.454	4.156	3.907	3.478	2.723	2.255
95	-	-	7.198	6.247	5.434	5.260	5.152	4.810	4.604	4.337	4.084	3.654	2.839	2.328
100	-	-	7.456	6.466	5.624	5.436	5.319	4.945	4.737	4.517	4.261	3.830	2.955	2.401
105	-	-	-	6.685	5.821	5.613	5.486	5.080	4.870	4.649	4.438	4.006	3.070	2.475
110	-	-	-	6.904	6.024	5.802	5.652	5.215	5.003	4.782	4.590	4.182	3.186	2.548
115	-	-	-	7.123	6.227	6.014	5.849	5.350	5.135	4.914	4.722	4.358	3.340	2.621
120	-	-	-	7.342	6.430	6.226	6.069	5.484	5.268	5.047	4.855	4.529	3.517	2.694
125	-	-	-	7.561	6.633	6.439	6.289	5.619	5.401	5.179	4.987	4.663	3.694	2.768
130	-	-	-	-	6.836	6.651	6.510	5.782	5.533	5.312	5.120	4.796	3.872	2.841
135	-	-	-	-	7.039	6.863	6.730	6.052	5.666	5.445	5.252	4.930	4.049	2.914
140	-	-	-	-	7.242	7.076	6.950	6.322	5.859	5.577	5.384	5.064	4.226	2.987
145	-	-	-	-	7.444	7.288	7.170	6.591	6.102	5.710	5.517	5.197	4.403	3.060
150	-	-	-	-	-	7.500	7.390	6.861	6.345	5.914	5.649	5.331	4.570	3.134
155	-	-	-	-	-	-	7.611	7.131	6.588	6.127	5.806	5.465	4.720	3.207
160	-	-	-	-	-	-	-	7.401	6.831	6.341	5.997	5.598	4.871	3.300
165	-	-	-	-	-	-	-	-	7.073	6.555	6.188	5.733	5.021	3.402
170	-	-	-	-	-	-	-	-	7.316	6.769	6.379	5.890	5.171	3.504
175	-	-	-	-	-	-	-	-	-	6.983	6.570	6.047	5.321	3.606
180	-	-	-	-	-	-	-	-	-	7.197	6.762	6.204	5.471	3.708
185	-	-	-	-	-	-	-	-	-	7.411	6.953	6.361	5.621	3.810
190	-	-	-	-	-	-	-	-	-	7.625	7.144	6.518	5.770	3.911
195	-	-	-	-	-	-	-	-	-	-	7.335	6.676	5.917	4.013
200	-	-	-	-	-	-	-	-	-	-	7.526	6.833	6.065	4.115
205	-	-	-	-	-	-	-	-	-	-	-	6.990	6.212	4.217
210	-	-	-	-	-	-	-	-	-	-	-	7.147	6.359	4.319
215	-	-	-	-	-	-	-	-	-	-	-	7.304	6.506	4.421
220	-	-	-	-	-	-	-	-	-	-	-	7.461	6.653	4.573
225	-	-	-	-	-	-	-	-	-	-	-	7.618	6.801	5.343
230	-	-	-	-	-	-	-	-	-	-	-	-	6.948	5.826
235	-	-	-	-	-	-	-	-	-	-	-	-	7.095	6.025
240	-	-	-	-	-	-	-	-	-	-	-	-	7.242	6.224
245	-	-	-	-	-	-	-	-	-	-	-	-	7.389	6.423

Thickness is intumescent only. Results apply to Rectangular/Square hollow columns exposed to fire on all sides. Results also apply to Rectangular/Square hollow beams exposed on all sides limited to a maximum protection thickness of 3.286mm.

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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

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CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Columns: 180 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	-	6.190	5.225	4.386	3.943	3.840	3.772	3.586	3.383	3.175	2.963	2.650	2.041	1.734
55	-	6.615	5.650	4.745	4.212	4.100	4.026	3.807	3.594	3.376	3.191	2.857	2.225	1.884
60	-	7.040	6.005	5.104	4.480	4.360	4.281	4.028	3.804	3.577	3.391	3.063	2.410	2.034
65	-	-	6.344	5.464	4.753	4.618	4.534	4.249	4.014	3.778	3.586	3.266	2.594	2.156
70	-	-	6.684	5.804	5.026	4.872	4.776	4.471	4.224	3.979	3.781	3.455	2.778	2.278
75	-	-	7.023	6.096	5.299	5.126	5.017	4.675	4.435	4.181	3.976	3.644	2.963	2.400
80	-	-	7.362	6.387	5.572	5.380	5.259	4.875	4.621	4.382	4.171	3.833	3.147	2.521
85	-	-	7.702	6.678	5.832	5.634	5.501	5.074	4.793	4.564	4.366	4.021	3.330	2.643
90	-	-	-	6.969	6.076	5.876	5.742	5.274	4.965	4.709	4.547	4.210	3.511	2.765
95	-	-	-	7.261	6.320	6.112	5.973	5.474	5.136	4.855	4.683	4.399	3.692	2.887
100	-	-	-	7.552	6.564	6.348	6.204	5.674	5.308	5.000	4.819	4.567	3.874	3.008
105	-	-	-	-	6.807	6.584	6.435	5.890	5.480	5.146	4.955	4.702	4.055	3.130
110	-	-	-	-	7.051	6.820	6.666	6.112	5.651	5.291	5.091	4.837	4.236	3.256
115	-	-	-	-	7.295	7.055	6.897	6.334	5.863	5.437	5.227	4.971	4.418	3.399
120	-	-	-	-	-	7.291	7.128	6.556	6.105	5.582	5.363	5.106	4.578	3.541
125	-	-	-	-	-	-	7.359	6.778	6.347	5.729	5.499	5.241	4.715	3.684
130	-	-	-	-	-	-	-	7.000	6.590	6.012	5.635	5.376	4.852	3.827
135	-	-	-	-	-	-	-	7.222	6.832	6.295	5.821	5.511	4.989	3.970
140	-	-	-	-	-	-	-	7.444	7.074	6.578	6.108	5.646	5.126	4.112
145	-	-	-	-	-	-	-	7.666	7.317	6.861	6.395	5.823	5.262	4.255
150	-	-	-	-	-	-	-	-	-	7.144	6.681	6.060	5.399	4.398
155	-	-	-	-	-	-	-	-	-	7.427	6.968	6.298	5.536	4.543
160	-	-	-	-	-	-	-	-	-	-	7.254	6.536	5.673	4.697
165	-	-	-	-	-	-	-	-	-	-	7.541	6.773	5.830	4.851
170	-	-	-	-	-	-	-	-	-	-	-	7.011	5.999	5.005
175	-	-	-	-	-	-	-	-	-	-	-	7.249	6.168	5.159
180	-	-	-	-	-	-	-	-	-	-	-	7.486	6.338	5.313
185	-	-	-	-	-	-	-	-	-	-	-	-	6.507	5.467
190	-	-	-	-	-	-	-	-	-	-	-	-	6.677	5.621
195	-	-	-	-	-	-	-	-	-	-	-	-	6.846	5.774
200	-	-	-	-	-	-	-	-	-	-	-	-	7.015	5.926
205	-	-	-	-	-	-	-	-	-	-	-	-	7.185	6.077
210	-	-	-	-	-	-	-	-	-	-	-	-	7.354	6.229
215	-	-	-	-	-	-	-	-	-	-	-	-	7.523	6.380
220	-	-	-	-	-	-	-	-	-	-	-	-	7.693	6.532
225	-	-	-	-	-	-	-	-	-	-	-	-	-	6.683
230	-	-	-	-	-	-	-	-	-	-	-	-	-	6.835
235	-	-	-	-	-	-	-	-	-	-	-	-	-	6.986
240	-	-	-	-	-	-	-	-	-	-	-	-	-	7.138
245	-	-	-	-	-	-	-	-	-	-	-	-	-	7.289

Thickness is intumescent only. Results apply to Rectangular/Square hollow columns exposed to fire on all sides. Results also apply to Rectangular/Square hollow beams exposed on all sides limited to a maximum protection thickness of 3.286mm.

Issued: 13th May 2014
Revised: 6th June 2024
Valid to: 12th May 2029

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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 5243
JOTUN A/S

Circular Hollow Columns: 30 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
55	0.795	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
60	0.826	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
65	0.857	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
70	0.888	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
75	0.918	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
80	0.949	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
85	0.980	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
90	1.011	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
95	1.041	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
100	1.072	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
105	1.103	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
110	1.134	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
115	1.164	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
120	1.195	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
125	1.226	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
130	1.257	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
135	1.288	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
140	1.318	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
145	1.349	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
150	1.380	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
155	1.411	0.756	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
160	1.441	0.796	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
165	1.472	0.836	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
170	1.503	0.876	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
175	1.534	0.916	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
180	1.564	0.957	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
185	1.595	0.997	0.734	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
190	1.626	1.037	0.769	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
195	1.657	1.077	0.804	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
200	1.688	1.117	0.838	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
205	1.718	1.158	0.873	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
210	1.749	1.198	0.908	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
215	1.780	1.238	0.943	0.731	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
220	1.811	1.278	0.977	0.761	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
225	1.841	1.318	1.012	0.791	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
230	1.872	1.359	1.047	0.820	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726

Thickness is intumescent only. Results apply to Circular 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 5243
JOTUN A/S

Circular Hollow Columns: 45 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	1.119	0.919	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
55	1.164	0.955	0.800	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
60	1.209	0.991	0.833	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
65	1.255	1.026	0.866	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
70	1.300	1.062	0.898	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
75	1.345	1.098	0.931	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
80	1.390	1.134	0.963	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
85	1.435	1.170	0.996	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
90	1.480	1.205	1.029	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
95	1.525	1.241	1.061	0.757	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
100	1.570	1.277	1.094	0.791	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
105	1.615	1.313	1.127	0.825	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
110	1.660	1.348	1.159	0.859	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
115	1.705	1.384	1.192	0.893	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
120	1.750	1.420	1.224	0.927	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
125	1.795	1.456	1.257	0.961	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
130	1.840	1.492	1.290	0.995	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
135	1.885	1.527	1.322	1.029	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
140	1.930	1.563	1.355	1.063	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
145	1.975	1.599	1.387	1.096	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
150	2.020	1.635	1.420	1.130	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
155	2.084	1.671	1.453	1.164	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
160	2.153	1.706	1.485	1.198	0.749	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
165	2.222	1.742	1.518	1.232	0.787	0.754	0.733	0.726	0.726	0.726	0.726	0.726	0.726	0.726
170	2.291	1.778	1.551	1.266	0.826	0.791	0.769	0.726	0.726	0.726	0.726	0.726	0.726	0.726
175	2.360	1.814	1.583	1.300	0.865	0.829	0.805	0.726	0.726	0.726	0.726	0.726	0.726	0.726
180	2.429	1.849	1.616	1.334	0.904	0.866	0.842	0.758	0.726	0.726	0.726	0.726	0.726	0.726
185	2.498	1.885	1.648	1.368	0.942	0.903	0.878	0.791	0.727	0.726	0.726	0.726	0.726	0.726
190	2.567	1.921	1.681	1.402	0.981	0.940	0.914	0.825	0.758	0.726	0.726	0.726	0.726	0.726
195	2.636	1.957	1.714	1.436	1.020	0.978	0.951	0.858	0.788	0.726	0.726	0.726	0.726	0.726
200	2.705	1.993	1.746	1.470	1.058	1.015	0.987	0.891	0.819	0.753	0.726	0.726	0.726	0.726
205	2.774	2.028	1.779	1.504	1.097	1.052	1.024	0.924	0.850	0.782	0.729	0.726	0.726	0.726
210	2.843	2.106	1.812	1.538	1.136	1.090	1.060	0.958	0.881	0.811	0.756	0.726	0.726	0.726
215	2.912	2.185	1.844	1.572	1.175	1.127	1.096	0.991	0.912	0.839	0.783	0.726	0.726	0.726
220	2.981	2.265	1.877	1.605	1.213	1.164	1.133	1.024	0.943	0.868	0.810	0.726	0.726	0.726
225	3.050	2.344	1.909	1.639	1.252	1.202	1.169	1.058	0.974	0.897	0.837	0.748	0.726	0.726
230	3.119	2.424	1.942	1.673	1.291	1.239	1.205	1.091	1.005	0.926	0.865	0.773	0.726	0.726

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

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CERTIFICATE No CF 5243
JOTUN A/S

Circular Hollow Columns: 60 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	1.456	1.212	1.033	0.901	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
55	1.528	1.262	1.076	0.937	0.822	0.788	0.765	0.726	0.726	0.726	0.726	0.726	0.726	0.726
60	1.600	1.313	1.120	0.972	0.855	0.820	0.797	0.726	0.726	0.726	0.726	0.726	0.726	0.726
65	1.672	1.364	1.163	1.008	0.888	0.853	0.829	0.726	0.726	0.726	0.726	0.726	0.726	0.726
70	1.744	1.415	1.206	1.043	0.920	0.885	0.861	0.752	0.726	0.726	0.726	0.726	0.726	0.726
75	1.816	1.466	1.249	1.078	0.953	0.917	0.893	0.784	0.726	0.726	0.726	0.726	0.726	0.726
80	1.888	1.517	1.292	1.114	0.986	0.950	0.925	0.816	0.726	0.726	0.726	0.726	0.726	0.726
85	1.960	1.568	1.335	1.149	1.018	0.982	0.957	0.847	0.726	0.726	0.726	0.726	0.726	0.726
90	2.033	1.619	1.378	1.185	1.051	1.014	0.989	0.879	0.759	0.726	0.726	0.726	0.726	0.726
95	2.135	1.670	1.422	1.220	1.084	1.046	1.021	0.911	0.791	0.726	0.726	0.726	0.726	0.726
100	2.238	1.721	1.465	1.255	1.116	1.079	1.053	0.943	0.823	0.726	0.726	0.726	0.726	0.726
105	2.341	1.772	1.508	1.291	1.149	1.111	1.085	0.974	0.855	0.726	0.726	0.726	0.726	0.726
110	2.443	1.823	1.551	1.326	1.182	1.143	1.117	1.006	0.887	0.726	0.726	0.726	0.726	0.726
115	2.546	1.874	1.594	1.362	1.214	1.176	1.149	1.038	0.919	0.753	0.726	0.726	0.726	0.726
120	2.648	1.925	1.637	1.397	1.247	1.208	1.181	1.069	0.951	0.787	0.726	0.726	0.726	0.726
125	2.751	1.976	1.681	1.432	1.280	1.240	1.213	1.101	0.983	0.821	0.726	0.726	0.726	0.726
130	2.853	2.027	1.724	1.468	1.312	1.273	1.246	1.133	1.015	0.854	0.726	0.726	0.726	0.726
135	2.956	2.101	1.767	1.503	1.345	1.305	1.278	1.165	1.047	0.888	0.726	0.726	0.726	0.726
140	3.059	2.177	1.810	1.539	1.377	1.337	1.310	1.196	1.079	0.922	0.727	0.726	0.726	0.726
145	3.161	2.254	1.853	1.574	1.410	1.369	1.342	1.228	1.112	0.955	0.763	0.726	0.726	0.726
150	3.259	2.330	1.896	1.610	1.443	1.402	1.374	1.260	1.144	0.989	0.800	0.726	0.726	0.726
155	3.342	2.406	1.939	1.645	1.475	1.434	1.406	1.291	1.176	1.022	0.836	0.726	0.726	0.726
160	3.424	2.482	1.983	1.680	1.508	1.466	1.438	1.323	1.208	1.056	0.873	0.749	0.726	0.726
165	3.506	2.558	2.026	1.716	1.541	1.499	1.470	1.355	1.240	1.090	0.909	0.784	0.726	0.726
170	3.589	2.634	2.103	1.751	1.573	1.531	1.502	1.387	1.272	1.123	0.945	0.820	0.726	0.726
175	3.671	2.710	2.183	1.787	1.606	1.563	1.534	1.418	1.304	1.157	0.982	0.855	0.726	0.726
180	3.753	2.786	2.264	1.822	1.639	1.596	1.566	1.450	1.336	1.191	1.018	0.890	0.742	0.726
185	3.836	2.862	2.345	1.857	1.671	1.628	1.598	1.482	1.368	1.224	1.054	0.925	0.773	0.726
190	3.918	2.938	2.425	1.893	1.704	1.660	1.630	1.513	1.400	1.258	1.091	0.960	0.804	0.726
195	4.001	3.015	2.506	1.928	1.737	1.692	1.662	1.545	1.433	1.291	1.127	0.996	0.836	0.726
200	4.083	3.091	2.587	1.964	1.769	1.725	1.694	1.577	1.465	1.325	1.163	1.031	0.867	0.735
205	4.165	3.167	2.667	1.999	1.802	1.757	1.726	1.609	1.497	1.359	1.200	1.066	0.898	0.761
210	4.248	3.245	2.748	2.042	1.835	1.789	1.758	1.640	1.529	1.392	1.236	1.101	0.929	0.786
215	4.330	3.368	2.829	2.135	1.867	1.822	1.790	1.672	1.561	1.426	1.273	1.137	0.960	0.812
220	4.413	3.491	2.909	2.229	1.900	1.854	1.822	1.704	1.593	1.460	1.309	1.172	0.992	0.837
225	4.495	3.615	2.990	2.323	1.933	1.886	1.854	1.735	1.625	1.493	1.345	1.207	1.023	0.863
230	4.666	3.738	3.071	2.417	1.965	1.918	1.886	1.767	1.657	1.527	1.382	1.242	1.054	0.888

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

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CERTIFICATE No CF 5243
JOTUN A/S

Circular Hollow Columns: 75 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	1.785	1.493	1.286	1.129	0.998	0.969	0.951	0.872	0.829	0.726	0.726	0.726	0.726	0.726
55	1.889	1.571	1.345	1.177	1.039	1.008	0.989	0.908	0.863	0.816	0.769	0.726	0.726	0.726
60	1.993	1.650	1.405	1.225	1.080	1.047	1.027	0.943	0.898	0.849	0.801	0.726	0.726	0.726
65	2.208	1.728	1.464	1.273	1.120	1.086	1.065	0.978	0.932	0.882	0.834	0.747	0.726	0.726
70	2.484	1.807	1.524	1.321	1.161	1.126	1.103	1.013	0.966	0.915	0.866	0.779	0.726	0.726
75	2.760	1.885	1.583	1.369	1.202	1.165	1.141	1.049	1.000	0.948	0.899	0.811	0.726	0.726
80	3.036	1.964	1.643	1.417	1.243	1.204	1.179	1.084	1.034	0.981	0.931	0.843	0.726	0.726
85	3.284	2.049	1.703	1.465	1.284	1.243	1.217	1.119	1.068	1.014	0.964	0.875	0.726	0.726
90	3.452	2.171	1.762	1.513	1.324	1.282	1.255	1.155	1.102	1.047	0.996	0.907	0.726	0.726
95	3.621	2.293	1.822	1.561	1.365	1.321	1.293	1.190	1.136	1.080	1.029	0.939	0.726	0.726
100	3.789	2.415	1.881	1.609	1.406	1.361	1.331	1.225	1.170	1.113	1.061	0.971	0.738	0.726
105	3.958	2.538	1.941	1.657	1.447	1.400	1.369	1.261	1.204	1.146	1.094	1.003	0.771	0.726
110	4.126	2.660	2.000	1.705	1.487	1.439	1.407	1.296	1.238	1.179	1.126	1.036	0.804	0.726
115	4.294	2.782	2.079	1.753	1.528	1.478	1.445	1.331	1.272	1.212	1.159	1.068	0.837	0.726
120	4.463	2.904	2.176	1.801	1.569	1.517	1.483	1.367	1.306	1.245	1.191	1.100	0.870	0.726
125	4.582	3.026	2.273	1.849	1.610	1.556	1.520	1.402	1.340	1.279	1.224	1.132	0.904	0.726
130	4.676	3.148	2.370	1.897	1.651	1.596	1.558	1.437	1.374	1.312	1.256	1.164	0.937	0.726
135	4.770	3.261	2.467	1.945	1.691	1.635	1.596	1.472	1.408	1.345	1.289	1.196	0.970	0.726
140	4.864	3.347	2.564	1.993	1.732	1.674	1.634	1.508	1.442	1.378	1.321	1.228	1.003	0.726
145	4.958	3.433	2.661	2.048	1.773	1.713	1.672	1.543	1.476	1.411	1.354	1.260	1.036	0.726
150	5.052	3.519	2.759	2.130	1.814	1.752	1.710	1.578	1.510	1.444	1.386	1.292	1.069	0.742
155	5.146	3.605	2.856	2.212	1.855	1.791	1.748	1.614	1.544	1.477	1.419	1.324	1.102	0.776
160	5.240	3.691	2.953	2.294	1.895	1.831	1.786	1.649	1.578	1.510	1.451	1.356	1.135	0.811
165	5.334	3.777	3.050	2.377	1.936	1.870	1.824	1.684	1.612	1.543	1.484	1.388	1.168	0.845
170	5.428	3.863	3.147	2.459	1.977	1.909	1.862	1.720	1.646	1.576	1.516	1.420	1.202	0.879
175	5.522	3.949	3.245	2.541	2.018	1.948	1.900	1.755	1.680	1.609	1.549	1.452	1.235	0.914
180	5.616	4.035	3.350	2.623	2.091	1.987	1.938	1.790	1.714	1.642	1.581	1.485	1.268	0.948
185	5.710	4.121	3.456	2.705	2.179	2.026	1.976	1.826	1.748	1.675	1.614	1.517	1.301	0.982
190	5.817	4.207	3.562	2.787	2.266	2.112	2.014	1.861	1.782	1.708	1.646	1.549	1.334	1.017
195	5.931	4.293	3.668	2.870	2.354	2.202	2.084	1.896	1.816	1.741	1.679	1.581	1.367	1.051
200	6.045	4.379	3.774	2.952	2.441	2.292	2.177	1.931	1.850	1.774	1.711	1.613	1.400	1.085
205	6.159	4.465	3.880	3.034	2.529	2.382	2.270	1.967	1.884	1.807	1.744	1.645	1.433	1.119
210	6.273	4.612	3.986	3.116	2.616	2.472	2.363	2.002	1.918	1.840	1.776	1.677	1.467	1.154
215	6.387	4.863	4.092	3.198	2.704	2.562	2.456	2.051	1.952	1.873	1.809	1.709	1.500	1.188
220	6.501	5.113	4.198	3.309	2.791	2.652	2.549	2.150	1.986	1.906	1.841	1.741	1.533	1.222
225	6.615	5.364	4.303	3.451	2.879	2.742	2.642	2.249	2.021	1.939	1.874	1.773	1.566	1.257
230	6.729	5.614	4.409	3.592	2.967	2.832	2.735	2.348	2.098	1.973	1.906	1.805	1.599	1.291

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CERTIFICATE No CF 5243
JOTUN A/S

Circular Hollow Columns: 90 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	2.429	1.772	1.531	1.351	1.203	1.169	1.147	1.070	1.010	0.953	0.909	0.840	0.726	0.726
55	3.107	1.877	1.614	1.417	1.255	1.219	1.197	1.116	1.052	0.992	0.946	0.876	0.773	0.726
60	3.440	1.983	1.698	1.483	1.307	1.270	1.246	1.162	1.095	1.032	0.983	0.912	0.807	0.726
65	3.688	2.198	1.781	1.549	1.359	1.320	1.296	1.207	1.138	1.072	1.021	0.947	0.841	0.726
70	3.937	2.501	1.865	1.615	1.411	1.371	1.345	1.253	1.180	1.111	1.058	0.983	0.876	0.726
75	4.185	2.803	1.948	1.681	1.463	1.421	1.395	1.299	1.223	1.151	1.095	1.019	0.910	0.751
80	4.433	3.106	2.034	1.747	1.515	1.472	1.444	1.345	1.266	1.191	1.133	1.055	0.944	0.784
85	4.722	3.366	2.184	1.813	1.567	1.522	1.494	1.390	1.308	1.230	1.170	1.090	0.978	0.817
90	5.032	3.591	2.335	1.879	1.620	1.573	1.543	1.436	1.351	1.270	1.207	1.126	1.012	0.850
95	5.342	3.817	2.485	1.946	1.672	1.623	1.593	1.482	1.394	1.310	1.245	1.162	1.047	0.883
100	5.652	4.043	2.636	2.012	1.724	1.674	1.642	1.528	1.436	1.349	1.282	1.198	1.081	0.916
105	5.792	4.268	2.786	2.110	1.776	1.724	1.692	1.573	1.479	1.389	1.319	1.233	1.115	0.949
110	5.864	4.494	2.937	2.221	1.828	1.775	1.741	1.619	1.522	1.429	1.357	1.269	1.149	0.982
115	5.936	4.654	3.088	2.332	1.880	1.825	1.791	1.665	1.564	1.469	1.394	1.305	1.184	1.015
120	6.008	4.805	3.238	2.442	1.932	1.876	1.840	1.711	1.607	1.508	1.431	1.341	1.218	1.048
125	6.080	4.957	3.419	2.553	1.984	1.926	1.889	1.756	1.650	1.548	1.469	1.376	1.252	1.081
130	6.153	5.109	3.600	2.664	2.040	1.977	1.939	1.802	1.692	1.588	1.506	1.412	1.286	1.114
135	6.225	5.260	3.782	2.775	2.130	2.027	1.988	1.848	1.735	1.627	1.543	1.448	1.321	1.147
140	6.297	5.412	3.963	2.885	2.219	2.107	2.043	1.894	1.778	1.667	1.581	1.484	1.355	1.180
145	6.369	5.563	4.144	2.996	2.309	2.189	2.126	1.939	1.820	1.707	1.618	1.519	1.389	1.212
150	6.441	5.715	4.326	3.107	2.398	2.272	2.208	1.985	1.863	1.746	1.655	1.555	1.423	1.245
155	6.513	5.812	4.507	3.218	2.487	2.354	2.291	2.032	1.906	1.786	1.693	1.591	1.457	1.278
160	6.585	5.898	4.614	3.323	2.577	2.436	2.373	2.116	1.948	1.826	1.730	1.627	1.492	1.311
165	6.658	5.983	4.715	3.426	2.666	2.518	2.455	2.200	1.991	1.865	1.767	1.662	1.526	1.344
170	6.730	6.069	4.816	3.529	2.756	2.600	2.538	2.284	2.037	1.905	1.805	1.698	1.560	1.377
175	6.802	6.155	4.918	3.632	2.845	2.682	2.620	2.368	2.124	1.945	1.842	1.734	1.594	1.410
180	6.874	6.241	5.019	3.736	2.935	2.764	2.703	2.452	2.211	1.984	1.880	1.770	1.629	1.443
185	6.946	6.327	5.120	3.839	3.024	2.846	2.785	2.536	2.298	2.024	1.917	1.805	1.663	1.476
190	7.018	6.413	5.222	3.942	3.114	2.928	2.868	2.620	2.385	2.108	1.954	1.841	1.697	1.509
195	7.090	6.498	5.323	4.046	3.203	3.010	2.950	2.704	2.472	2.199	1.992	1.877	1.731	1.542
200	7.163	6.584	5.424	4.149	3.324	3.092	3.032	2.788	2.559	2.290	2.029	1.913	1.765	1.575
205	7.235	6.670	5.526	4.252	3.467	3.175	3.115	2.872	2.646	2.382	2.124	1.948	1.800	1.608
210	7.307	6.756	5.627	4.355	3.610	3.273	3.197	2.956	2.733	2.473	2.220	1.984	1.834	1.641
215	7.379	6.842	5.728	4.459	3.752	3.437	3.318	3.040	2.820	2.565	2.317	2.020	1.868	1.674
220	7.451	6.928	5.903	4.640	3.895	3.601	3.480	3.124	2.907	2.656	2.414	2.098	1.902	1.707
225	-	7.014	6.087	4.932	4.038	3.765	3.642	3.207	2.994	2.747	2.510	2.193	1.937	1.740
230	-	7.099	6.272	5.224	4.181	3.929	3.804	3.335	3.081	2.839	2.607	2.288	1.971	1.773

Thickness is intumescent only. Results apply to Circular 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 5243
JOTUN A/S

Circular Hollow Columns: 105 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	3.759	2.114	1.774	1.569	1.401	1.363	1.339	1.253	1.185	1.118	1.065	0.985	0.870	0.726
55	4.089	2.741	1.881	1.657	1.473	1.432	1.405	1.312	1.238	1.169	1.114	1.030	0.910	0.797
60	4.418	3.299	1.989	1.744	1.544	1.500	1.472	1.371	1.292	1.219	1.162	1.075	0.950	0.834
65	4.900	3.589	2.231	1.831	1.615	1.568	1.538	1.429	1.345	1.270	1.211	1.121	0.990	0.870
70	5.449	3.879	2.558	1.919	1.687	1.637	1.604	1.488	1.399	1.320	1.259	1.166	1.030	0.907
75	5.808	4.169	2.885	2.006	1.758	1.705	1.670	1.547	1.453	1.371	1.308	1.211	1.070	0.944
80	5.954	4.459	3.211	2.161	1.830	1.774	1.736	1.606	1.506	1.422	1.356	1.256	1.110	0.980
85	6.100	4.803	3.499	2.341	1.901	1.842	1.802	1.665	1.560	1.472	1.405	1.302	1.150	1.017
90	6.246	5.162	3.782	2.521	1.973	1.910	1.869	1.724	1.614	1.523	1.453	1.347	1.190	1.053
95	6.392	5.521	4.066	2.702	2.054	1.979	1.935	1.782	1.667	1.573	1.501	1.392	1.230	1.090
100	6.537	5.777	4.350	2.882	2.176	2.059	2.001	1.841	1.721	1.624	1.550	1.437	1.270	1.126
105	6.683	5.872	4.607	3.062	2.297	2.175	2.093	1.900	1.774	1.675	1.598	1.483	1.310	1.163
110	6.829	5.967	4.824	3.243	2.419	2.291	2.206	1.959	1.828	1.725	1.647	1.528	1.350	1.199
115	6.975	6.062	5.042	3.550	2.541	2.407	2.319	2.018	1.882	1.776	1.695	1.573	1.391	1.236
120	7.121	6.157	5.260	3.856	2.662	2.523	2.431	2.109	1.935	1.826	1.744	1.618	1.431	1.273
125	7.266	6.252	5.477	4.163	2.784	2.639	2.544	2.209	1.989	1.877	1.792	1.664	1.471	1.309
130	7.412	6.346	5.695	4.469	2.906	2.755	2.657	2.309	2.051	1.928	1.841	1.709	1.511	1.346
135	7.558	6.441	5.805	4.606	3.027	2.871	2.770	2.409	2.140	1.978	1.889	1.754	1.551	1.382
140	-	6.536	5.886	4.709	3.149	2.986	2.882	2.509	2.229	2.029	1.938	1.799	1.591	1.419
145	-	6.631	5.967	4.812	3.270	3.102	2.995	2.610	2.318	2.110	1.986	1.845	1.631	1.455
150	-	6.726	6.049	4.916	3.389	3.218	3.108	2.710	2.407	2.192	2.038	1.890	1.671	1.492
155	-	6.821	6.130	5.019	3.509	3.326	3.221	2.810	2.496	2.274	2.121	1.935	1.711	1.528
160	-	6.916	6.211	5.122	3.628	3.432	3.330	2.910	2.585	2.356	2.203	1.980	1.751	1.565
165	-	7.011	6.293	5.225	3.748	3.537	3.438	3.010	2.674	2.438	2.286	2.026	1.791	1.602
170	-	7.105	6.374	5.329	3.867	3.643	3.547	3.110	2.763	2.521	2.369	2.107	1.831	1.638
175	-	7.200	6.455	5.432	3.986	3.749	3.655	3.210	2.852	2.603	2.451	2.191	1.871	1.675
180	-	7.295	6.537	5.535	4.106	3.854	3.764	3.326	2.941	2.685	2.534	2.276	1.911	1.711
185	-	7.390	6.618	5.639	4.225	3.960	3.872	3.449	3.030	2.767	2.617	2.361	1.952	1.748
190	-	7.485	6.700	5.743	4.345	4.066	3.980	3.572	3.119	2.849	2.700	2.446	1.992	1.784
195	-	-	6.781	5.896	4.464	4.171	4.089	3.696	3.208	2.931	2.782	2.531	2.034	1.821
200	-	-	6.862	6.049	4.638	4.277	4.197	3.819	3.335	3.013	2.865	2.616	2.118	1.857
205	-	-	6.944	6.203	4.858	4.383	4.306	3.942	3.483	3.095	2.948	2.700	2.203	1.894
210	-	-	7.025	6.356	5.078	4.489	4.414	4.065	3.630	3.177	3.030	2.785	2.288	1.931
215	-	-	7.106	6.509	5.298	4.749	4.530	4.188	3.778	3.279	3.113	2.870	2.373	1.967
220	-	-	7.188	6.662	5.518	5.071	4.850	4.311	3.926	3.445	3.196	2.955	2.458	2.004
225	-	-	7.269	6.816	5.738	5.394	5.170	4.434	4.074	3.612	3.315	3.040	2.543	2.052
230	-	-	7.351	6.969	5.966	5.717	5.490	4.619	4.222	3.779	3.476	3.125	2.627	2.129

Thickness is intumescent only. Results apply to Circular 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

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CERTIFICATE No CF 5243
JOTUN A/S

Circular Hollow Columns: 120 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	4.631	3.526	1.961	1.786	1.598	1.556	1.528	1.432	1.355	1.280	1.220	1.124	1.009	0.865
55	5.471	3.881	2.571	1.895	1.689	1.643	1.613	1.508	1.425	1.345	1.281	1.180	1.058	0.910
60	5.926	4.237	3.182	2.003	1.779	1.730	1.698	1.584	1.495	1.410	1.342	1.236	1.107	0.955
65	6.200	4.649	3.544	2.292	1.870	1.817	1.783	1.661	1.565	1.475	1.403	1.291	1.156	1.000
70	6.474	5.278	3.880	2.640	1.961	1.904	1.867	1.737	1.636	1.539	1.463	1.347	1.206	1.045
75	6.748	5.783	4.216	2.987	2.080	1.992	1.952	1.813	1.706	1.604	1.524	1.402	1.255	1.090
80	7.022	5.944	4.560	3.331	2.289	2.134	2.043	1.890	1.776	1.669	1.585	1.458	1.304	1.135
85	7.297	6.105	4.978	3.663	2.498	2.318	2.214	1.966	1.846	1.734	1.646	1.514	1.353	1.180
90	7.571	6.267	5.396	3.996	2.708	2.503	2.384	2.051	1.917	1.798	1.707	1.569	1.402	1.225
95	-	6.428	5.762	4.328	2.917	2.688	2.555	2.184	1.987	1.863	1.767	1.625	1.452	1.270
100	-	6.589	5.887	4.632	3.126	2.873	2.725	2.316	2.077	1.928	1.828	1.680	1.501	1.315
105	-	6.751	6.012	4.897	3.399	3.058	2.895	2.449	2.198	1.993	1.889	1.736	1.550	1.360
110	-	6.912	6.137	5.161	3.746	3.245	3.066	2.581	2.319	2.077	1.950	1.792	1.599	1.405
115	-	7.074	6.262	5.426	4.093	3.607	3.236	2.713	2.441	2.188	2.011	1.847	1.649	1.450
120	-	7.235	6.387	5.691	4.440	3.969	3.599	2.846	2.562	2.299	2.099	1.903	1.698	1.495
125	-	7.396	6.513	5.814	4.632	4.331	3.967	2.978	2.683	2.410	2.201	1.959	1.747	1.539
130	-	7.558	6.638	5.905	4.777	4.578	4.335	3.111	2.805	2.520	2.303	2.014	1.796	1.584
135	-	-	6.763	5.997	4.923	4.700	4.573	3.245	2.926	2.631	2.405	2.093	1.845	1.629
140	-	-	6.888	6.088	5.069	4.823	4.683	3.453	3.048	2.742	2.507	2.181	1.895	1.674
145	-	-	7.013	6.179	5.215	4.946	4.792	3.661	3.169	2.853	2.609	2.269	1.944	1.719
150	-	-	7.138	6.270	5.361	5.068	4.901	3.868	3.284	2.964	2.711	2.356	1.993	1.764
155	-	-	7.263	6.361	5.507	5.191	5.011	4.076	3.389	3.075	2.812	2.444	2.050	1.809
160	-	-	7.388	6.452	5.653	5.313	5.120	4.284	3.494	3.186	2.914	2.532	2.130	1.854
165	-	-	7.513	6.543	5.787	5.436	5.229	4.492	3.599	3.298	3.016	2.620	2.210	1.899
170	-	-	-	6.634	5.903	5.558	5.339	4.625	3.704	3.411	3.118	2.708	2.290	1.944
175	-	-	-	6.725	6.019	5.681	5.448	4.748	3.809	3.524	3.220	2.796	2.370	1.989
180	-	-	-	6.816	6.135	5.812	5.557	4.870	3.915	3.637	3.339	2.884	2.450	2.037
185	-	-	-	6.908	6.252	5.952	5.666	4.993	4.020	3.750	3.463	2.971	2.531	2.113
190	-	-	-	6.999	6.368	6.092	5.794	5.115	4.125	3.863	3.587	3.059	2.611	2.190
195	-	-	-	7.090	6.484	6.231	5.961	5.238	4.230	3.975	3.710	3.147	2.691	2.267
200	-	-	-	7.181	6.600	6.371	6.127	5.360	4.335	4.088	3.834	3.235	2.771	2.344
205	-	-	-	7.272	6.717	6.511	6.294	5.483	4.440	4.201	3.958	3.387	2.851	2.421
210	-	-	-	7.363	6.833	6.651	6.460	5.605	4.611	4.314	4.081	3.544	2.931	2.497
215	-	-	-	7.454	6.949	6.790	6.627	5.728	4.973	4.427	4.205	3.700	3.011	2.574
220	-	-	-	7.545	7.065	6.930	6.793	5.981	5.336	4.586	4.329	3.856	3.091	2.651
225	-	-	-	-	7.181	7.070	6.960	6.249	5.699	4.947	4.452	4.012	3.171	2.728
230	-	-	-	-	7.298	7.210	7.126	6.516	5.979	5.308	4.687	4.168	3.264	2.804

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

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CERTIFICATE No CF 5243
JOTUN A/S

Circular Hollow Columns: 135 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	6.163	4.067	3.361	1.896	1.794	1.747	1.717	1.610	1.524	1.441	1.373	1.261	1.137	1.011
55	6.745	4.947	3.754	2.496	1.903	1.853	1.820	1.703	1.611	1.521	1.448	1.330	1.196	1.065
60	7.327	5.798	4.146	3.096	2.013	1.959	1.923	1.797	1.697	1.602	1.524	1.399	1.255	1.119
65	-	6.090	4.555	3.526	2.347	2.140	2.026	1.891	1.784	1.682	1.600	1.468	1.313	1.173
70	-	6.383	5.258	3.903	2.721	2.475	2.330	1.984	1.871	1.762	1.676	1.537	1.372	1.227
75	-	6.676	5.795	4.279	3.095	2.811	2.644	2.153	1.958	1.843	1.751	1.606	1.431	1.281
80	-	6.969	5.970	4.693	3.464	3.147	2.957	2.392	2.061	1.923	1.827	1.675	1.489	1.334
85	-	7.261	6.144	5.170	3.829	3.505	3.275	2.631	2.250	2.004	1.903	1.744	1.548	1.388
90	-	7.554	6.319	5.648	4.195	3.870	3.643	2.870	2.440	2.132	1.978	1.813	1.607	1.442
95	-	-	6.493	5.862	4.555	4.236	4.011	3.109	2.629	2.283	2.073	1.882	1.665	1.496
100	-	-	6.667	6.013	4.881	4.587	4.379	3.415	2.818	2.434	2.210	1.951	1.724	1.550
105	-	-	6.842	6.165	5.207	4.884	4.692	3.802	3.007	2.585	2.347	2.020	1.783	1.603
110	-	-	7.016	6.316	5.532	5.181	4.971	4.189	3.196	2.736	2.484	2.138	1.842	1.657
115	-	-	7.191	6.467	5.782	5.478	5.250	4.548	3.577	2.887	2.621	2.266	1.900	1.711
120	-	-	7.365	6.619	5.896	5.752	5.529	4.746	4.015	3.038	2.758	2.393	1.959	1.765
125	-	-	7.540	6.770	6.011	5.859	5.765	4.943	4.454	3.189	2.895	2.520	2.018	1.819
130	-	-	-	6.921	6.126	5.966	5.866	5.140	4.634	3.469	3.032	2.648	2.103	1.873
135	-	-	-	7.072	6.241	6.072	5.967	5.338	4.768	3.815	3.169	2.775	2.195	1.926
140	-	-	-	7.224	6.356	6.179	6.068	5.535	4.903	4.162	3.332	2.903	2.287	1.980
145	-	-	-	7.375	6.470	6.285	6.169	5.732	5.038	4.508	3.524	3.030	2.379	2.036
150	-	-	-	7.526	6.585	6.392	6.270	5.838	5.172	4.613	3.715	3.158	2.471	2.110
155	-	-	-	-	6.700	6.499	6.371	5.939	5.307	4.710	3.907	3.278	2.563	2.185
160	-	-	-	-	6.815	6.605	6.473	6.041	5.442	4.807	4.098	3.385	2.655	2.259
165	-	-	-	-	6.930	6.712	6.574	6.142	5.576	4.904	4.290	3.493	2.747	2.334
170	-	-	-	-	7.045	6.818	6.675	6.244	5.711	5.001	4.481	3.601	2.839	2.409
175	-	-	-	-	7.159	6.925	6.776	6.345	5.847	5.098	4.628	3.708	2.931	2.483
180	-	-	-	-	7.274	7.032	6.877	6.447	5.982	5.195	4.764	3.816	3.023	2.558
185	-	-	-	-	7.389	7.138	6.978	6.548	6.118	5.292	4.900	3.923	3.115	2.632
190	-	-	-	-	7.504	7.245	7.079	6.650	6.254	5.389	5.036	4.031	3.207	2.707
195	-	-	-	-	-	7.351	7.180	6.751	6.390	5.486	5.172	4.138	3.336	2.782
200	-	-	-	-	-	7.458	7.281	6.853	6.526	5.583	5.308	4.246	3.485	2.856
205	-	-	-	-	-	-	7.382	6.954	6.661	5.680	5.444	4.354	3.634	2.931
210	-	-	-	-	-	-	7.484	7.056	6.797	5.855	5.580	4.461	3.784	3.005
215	-	-	-	-	-	-	-	7.158	6.933	6.157	5.716	4.709	3.933	3.080
220	-	-	-	-	-	-	-	7.259	7.069	6.460	5.996	5.120	4.082	3.154
225	-	-	-	-	-	-	-	7.361	7.204	6.762	6.306	5.532	4.232	3.229
230	-	-	-	-	-	-	-	7.462	7.340	7.064	6.616	5.894	4.381	3.384

Thickness is intumescent only. Results apply to Circular 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 5243
JOTUN A/S

Circular Hollow Columns: 150 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	-	5.830	4.067	3.232	1.904	1.904	1.904	1.786	1.692	1.600	1.525	1.397	1.263	1.135
55	-	6.408	4.605	3.658	2.443	2.170	2.025	1.897	1.795	1.696	1.615	1.480	1.334	1.200
60	-	6.985	5.699	4.085	3.056	2.727	2.531	2.008	1.898	1.792	1.706	1.562	1.405	1.264
65	-	7.562	6.036	4.511	3.522	3.271	3.054	2.358	2.002	1.888	1.796	1.644	1.476	1.329
70	-	-	6.343	5.287	3.924	3.669	3.494	2.765	2.270	1.984	1.887	1.726	1.547	1.393
75	-	-	6.651	5.817	4.327	4.066	3.890	3.173	2.601	2.172	1.977	1.809	1.618	1.457
80	-	-	6.958	6.002	4.816	4.464	4.285	3.568	2.931	2.441	2.125	1.891	1.689	1.522
85	-	-	7.266	6.186	5.385	4.974	4.724	3.962	3.267	2.711	2.355	1.973	1.760	1.586
90	-	-	7.573	6.370	5.804	5.502	5.226	4.355	3.669	2.981	2.584	2.088	1.831	1.650
95	-	-	-	6.554	5.974	5.831	5.729	4.755	4.071	3.257	2.813	2.275	1.902	1.715
100	-	-	-	6.738	6.144	5.996	5.895	5.161	4.473	3.683	3.043	2.463	1.973	1.779
105	-	-	-	6.922	6.315	6.161	6.054	5.567	4.815	4.109	3.306	2.650	2.056	1.844
110	-	-	-	7.106	6.485	6.326	6.213	5.818	5.150	4.529	3.778	2.837	2.189	1.908
115	-	-	-	7.290	6.655	6.491	6.372	5.955	5.485	4.799	4.250	3.025	2.322	1.972
120	-	-	-	7.474	6.825	6.656	6.531	6.092	5.768	5.069	4.603	3.212	2.455	2.039
125	-	-	-	7.659	6.996	6.821	6.690	6.228	5.885	5.339	4.798	3.736	2.588	2.127
130	-	-	-	-	7.166	6.985	6.849	6.365	6.003	5.609	4.992	4.317	2.721	2.214
135	-	-	-	-	7.336	7.150	7.008	6.502	6.120	5.791	5.187	4.594	2.854	2.301
140	-	-	-	-	7.506	7.315	7.167	6.638	6.238	5.890	5.382	4.709	2.987	2.389
145	-	-	-	-	-	7.480	7.326	6.775	6.355	5.989	5.577	4.824	3.120	2.476
150	-	-	-	-	-	-	7.485	6.911	6.473	6.088	5.758	4.940	3.250	2.563
155	-	-	-	-	-	-	-	7.048	6.590	6.187	5.866	5.055	3.357	2.651
160	-	-	-	-	-	-	-	7.185	6.708	6.286	5.975	5.170	3.465	2.738
165	-	-	-	-	-	-	-	7.321	6.825	6.384	6.083	5.285	3.572	2.825
170	-	-	-	-	-	-	-	7.458	6.943	6.483	6.192	5.400	3.679	2.913
175	-	-	-	-	-	-	-	7.595	7.060	6.582	6.300	5.515	3.786	3.000
180	-	-	-	-	-	-	-	-	7.178	6.681	6.409	5.630	3.893	3.087
185	-	-	-	-	-	-	-	-	7.295	6.780	6.517	5.749	4.000	3.175
190	-	-	-	-	-	-	-	-	7.413	6.879	6.626	5.929	4.107	3.276
195	-	-	-	-	-	-	-	-	7.530	6.978	6.734	6.109	4.215	3.417
200	-	-	-	-	-	-	-	-	-	7.077	6.843	6.289	4.322	3.557
205	-	-	-	-	-	-	-	-	-	7.176	6.952	6.470	4.429	3.698
210	-	-	-	-	-	-	-	-	-	7.275	7.060	6.650	4.592	3.839
215	-	-	-	-	-	-	-	-	-	7.373	7.169	6.830	5.047	3.980
220	-	-	-	-	-	-	-	-	-	7.472	7.277	7.010	5.502	4.121
225	-	-	-	-	-	-	-	-	-	7.571	7.386	7.190	5.911	4.262
230	-	-	-	-	-	-	-	-	-	-	7.494	7.371	6.269	4.402

Thickness is intumescent only. Results apply to Circular 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 5243
JOTUN A/S

Circular Hollow Columns: 165 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	-	-	5.625	3.998	3.131	2.928	2.382	1.859	1.859	1.759	1.676	1.533	1.389	1.258
55	-	-	6.201	4.442	3.577	3.366	3.208	2.336	1.979	1.871	1.781	1.628	1.472	1.334
60	-	-	6.778	5.542	4.024	3.804	3.656	2.988	2.338	1.982	1.886	1.724	1.555	1.411
65	-	-	7.355	6.008	4.470	4.242	4.089	3.498	2.877	2.284	1.991	1.819	1.638	1.487
70	-	-	-	6.329	5.342	4.840	4.525	3.919	3.375	2.729	2.273	1.915	1.721	1.563
75	-	-	-	6.649	5.848	5.714	5.366	4.340	3.790	3.174	2.658	2.010	1.805	1.640
80	-	-	-	6.970	6.038	5.921	5.842	4.924	4.204	3.600	3.043	2.291	1.888	1.716
85	-	-	-	7.291	6.228	6.107	6.026	5.628	4.661	4.022	3.456	2.620	1.971	1.792
90	-	-	-	7.612	6.418	6.294	6.211	5.892	5.254	4.444	3.896	2.949	2.086	1.869
95	-	-	-	-	6.608	6.480	6.395	6.072	5.772	4.935	4.337	3.296	2.278	1.945
100	-	-	-	-	6.798	6.667	6.579	6.253	5.952	5.442	4.775	3.788	2.469	2.021
105	-	-	-	-	6.988	6.853	6.763	6.433	6.131	5.805	5.210	4.280	2.661	2.142
110	-	-	-	-	7.178	7.039	6.947	6.613	6.311	5.962	5.646	4.687	2.852	2.268
115	-	-	-	-	7.368	7.226	7.132	6.794	6.490	6.119	5.850	5.013	3.044	2.394
120	-	-	-	-	7.558	7.412	7.316	6.974	6.670	6.276	5.991	5.339	3.236	2.520
125	-	-	-	-	-	7.599	7.500	7.155	6.850	6.434	6.131	5.665	3.988	2.646
130	-	-	-	-	-	-	7.684	7.335	7.029	6.591	6.272	5.830	4.560	2.772
135	-	-	-	-	-	-	-	7.515	7.209	6.748	6.412	5.946	4.692	2.899
140	-	-	-	-	-	-	-	-	7.388	6.905	6.553	6.063	4.825	3.025
145	-	-	-	-	-	-	-	-	7.568	7.062	6.693	6.179	4.957	3.151
150	-	-	-	-	-	-	-	-	-	7.219	6.834	6.296	5.090	3.270
155	-	-	-	-	-	-	-	-	-	7.377	6.974	6.413	5.222	3.373
160	-	-	-	-	-	-	-	-	-	7.534	7.115	6.529	5.355	3.477
165	-	-	-	-	-	-	-	-	-	7.691	7.255	6.646	5.487	3.580
170	-	-	-	-	-	-	-	-	-	-	7.395	6.762	5.620	3.683
175	-	-	-	-	-	-	-	-	-	-	7.536	6.879	5.755	3.786
180	-	-	-	-	-	-	-	-	-	-	7.676	6.995	5.914	3.889
185	-	-	-	-	-	-	-	-	-	-	-	7.112	6.073	3.992
190	-	-	-	-	-	-	-	-	-	-	-	7.229	6.232	4.095
195	-	-	-	-	-	-	-	-	-	-	-	7.345	6.390	4.199
200	-	-	-	-	-	-	-	-	-	-	-	7.462	6.549	4.302
205	-	-	-	-	-	-	-	-	-	-	-	7.578	6.708	4.405
210	-	-	-	-	-	-	-	-	-	-	-	-	6.867	4.508
215	-	-	-	-	-	-	-	-	-	-	-	-	7.026	4.924
220	-	-	-	-	-	-	-	-	-	-	-	-	7.185	5.378
225	-	-	-	-	-	-	-	-	-	-	-	-	7.344	5.821
230	-	-	-	-	-	-	-	-	-	-	-	-	7.503	6.218

Thickness is intumescent only. Results apply to Circular 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 5243
JOTUN A/S

Circular Hollow Columns: 180 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	-	-	-	5.489	3.892	3.650	3.522	3.026	2.002	1.917	1.826	1.668	1.514	1.380
55	-	-	-	6.066	4.324	4.133	3.998	3.482	2.847	2.107	1.946	1.777	1.609	1.468
60	-	-	-	6.643	5.428	4.796	4.473	3.939	3.476	2.810	2.213	1.885	1.704	1.557
65	-	-	-	7.220	5.997	5.832	5.739	4.396	3.917	3.412	2.831	1.994	1.800	1.645
70	-	-	-	-	6.324	6.121	6.003	5.377	4.358	3.854	3.392	2.402	1.895	1.733
75	-	-	-	-	6.651	6.409	6.265	5.873	5.157	4.295	3.842	2.958	1.991	1.821
80	-	-	-	-	6.978	6.698	6.528	6.066	5.820	4.965	4.293	3.478	2.203	1.909
85	-	-	-	-	7.305	6.986	6.790	6.259	6.010	5.766	4.917	3.959	2.496	1.998
90	-	-	-	-	7.633	7.275	7.053	6.451	6.200	5.953	5.717	4.440	2.790	2.145
95	-	-	-	-	-	7.563	7.316	6.644	6.390	6.140	5.923	5.017	3.084	2.325
100	-	-	-	-	-	-	7.578	6.836	6.580	6.327	6.111	5.612	3.520	2.506
105	-	-	-	-	-	-	-	7.029	6.770	6.514	6.299	5.880	4.118	2.687
110	-	-	-	-	-	-	-	7.222	6.960	6.701	6.487	6.059	4.638	2.868
115	-	-	-	-	-	-	-	7.414	7.150	6.888	6.675	6.238	5.002	3.048
120	-	-	-	-	-	-	-	7.607	7.341	7.075	6.863	6.417	5.365	3.229
125	-	-	-	-	-	-	-	-	7.531	7.262	7.051	6.596	5.729	3.701
130	-	-	-	-	-	-	-	-	-	7.449	7.240	6.775	5.873	4.192
135	-	-	-	-	-	-	-	-	-	7.636	7.428	6.954	6.010	4.559
140	-	-	-	-	-	-	-	-	-	-	7.616	7.133	6.147	4.679
145	-	-	-	-	-	-	-	-	-	-	-	7.311	6.284	4.798
150	-	-	-	-	-	-	-	-	-	-	-	7.490	6.421	4.918
155	-	-	-	-	-	-	-	-	-	-	-	7.669	6.558	5.038
160	-	-	-	-	-	-	-	-	-	-	-	-	6.695	5.157
165	-	-	-	-	-	-	-	-	-	-	-	-	6.832	5.277
170	-	-	-	-	-	-	-	-	-	-	-	-	6.969	5.397
175	-	-	-	-	-	-	-	-	-	-	-	-	7.106	5.516
180	-	-	-	-	-	-	-	-	-	-	-	-	7.243	5.636
185	-	-	-	-	-	-	-	-	-	-	-	-	7.380	5.766
190	-	-	-	-	-	-	-	-	-	-	-	-	7.517	5.965
195	-	-	-	-	-	-	-	-	-	-	-	-	7.654	6.164
200	-	-	-	-	-	-	-	-	-	-	-	-	-	6.362
205	-	-	-	-	-	-	-	-	-	-	-	-	-	6.561
210	-	-	-	-	-	-	-	-	-	-	-	-	-	6.760
215	-	-	-	-	-	-	-	-	-	-	-	-	-	6.959
220	-	-	-	-	-	-	-	-	-	-	-	-	-	7.158
225	-	-	-	-	-	-	-	-	-	-	-	-	-	7.356
230	-	-	-	-	-	-	-	-	-	-	-	-	-	7.555

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

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CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Beams: 30 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
55	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
60	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
65	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
70	0.727	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
75	0.760	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
80	0.793	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
85	0.827	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
90	0.860	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
95	0.893	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
100	0.926	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
105	0.959	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
110	0.992	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
115	1.026	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
120	1.059	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
125	1.092	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
130	1.125	0.755	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
135	1.158	0.787	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
140	1.192	0.820	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
145	1.225	0.852	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
150	1.258	0.884	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
155	1.291	0.917	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
160	1.324	0.949	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
165	1.358	0.981	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
170	1.391	1.014	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
175	1.424	1.046	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
180	1.457	1.078	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
185	1.490	1.110	0.739	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
190	1.524	1.143	0.771	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
195	1.557	1.175	0.802	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
200	1.590	1.207	0.834	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
205	1.623	1.240	0.866	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
210	1.656	1.272	0.898	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
215	1.690	1.304	0.930	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
220	1.723	1.336	0.962	0.732	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
225	1.756	1.369	0.993	0.760	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
230	1.789	1.401	1.025	0.788	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
235	1.822	1.433	1.057	0.816	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
240	1.856	1.466	1.089	0.844	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
245	1.889	1.498	1.121	0.871	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726

Thickness is intumescent only. Results apply to Rectangular/Square hollow section beams with concrete slabs with 3-sided fire exposure.

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

CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Beams: 45 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	1.071	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
55	1.125	0.780	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
60	1.178	0.821	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
65	1.232	0.861	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
70	1.285	0.902	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
75	1.338	0.943	0.752	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
80	1.392	0.983	0.788	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
85	1.445	1.024	0.824	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
90	1.499	1.065	0.859	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
95	1.552	1.106	0.895	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
100	1.605	1.146	0.930	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
105	1.659	1.187	0.966	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
110	1.712	1.228	1.002	0.727	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
115	1.766	1.269	1.037	0.762	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
120	1.819	1.309	1.073	0.798	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
125	1.872	1.350	1.109	0.833	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
130	1.926	1.391	1.144	0.868	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
135	1.979	1.431	1.180	0.904	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
140	2.033	1.472	1.216	0.939	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
145	2.080	1.513	1.251	0.974	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
150	2.128	1.554	1.287	1.010	0.760	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
155	2.176	1.594	1.323	1.045	0.794	0.739	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
160	2.223	1.635	1.358	1.081	0.828	0.773	0.737	0.726	0.726	0.726	0.726	0.726	0.726	0.726
165	2.271	1.676	1.394	1.116	0.862	0.806	0.770	0.726	0.726	0.726	0.726	0.726	0.726	0.726
170	2.318	1.716	1.430	1.151	0.896	0.840	0.803	0.726	0.726	0.726	0.726	0.726	0.726	0.726
175	2.366	1.757	1.465	1.187	0.930	0.873	0.837	0.726	0.726	0.726	0.726	0.726	0.726	0.726
180	2.413	1.798	1.501	1.222	0.964	0.907	0.870	0.740	0.726	0.726	0.726	0.726	0.726	0.726
185	2.461	1.839	1.537	1.258	0.998	0.940	0.903	0.772	0.726	0.726	0.726	0.726	0.726	0.726
190	2.508	1.879	1.572	1.293	1.032	0.974	0.936	0.804	0.726	0.726	0.726	0.726	0.726	0.726
195	2.556	1.920	1.608	1.328	1.066	1.007	0.969	0.835	0.748	0.726	0.726	0.726	0.726	0.726
200	2.603	1.961	1.644	1.364	1.099	1.041	1.002	0.867	0.778	0.726	0.726	0.726	0.726	0.726
205	2.651	2.002	1.679	1.399	1.133	1.074	1.035	0.899	0.808	0.743	0.726	0.726	0.726	0.726
210	2.699	2.046	1.715	1.434	1.167	1.108	1.069	0.930	0.838	0.770	0.726	0.726	0.726	0.726
215	2.746	2.102	1.751	1.470	1.201	1.141	1.102	0.962	0.868	0.798	0.747	0.726	0.726	0.726
220	2.794	2.159	1.786	1.505	1.235	1.175	1.135	0.994	0.897	0.825	0.773	0.726	0.726	0.726
225	2.841	2.216	1.822	1.541	1.269	1.208	1.168	1.025	0.927	0.853	0.799	0.726	0.726	0.726
230	2.889	2.273	1.858	1.576	1.303	1.242	1.201	1.057	0.957	0.880	0.825	0.746	0.726	0.726
235	2.936	2.329	1.893	1.611	1.337	1.276	1.234	1.089	0.987	0.908	0.851	0.770	0.726	0.726
240	2.984	2.386	1.929	1.647	1.371	1.309	1.267	1.120	1.017	0.935	0.877	0.793	0.726	0.726
245	3.031	2.443	1.965	1.682	1.405	1.343	1.301	1.152	1.046	0.963	0.903	0.817	0.726	0.726

Thickness is intumescent only. Results apply to Rectangular/Square hollow section beams with concrete slabs with 3-sided fire exposure.

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CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Beams: 60 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	1.684	1.235	0.828	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
55	1.791	1.299	0.882	0.744	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
60	1.898	1.364	0.936	0.785	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
65	2.005	1.429	0.990	0.826	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
70	2.080	1.493	1.044	0.866	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
75	2.142	1.558	1.098	0.907	0.744	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
80	2.205	1.622	1.151	0.947	0.781	0.734	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
85	2.267	1.687	1.205	0.988	0.818	0.771	0.736	0.726	0.726	0.726	0.726	0.726	0.726	0.726
90	2.330	1.752	1.259	1.029	0.856	0.808	0.773	0.726	0.726	0.726	0.726	0.726	0.726	0.726
95	2.393	1.816	1.313	1.069	0.893	0.845	0.809	0.726	0.726	0.726	0.726	0.726	0.726	0.726
100	2.455	1.881	1.367	1.110	0.930	0.881	0.846	0.726	0.726	0.726	0.726	0.726	0.726	0.726
105	2.518	1.945	1.421	1.150	0.967	0.918	0.883	0.726	0.726	0.726	0.726	0.726	0.726	0.726
110	2.580	2.010	1.475	1.191	1.004	0.955	0.920	0.759	0.726	0.726	0.726	0.726	0.726	0.726
115	2.643	2.065	1.529	1.232	1.041	0.992	0.957	0.797	0.726	0.726	0.726	0.726	0.726	0.726
120	2.706	2.113	1.583	1.272	1.078	1.029	0.993	0.834	0.726	0.726	0.726	0.726	0.726	0.726
125	2.768	2.162	1.637	1.313	1.115	1.066	1.030	0.871	0.736	0.726	0.726	0.726	0.726	0.726
130	2.831	2.211	1.691	1.353	1.152	1.103	1.067	0.908	0.773	0.726	0.726	0.726	0.726	0.726
135	2.893	2.260	1.745	1.394	1.189	1.140	1.104	0.946	0.810	0.728	0.726	0.726	0.726	0.726
140	2.956	2.308	1.799	1.435	1.226	1.177	1.141	0.983	0.848	0.764	0.726	0.726	0.726	0.726
145	3.019	2.357	1.853	1.475	1.264	1.213	1.177	1.020	0.885	0.799	0.735	0.726	0.726	0.726
150	3.081	2.406	1.907	1.516	1.301	1.250	1.214	1.057	0.922	0.835	0.770	0.726	0.726	0.726
155	3.144	2.455	1.961	1.556	1.338	1.287	1.251	1.095	0.960	0.871	0.805	0.726	0.726	0.726
160	3.207	2.504	2.014	1.597	1.375	1.324	1.288	1.132	0.997	0.906	0.839	0.740	0.726	0.726
165	3.284	2.552	2.069	1.637	1.412	1.361	1.325	1.169	1.034	0.942	0.874	0.773	0.726	0.726
170	-	2.601	2.124	1.678	1.449	1.398	1.361	1.206	1.072	0.978	0.909	0.806	0.726	0.726
175	-	2.650	2.179	1.719	1.486	1.435	1.398	1.244	1.109	1.014	0.943	0.839	0.726	0.726
180	-	2.699	2.234	1.759	1.523	1.472	1.435	1.281	1.147	1.049	0.978	0.872	0.740	0.726
185	-	2.747	2.289	1.800	1.560	1.509	1.472	1.318	1.184	1.085	1.013	0.905	0.768	0.726
190	-	2.796	2.344	1.840	1.597	1.545	1.509	1.355	1.221	1.121	1.047	0.937	0.797	0.726
195	-	2.845	2.399	1.881	1.635	1.582	1.545	1.393	1.259	1.157	1.082	0.970	0.826	0.726
200	-	2.894	2.454	1.922	1.672	1.619	1.582	1.430	1.296	1.192	1.117	1.003	0.854	0.726
205	-	2.942	2.509	1.962	1.709	1.656	1.619	1.467	1.333	1.228	1.152	1.036	0.883	0.739
210	-	2.991	2.564	2.003	1.746	1.693	1.656	1.504	1.371	1.264	1.186	1.069	0.912	0.761
215	-	3.040	2.619	2.049	1.783	1.730	1.693	1.542	1.408	1.299	1.221	1.102	0.940	0.784
220	-	3.089	2.674	2.111	1.820	1.767	1.729	1.579	1.445	1.335	1.256	1.135	0.969	0.807
225	-	3.138	2.729	2.174	1.857	1.804	1.766	1.616	1.483	1.371	1.290	1.167	0.998	0.830
230	-	3.186	2.784	2.237	1.894	1.841	1.803	1.653	1.520	1.407	1.325	1.200	1.026	0.853
235	-	3.248	2.839	2.300	1.931	1.877	1.840	1.691	1.558	1.442	1.360	1.233	1.055	0.876
240	-	-	2.894	2.362	1.968	1.914	1.877	1.728	1.595	1.478	1.394	1.266	1.083	0.898
245	-	-	2.949	2.425	2.006	1.951	1.913	1.765	1.632	1.514	1.429	1.299	1.112	0.921

Thickness is intumescent only. Results apply to Rectangular/Square hollow section beams with concrete slabs with 3-sided fire exposure.

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CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Beams: 75 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	2.400	1.786	1.385	1.049	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
55	2.529	1.904	1.464	1.104	0.826	0.795	0.775	0.726	0.726	0.726	0.726	0.726	0.726	0.726
60	2.657	2.022	1.543	1.160	0.877	0.844	0.822	0.747	0.726	0.726	0.726	0.726	0.726	0.726
65	2.785	2.099	1.622	1.216	0.928	0.892	0.869	0.787	0.726	0.726	0.726	0.726	0.726	0.726
70	2.914	2.171	1.701	1.272	0.979	0.940	0.915	0.827	0.752	0.726	0.726	0.726	0.726	0.726
75	3.042	2.243	1.781	1.327	1.030	0.989	0.962	0.867	0.791	0.726	0.726	0.726	0.726	0.726
80	3.170	2.315	1.860	1.383	1.081	1.037	1.008	0.908	0.830	0.740	0.726	0.726	0.726	0.726
85	-	2.387	1.939	1.439	1.132	1.085	1.055	0.948	0.869	0.779	0.726	0.726	0.726	0.726
90	-	2.459	2.018	1.495	1.183	1.134	1.101	0.988	0.908	0.817	0.726	0.726	0.726	0.726
95	-	2.531	2.077	1.551	1.234	1.182	1.148	1.028	0.947	0.855	0.765	0.726	0.726	0.726
100	-	2.604	2.130	1.606	1.285	1.230	1.194	1.068	0.986	0.894	0.804	0.726	0.726	0.726
105	-	2.676	2.183	1.662	1.336	1.278	1.241	1.108	1.025	0.932	0.842	0.726	0.726	0.726
110	-	2.748	2.237	1.718	1.387	1.327	1.287	1.148	1.063	0.970	0.881	0.726	0.726	0.726
115	-	2.820	2.290	1.774	1.438	1.375	1.334	1.188	1.102	1.009	0.920	0.726	0.726	0.726
120	-	2.892	2.344	1.829	1.489	1.423	1.380	1.228	1.141	1.047	0.958	0.728	0.726	0.726
125	-	2.964	2.397	1.885	1.540	1.472	1.427	1.269	1.180	1.085	0.997	0.770	0.726	0.726
130	-	3.036	2.450	1.941	1.591	1.520	1.473	1.309	1.219	1.123	1.035	0.811	0.726	0.726
135	-	3.108	2.504	1.997	1.642	1.568	1.520	1.349	1.258	1.162	1.074	0.853	0.726	0.726
140	-	3.180	2.557	2.052	1.693	1.617	1.566	1.389	1.297	1.200	1.113	0.895	0.758	0.726
145	-	3.257	2.611	2.108	1.744	1.665	1.613	1.429	1.336	1.238	1.151	0.936	0.795	0.726
150	-	-	2.664	2.164	1.795	1.713	1.659	1.469	1.375	1.277	1.190	0.978	0.833	0.726
155	-	-	2.717	2.220	1.846	1.762	1.706	1.509	1.413	1.315	1.229	1.020	0.871	0.738
160	-	-	2.771	2.276	1.897	1.810	1.752	1.549	1.452	1.353	1.267	1.062	0.908	0.769
165	-	-	2.824	2.331	1.948	1.858	1.799	1.589	1.491	1.392	1.306	1.103	0.946	0.800
170	-	-	2.877	2.387	1.999	1.906	1.845	1.630	1.530	1.430	1.345	1.145	0.983	0.831
175	-	-	2.931	2.443	2.053	1.955	1.892	1.670	1.569	1.468	1.383	1.187	1.021	0.862
180	-	-	2.984	2.499	2.110	2.003	1.939	1.710	1.608	1.507	1.422	1.228	1.058	0.893
185	-	-	3.038	2.554	2.168	2.055	1.985	1.750	1.647	1.545	1.461	1.270	1.096	0.924
190	-	-	3.091	2.610	2.226	2.114	2.032	1.790	1.686	1.583	1.499	1.312	1.133	0.955
195	-	-	3.144	2.666	2.283	2.173	2.091	1.830	1.725	1.621	1.538	1.353	1.171	0.987
200	-	-	3.198	2.722	2.341	2.232	2.151	1.870	1.763	1.660	1.577	1.395	1.208	1.018
205	-	-	-	2.777	2.399	2.291	2.211	1.910	1.802	1.698	1.615	1.437	1.246	1.049
210	-	-	-	2.833	2.457	2.350	2.271	1.950	1.841	1.736	1.654	1.478	1.284	1.080
215	-	-	-	2.889	2.514	2.409	2.331	1.991	1.880	1.775	1.692	1.520	1.321	1.111
220	-	-	-	2.945	2.572	2.468	2.391	2.031	1.919	1.813	1.731	1.562	1.359	1.142
225	-	-	-	3.000	2.630	2.527	2.451	2.096	1.958	1.851	1.770	1.603	1.396	1.173
230	-	-	-	3.056	2.688	2.586	2.511	2.163	1.997	1.890	1.808	1.645	1.434	1.204
235	-	-	-	3.112	2.745	2.645	2.571	2.230	2.037	1.928	1.847	1.687	1.471	1.235
240	-	-	-	3.168	2.803	2.703	2.631	2.297	2.102	1.966	1.886	1.728	1.509	1.266
245	-	-	-	3.223	2.861	2.762	2.691	2.364	2.166	2.005	1.924	1.770	1.546	1.297

Thickness is intumescent only. Results apply to Rectangular/Square hollow 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 5243
JOTUN A/S

Rectangular/Square Hollow Beams: 90 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	3.176	2.448	1.880	1.509	1.190	1.117	1.068	0.836	0.726	0.726	0.726	0.726	0.726	0.726
55	-	2.581	2.008	1.601	1.254	1.175	1.126	0.896	0.830	0.768	0.726	0.726	0.726	0.726
60	-	2.715	2.098	1.694	1.318	1.233	1.184	0.956	0.884	0.817	0.766	0.726	0.726	0.726
65	-	2.848	2.177	1.786	1.383	1.291	1.242	1.016	0.939	0.866	0.811	0.726	0.726	0.726
70	-	2.981	2.257	1.879	1.447	1.350	1.300	1.076	0.993	0.915	0.856	0.757	0.726	0.726
75	-	3.115	2.337	1.971	1.511	1.408	1.357	1.137	1.048	0.964	0.902	0.798	0.726	0.726
80	-	3.247	2.417	2.054	1.575	1.466	1.415	1.197	1.102	1.013	0.947	0.839	0.726	0.726
85	-	-	2.497	2.117	1.640	1.524	1.473	1.257	1.157	1.062	0.992	0.880	0.726	0.726
90	-	-	2.577	2.179	1.704	1.582	1.531	1.317	1.211	1.111	1.037	0.921	0.726	0.726
95	-	-	2.657	2.241	1.768	1.640	1.589	1.377	1.266	1.160	1.082	0.962	0.750	0.726
100	-	-	2.737	2.304	1.832	1.698	1.647	1.437	1.320	1.209	1.128	1.003	0.791	0.726
105	-	-	2.817	2.366	1.896	1.757	1.705	1.498	1.375	1.258	1.173	1.044	0.833	0.726
110	-	-	2.897	2.428	1.961	1.815	1.763	1.558	1.429	1.307	1.218	1.085	0.874	0.726
115	-	-	2.976	2.491	2.025	1.873	1.820	1.618	1.484	1.356	1.263	1.126	0.915	0.726
120	-	-	3.056	2.553	2.079	1.931	1.878	1.678	1.538	1.405	1.308	1.166	0.956	0.726
125	-	-	3.136	2.615	2.132	1.989	1.936	1.738	1.593	1.454	1.354	1.207	0.998	0.737
130	-	-	3.216	2.678	2.184	2.047	1.994	1.798	1.647	1.503	1.399	1.248	1.039	0.776
135	-	-	-	2.740	2.237	2.103	2.052	1.858	1.701	1.552	1.444	1.289	1.080	0.815
140	-	-	-	2.802	2.290	2.159	2.108	1.919	1.756	1.601	1.489	1.330	1.121	0.855
145	-	-	-	2.864	2.342	2.215	2.164	1.979	1.810	1.650	1.535	1.371	1.162	0.894
150	-	-	-	2.927	2.395	2.271	2.220	2.039	1.865	1.699	1.580	1.412	1.204	0.933
155	-	-	-	2.989	2.448	2.327	2.277	2.095	1.919	1.748	1.625	1.453	1.245	0.973
160	-	-	-	3.051	2.500	2.383	2.333	2.152	1.974	1.797	1.670	1.494	1.286	1.012
165	-	-	-	3.114	2.553	2.439	2.389	2.208	2.028	1.846	1.715	1.535	1.327	1.051
170	-	-	-	3.176	2.606	2.495	2.446	2.265	2.086	1.895	1.761	1.576	1.369	1.091
175	-	-	-	3.247	2.658	2.551	2.502	2.321	2.143	1.944	1.806	1.617	1.410	1.130
180	-	-	-	-	2.711	2.608	2.558	2.377	2.201	1.993	1.851	1.658	1.451	1.169
185	-	-	-	-	2.764	2.664	2.614	2.434	2.259	2.044	1.896	1.699	1.492	1.209
190	-	-	-	-	2.816	2.720	2.671	2.490	2.316	2.104	1.941	1.740	1.534	1.248
195	-	-	-	-	2.869	2.776	2.727	2.547	2.374	2.165	1.987	1.781	1.575	1.287
200	-	-	-	-	2.922	2.832	2.783	2.603	2.431	2.225	2.032	1.822	1.616	1.327
205	-	-	-	-	2.974	2.888	2.840	2.660	2.489	2.285	2.094	1.863	1.657	1.366
210	-	-	-	-	3.027	2.944	2.896	2.716	2.547	2.346	2.157	1.904	1.699	1.405
215	-	-	-	-	3.080	3.000	2.952	2.773	2.604	2.406	2.220	1.945	1.740	1.444
220	-	-	-	-	3.132	3.056	3.008	2.829	2.662	2.466	2.283	1.986	1.781	1.484
225	-	-	-	-	3.185	3.112	3.065	2.886	2.720	2.527	2.346	2.027	1.822	1.523
230	-	-	-	-	3.272	3.168	3.121	2.942	2.777	2.587	2.410	2.090	1.864	1.562
235	-	-	-	-	-	3.224	3.177	2.999	2.835	2.647	2.473	2.158	1.905	1.602
240	-	-	-	-	-	-	3.251	3.055	2.892	2.708	2.536	2.225	1.946	1.641
245	-	-	-	-	-	-	-	3.112	2.950	2.768	2.599	2.293	1.987	1.680

Thickness is intumescent only. Results apply to Rectangular/Square hollow 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 5243
JOTUN A/S

Rectangular/Square Hollow Beams: 105 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	-	3.141	2.503	1.979	1.612	1.534	1.483	1.299	1.151	0.886	0.838	0.726	0.726	0.726
55	-	-	2.647	2.078	1.718	1.632	1.577	1.379	1.219	0.955	0.902	0.819	0.726	0.726
60	-	-	2.791	2.177	1.823	1.731	1.672	1.459	1.287	1.024	0.966	0.878	0.726	0.726
65	-	-	2.935	2.276	1.929	1.830	1.767	1.538	1.355	1.092	1.031	0.936	0.773	0.726
70	-	-	3.079	2.375	2.034	1.929	1.861	1.618	1.423	1.161	1.095	0.994	0.822	0.726
75	-	-	3.223	2.474	2.104	2.027	1.956	1.698	1.491	1.230	1.159	1.052	0.870	0.726
80	-	-	-	2.572	2.174	2.096	2.045	1.777	1.559	1.298	1.224	1.110	0.918	0.735
85	-	-	-	2.671	2.245	2.162	2.109	1.857	1.627	1.367	1.288	1.168	0.966	0.775
90	-	-	-	2.770	2.315	2.229	2.173	1.937	1.695	1.436	1.353	1.227	1.014	0.816
95	-	-	-	2.869	2.385	2.295	2.237	2.016	1.763	1.504	1.417	1.285	1.063	0.856
100	-	-	-	2.968	2.455	2.362	2.300	2.076	1.831	1.573	1.481	1.343	1.111	0.896
105	-	-	-	3.067	2.526	2.428	2.364	2.130	1.900	1.642	1.546	1.401	1.159	0.937
110	-	-	-	3.166	2.596	2.494	2.428	2.184	1.968	1.710	1.610	1.459	1.207	0.977
115	-	-	-	3.283	2.666	2.561	2.492	2.239	2.035	1.779	1.674	1.517	1.255	1.018
120	-	-	-	-	2.736	2.627	2.556	2.293	2.088	1.848	1.739	1.576	1.304	1.058
125	-	-	-	-	2.807	2.694	2.620	2.347	2.140	1.916	1.803	1.634	1.352	1.098
130	-	-	-	-	2.877	2.760	2.683	2.401	2.193	1.985	1.867	1.692	1.400	1.139
135	-	-	-	-	2.947	2.826	2.747	2.455	2.245	2.050	1.932	1.750	1.448	1.179
140	-	-	-	-	3.017	2.893	2.811	2.509	2.297	2.106	1.996	1.808	1.497	1.219
145	-	-	-	-	3.088	2.959	2.875	2.563	2.350	2.162	2.057	1.866	1.545	1.260
150	-	-	-	-	3.158	3.025	2.939	2.617	2.402	2.218	2.113	1.925	1.593	1.300
155	-	-	-	-	3.228	3.092	3.002	2.672	2.455	2.274	2.169	1.983	1.641	1.340
160	-	-	-	-	-	3.158	3.066	2.726	2.507	2.330	2.225	2.041	1.689	1.381
165	-	-	-	-	-	3.225	3.130	2.780	2.560	2.386	2.280	2.097	1.738	1.421
170	-	-	-	-	-	-	3.194	2.834	2.612	2.442	2.336	2.154	1.786	1.461
175	-	-	-	-	-	-	3.284	2.888	2.664	2.498	2.392	2.210	1.834	1.502
180	-	-	-	-	-	-	-	2.942	2.717	2.554	2.448	2.267	1.882	1.542
185	-	-	-	-	-	-	-	2.996	2.769	2.610	2.504	2.323	1.930	1.582
190	-	-	-	-	-	-	-	3.050	2.822	2.666	2.560	2.379	1.979	1.623
195	-	-	-	-	-	-	-	3.104	2.874	2.722	2.616	2.436	2.027	1.663
200	-	-	-	-	-	-	-	3.159	2.927	2.778	2.672	2.492	2.084	1.703
205	-	-	-	-	-	-	-	3.213	2.979	2.833	2.727	2.549	2.142	1.744
210	-	-	-	-	-	-	-	-	3.031	2.889	2.783	2.605	2.200	1.784
215	-	-	-	-	-	-	-	-	3.084	2.945	2.839	2.662	2.259	1.824
220	-	-	-	-	-	-	-	-	3.136	3.001	2.895	2.718	2.317	1.865
225	-	-	-	-	-	-	-	-	3.189	3.057	2.951	2.774	2.375	1.905
230	-	-	-	-	-	-	-	-	-	3.113	3.007	2.831	2.434	1.945
235	-	-	-	-	-	-	-	-	-	3.169	3.063	2.887	2.492	1.986
240	-	-	-	-	-	-	-	-	-	3.225	3.118	2.944	2.550	2.026
245	-	-	-	-	-	-	-	-	-	-	3.174	3.000	2.609	2.085

Thickness is intumescent only. Results apply to Rectangular/Square hollow 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 5243
JOTUN A/S

Rectangular/Square Hollow Beams: 120 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	-	-	3.136	2.563	2.030	1.945	1.890	1.693	1.534	1.381	1.262	1.084	0.726	0.726
55	-	-	-	2.719	2.148	2.071	2.024	1.811	1.639	1.475	1.348	1.158	0.851	0.726
60	-	-	-	2.876	2.267	2.176	2.123	1.929	1.745	1.570	1.434	1.232	0.917	0.764
65	-	-	-	3.033	2.386	2.281	2.220	2.043	1.850	1.664	1.520	1.306	0.984	0.814
70	-	-	-	3.190	2.504	2.386	2.316	2.121	1.955	1.758	1.606	1.381	1.050	0.865
75	-	-	-	-	2.623	2.491	2.413	2.199	2.052	1.853	1.692	1.455	1.116	0.916
80	-	-	-	-	2.742	2.595	2.509	2.277	2.122	1.947	1.778	1.529	1.182	0.966
85	-	-	-	-	2.860	2.700	2.605	2.356	2.192	2.039	1.864	1.603	1.248	1.017
90	-	-	-	-	2.979	2.805	2.702	2.434	2.263	2.101	1.950	1.678	1.314	1.068
95	-	-	-	-	3.098	2.910	2.798	2.512	2.333	2.163	2.035	1.752	1.380	1.118
100	-	-	-	-	3.216	3.015	2.894	2.590	2.403	2.224	2.090	1.826	1.447	1.169
105	-	-	-	-	-	3.120	2.991	2.669	2.473	2.286	2.145	1.900	1.513	1.220
110	-	-	-	-	-	3.224	3.087	2.747	2.543	2.348	2.200	1.975	1.579	1.270
115	-	-	-	-	-	-	3.183	2.825	2.614	2.410	2.255	2.044	1.645	1.321
120	-	-	-	-	-	-	-	2.903	2.684	2.472	2.309	2.096	1.711	1.372
125	-	-	-	-	-	-	-	2.982	2.754	2.534	2.364	2.148	1.777	1.422
130	-	-	-	-	-	-	-	3.060	2.824	2.595	2.419	2.199	1.843	1.473
135	-	-	-	-	-	-	-	3.138	2.895	2.657	2.474	2.251	1.910	1.524
140	-	-	-	-	-	-	-	3.216	2.965	2.719	2.529	2.303	1.976	1.574
145	-	-	-	-	-	-	-	-	3.035	2.781	2.584	2.354	2.040	1.625
150	-	-	-	-	-	-	-	-	3.105	2.843	2.639	2.406	2.093	1.676
155	-	-	-	-	-	-	-	-	3.175	2.904	2.693	2.458	2.147	1.727
160	-	-	-	-	-	-	-	-	3.260	2.966	2.748	2.509	2.200	1.777
165	-	-	-	-	-	-	-	-	-	3.028	2.803	2.561	2.253	1.828
170	-	-	-	-	-	-	-	-	-	3.090	2.858	2.613	2.306	1.879
175	-	-	-	-	-	-	-	-	-	3.152	2.913	2.664	2.359	1.929
180	-	-	-	-	-	-	-	-	-	3.214	2.968	2.716	2.412	1.980
185	-	-	-	-	-	-	-	-	-	-	3.023	2.768	2.465	2.031
190	-	-	-	-	-	-	-	-	-	-	3.077	2.819	2.518	2.089
195	-	-	-	-	-	-	-	-	-	-	3.132	2.871	2.571	2.147
200	-	-	-	-	-	-	-	-	-	-	3.187	2.922	2.624	2.206
205	-	-	-	-	-	-	-	-	-	-	3.275	2.974	2.677	2.264
210	-	-	-	-	-	-	-	-	-	-	-	3.026	2.731	2.323
215	-	-	-	-	-	-	-	-	-	-	-	3.077	2.784	2.381
220	-	-	-	-	-	-	-	-	-	-	-	3.129	2.837	2.440
225	-	-	-	-	-	-	-	-	-	-	-	3.181	2.890	2.498
230	-	-	-	-	-	-	-	-	-	-	-	3.249	2.943	2.557
235	-	-	-	-	-	-	-	-	-	-	-	-	2.996	2.615
240	-	-	-	-	-	-	-	-	-	-	-	-	3.049	2.674
245	-	-	-	-	-	-	-	-	-	-	-	-	3.102	2.732

Thickness is intumescent only. Results apply to Rectangular/Square hollow 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 5243
JOTUN A/S

Rectangular/Square Hollow Beams: 135 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	-	-	-	3.156	2.619	2.500	2.296	2.076	1.912	1.749	1.621	1.427	1.105	0.802
55	-	-	-	-	2.788	2.659	2.473	2.213	2.050	1.879	1.741	1.535	1.192	0.870
60	-	-	-	-	2.957	2.818	2.649	2.351	2.160	2.009	1.862	1.642	1.279	0.939
65	-	-	-	-	3.126	2.977	2.826	2.489	2.271	2.104	1.983	1.750	1.367	1.008
70	-	-	-	-	-	3.137	3.003	2.626	2.381	2.191	2.080	1.857	1.454	1.077
75	-	-	-	-	-	-	3.179	2.764	2.492	2.277	2.160	1.965	1.542	1.146
80	-	-	-	-	-	-	-	2.902	2.602	2.364	2.239	2.059	1.629	1.215
85	-	-	-	-	-	-	-	3.039	2.713	2.450	2.319	2.128	1.716	1.283
90	-	-	-	-	-	-	-	3.177	2.823	2.537	2.399	2.197	1.804	1.352
95	-	-	-	-	-	-	-	-	2.934	2.623	2.479	2.267	1.891	1.421
100	-	-	-	-	-	-	-	-	3.044	2.710	2.558	2.336	1.978	1.490
105	-	-	-	-	-	-	-	-	3.155	2.797	2.638	2.405	2.052	1.559
110	-	-	-	-	-	-	-	-	3.283	2.883	2.718	2.474	2.100	1.628
115	-	-	-	-	-	-	-	-	-	2.970	2.797	2.544	2.149	1.697
120	-	-	-	-	-	-	-	-	-	3.056	2.877	2.613	2.198	1.765
125	-	-	-	-	-	-	-	-	-	3.143	2.957	2.682	2.247	1.834
130	-	-	-	-	-	-	-	-	-	3.230	3.037	2.751	2.295	1.903
135	-	-	-	-	-	-	-	-	-	-	3.116	2.821	2.344	1.972
140	-	-	-	-	-	-	-	-	-	-	3.196	2.890	2.393	2.039
145	-	-	-	-	-	-	-	-	-	-	-	2.959	2.442	2.093
150	-	-	-	-	-	-	-	-	-	-	-	3.028	2.491	2.146
155	-	-	-	-	-	-	-	-	-	-	-	3.098	2.539	2.200
160	-	-	-	-	-	-	-	-	-	-	-	3.167	2.588	2.253
165	-	-	-	-	-	-	-	-	-	-	-	3.242	2.637	2.307
170	-	-	-	-	-	-	-	-	-	-	-	-	2.686	2.360
175	-	-	-	-	-	-	-	-	-	-	-	-	2.734	2.414
180	-	-	-	-	-	-	-	-	-	-	-	-	2.783	2.467
185	-	-	-	-	-	-	-	-	-	-	-	-	2.832	2.521
190	-	-	-	-	-	-	-	-	-	-	-	-	2.881	2.574
195	-	-	-	-	-	-	-	-	-	-	-	-	2.929	2.628
200	-	-	-	-	-	-	-	-	-	-	-	-	2.978	2.682
205	-	-	-	-	-	-	-	-	-	-	-	-	3.027	2.735
210	-	-	-	-	-	-	-	-	-	-	-	-	3.076	2.789
215	-	-	-	-	-	-	-	-	-	-	-	-	3.124	2.842
220	-	-	-	-	-	-	-	-	-	-	-	-	3.173	2.896
225	-	-	-	-	-	-	-	-	-	-	-	-	3.222	2.949
230	-	-	-	-	-	-	-	-	-	-	-	-	-	3.003
235	-	-	-	-	-	-	-	-	-	-	-	-	-	3.056
240	-	-	-	-	-	-	-	-	-	-	-	-	-	3.110
245	-	-	-	-	-	-	-	-	-	-	-	-	-	3.163

Thickness is intumescent only. Results apply to Rectangular/Square hollow section beams with concrete slabs with 3-sided fire exposure.

CXR53737-1, CXR53737-4, CXR53737-7, CXR53737-2, CXR53737-12, CXR53737-8, CXR53737-11, CXR53737-6

Issued: 13th May 2014
Revised: 6th June 2024
Valid to: 12th May 2029

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 5243
JOTUN A/S

Rectangular/Square Hollow Beams: 150 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	-	-	-	-	3.175	3.039	2.955	2.657	2.297	2.107	1.983	1.766	1.420	1.128
55	-	-	-	-	-	3.249	3.161	2.838	2.484	2.263	2.116	1.907	1.538	1.219
60	-	-	-	-	-	-	-	3.020	2.671	2.419	2.249	2.044	1.656	1.310
65	-	-	-	-	-	-	-	3.201	2.858	2.574	2.382	2.147	1.774	1.401
70	-	-	-	-	-	-	-	-	3.045	2.730	2.515	2.250	1.892	1.493
75	-	-	-	-	-	-	-	-	3.231	2.885	2.648	2.352	2.010	1.584
80	-	-	-	-	-	-	-	-	-	3.041	2.781	2.455	2.093	1.675
85	-	-	-	-	-	-	-	-	-	3.196	2.913	2.558	2.167	1.766
90	-	-	-	-	-	-	-	-	-	-	3.046	2.661	2.241	1.857
95	-	-	-	-	-	-	-	-	-	-	3.179	2.764	2.315	1.948
100	-	-	-	-	-	-	-	-	-	-	-	2.866	2.389	2.037
105	-	-	-	-	-	-	-	-	-	-	-	2.969	2.463	2.085
110	-	-	-	-	-	-	-	-	-	-	-	3.072	2.537	2.134
115	-	-	-	-	-	-	-	-	-	-	-	3.175	2.611	2.182
120	-	-	-	-	-	-	-	-	-	-	-	-	2.685	2.231
125	-	-	-	-	-	-	-	-	-	-	-	-	2.759	2.279
130	-	-	-	-	-	-	-	-	-	-	-	-	2.833	2.328
135	-	-	-	-	-	-	-	-	-	-	-	-	2.907	2.376
140	-	-	-	-	-	-	-	-	-	-	-	-	2.981	2.425
145	-	-	-	-	-	-	-	-	-	-	-	-	3.055	2.473
150	-	-	-	-	-	-	-	-	-	-	-	-	3.129	2.522
155	-	-	-	-	-	-	-	-	-	-	-	-	3.203	2.570
160	-	-	-	-	-	-	-	-	-	-	-	-	-	2.618
165	-	-	-	-	-	-	-	-	-	-	-	-	-	2.667
170	-	-	-	-	-	-	-	-	-	-	-	-	-	2.715
175	-	-	-	-	-	-	-	-	-	-	-	-	-	2.764
180	-	-	-	-	-	-	-	-	-	-	-	-	-	2.812
185	-	-	-	-	-	-	-	-	-	-	-	-	-	2.861
190	-	-	-	-	-	-	-	-	-	-	-	-	-	2.909
195	-	-	-	-	-	-	-	-	-	-	-	-	-	2.958
200	-	-	-	-	-	-	-	-	-	-	-	-	-	3.006
205	-	-	-	-	-	-	-	-	-	-	-	-	-	3.055
210	-	-	-	-	-	-	-	-	-	-	-	-	-	3.103
215	-	-	-	-	-	-	-	-	-	-	-	-	-	3.152
220	-	-	-	-	-	-	-	-	-	-	-	-	-	3.200
225	-	-	-	-	-	-	-	-	-	-	-	-	-	-
230	-	-	-	-	-	-	-	-	-	-	-	-	-	-
235	-	-	-	-	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
245	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only. Results apply to Rectangular/Square hollow section beams with concrete slabs with 3-sided fire exposure.

CXR53737-1, CXR53737-4, CXR53737-7, CXR53737-2, CXR53737-12, CXR53737-8, CXR53737-11, CXR53737-6

Issued: 13th May 2014
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CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Beams: 165 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	-	-	-	-	-	-	-	3.181	2.920	2.675	2.356	2.101	1.732	1.433
55	-	-	-	-	-	-	-	-	3.133	2.868	2.565	2.273	1.880	1.553
60	-	-	-	-	-	-	-	-	-	3.062	2.775	2.444	2.028	1.674
65	-	-	-	-	-	-	-	-	-	3.254	2.984	2.615	2.145	1.795
70	-	-	-	-	-	-	-	-	-	-	3.194	2.787	2.261	1.916
75	-	-	-	-	-	-	-	-	-	-	-	2.958	2.376	2.035
80	-	-	-	-	-	-	-	-	-	-	-	3.129	2.492	2.109
85	-	-	-	-	-	-	-	-	-	-	-	-	2.608	2.182
90	-	-	-	-	-	-	-	-	-	-	-	-	2.723	2.255
95	-	-	-	-	-	-	-	-	-	-	-	-	2.839	2.328
100	-	-	-	-	-	-	-	-	-	-	-	-	2.955	2.401
105	-	-	-	-	-	-	-	-	-	-	-	-	3.070	2.475
110	-	-	-	-	-	-	-	-	-	-	-	-	3.186	2.548
115	-	-	-	-	-	-	-	-	-	-	-	-	-	2.621
120	-	-	-	-	-	-	-	-	-	-	-	-	-	2.694
125	-	-	-	-	-	-	-	-	-	-	-	-	-	2.768
130	-	-	-	-	-	-	-	-	-	-	-	-	-	2.841
135	-	-	-	-	-	-	-	-	-	-	-	-	-	2.914
140	-	-	-	-	-	-	-	-	-	-	-	-	-	2.987
145	-	-	-	-	-	-	-	-	-	-	-	-	-	3.060
150	-	-	-	-	-	-	-	-	-	-	-	-	-	3.134
155	-	-	-	-	-	-	-	-	-	-	-	-	-	3.207
160	-	-	-	-	-	-	-	-	-	-	-	-	-	-
165	-	-	-	-	-	-	-	-	-	-	-	-	-	-
170	-	-	-	-	-	-	-	-	-	-	-	-	-	-
175	-	-	-	-	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-	-	-	-	-
185	-	-	-	-	-	-	-	-	-	-	-	-	-	-
190	-	-	-	-	-	-	-	-	-	-	-	-	-	-
195	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-	-	-	-	-	-	-	-
205	-	-	-	-	-	-	-	-	-	-	-	-	-	-
210	-	-	-	-	-	-	-	-	-	-	-	-	-	-
215	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-	-	-	-	-	-	-
225	-	-	-	-	-	-	-	-	-	-	-	-	-	-
230	-	-	-	-	-	-	-	-	-	-	-	-	-	-
235	-	-	-	-	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
245	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only. Results apply to Rectangular/Square hollow section beams with concrete slabs with 3-sided fire exposure.

CXR53737-1, CXR53737-4, CXR53737-7, CXR53737-2, CXR53737-12, CXR53737-8, CXR53737-11, CXR53737-6

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CERTIFICATE No CF 5243
JOTUN A/S

Rectangular/Square Hollow Beams: 180 minutes														
Required Thickness (mm) for a Design Temperature (°C)														
Section Factor (m^{-1})	300	350	400	450	500	512	520	550	575	600	620	650	700	750
50	-	-	-	-	-	-	-	-	-	3.175	2.963	2.650	2.041	1.734
55	-	-	-	-	-	-	-	-	-	-	3.191	2.857	2.225	1.884
60	-	-	-	-	-	-	-	-	-	-	-	3.063	2.410	2.034
65	-	-	-	-	-	-	-	-	-	-	-	3.266	2.594	2.156
70	-	-	-	-	-	-	-	-	-	-	-	-	2.778	2.278
75	-	-	-	-	-	-	-	-	-	-	-	-	2.963	2.400
80	-	-	-	-	-	-	-	-	-	-	-	-	3.147	2.521
85	-	-	-	-	-	-	-	-	-	-	-	-	-	2.643
90	-	-	-	-	-	-	-	-	-	-	-	-	-	2.765
95	-	-	-	-	-	-	-	-	-	-	-	-	-	2.887
100	-	-	-	-	-	-	-	-	-	-	-	-	-	3.008
105	-	-	-	-	-	-	-	-	-	-	-	-	-	3.130
110	-	-	-	-	-	-	-	-	-	-	-	-	-	3.256
115	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-	-	-	-	-
125	-	-	-	-	-	-	-	-	-	-	-	-	-	-
130	-	-	-	-	-	-	-	-	-	-	-	-	-	-
135	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140	-	-	-	-	-	-	-	-	-	-	-	-	-	-
145	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-	-	-	-	-
155	-	-	-	-	-	-	-	-	-	-	-	-	-	-
160	-	-	-	-	-	-	-	-	-	-	-	-	-	-
165	-	-	-	-	-	-	-	-	-	-	-	-	-	-
170	-	-	-	-	-	-	-	-	-	-	-	-	-	-
175	-	-	-	-	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-	-	-	-	-
185	-	-	-	-	-	-	-	-	-	-	-	-	-	-
190	-	-	-	-	-	-	-	-	-	-	-	-	-	-
195	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-	-	-	-	-	-	-	-
205	-	-	-	-	-	-	-	-	-	-	-	-	-	-
210	-	-	-	-	-	-	-	-	-	-	-	-	-	-
215	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-	-	-	-	-	-	-
225	-	-	-	-	-	-	-	-	-	-	-	-	-	-
230	-	-	-	-	-	-	-	-	-	-	-	-	-	-
235	-	-	-	-	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
245	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only. Results apply to Rectangular/Square hollow section beams with concrete slabs with 3-sided fire exposure.

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