CERTIFICATE OF APPROVAL
No CF 5276

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

JOTUN U.A.E. LTD (L.L.C)

Al Quoz Industrial Area, P.O. Box 3671, Dubai
Tel : + 47 33 45 7000 Fax: + 47 33 45 7242

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
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

1. This approval relates to the use of SteelMaster 1200WF for the fire protection of I/H-shaped and hollow steel sections. The precise scope is given in Tables 1 to 32 which show the total dry film thickness of SteelMaster 1200WF (excluding primer and top sealer) required to provide fire resistance periods in accordance with BS476: Parts 20 and 21: 1987 of 30 minutes up to 180 minutes for differing sections and section factors.

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 Sa2.5 or equivalent and primed with a suitable and compatible primer. Specifications of surface preparations, primers and top sealers is available from JOTUN U.A.E. LTD (L.L.C.) whose responsibility is to ensure that SteelMaster 1200WF is compatible for use in respect of both ambient and fire conditions. The total dry film thickness of primer and top sealer should not exceed that tested.

6. The data shown is applicable to SteelMaster 1200WF applied by spray to horizontal, vertical, flexural and compression members supporting loads up to the maximum design loads specified in BS449: Part 2.

7. The approval relates to on-going production. Product and/or its immediate packaging is identified with the manufacturers' name, the product name or number, the CERTIFIRE name or name and mark, together with the CERTIFIRE certificate number and application where appropriate.

8. The data shown in the tables is based on assessments which comply with the criteria for acceptability now incorporated within the CERTIFIRE scheme.

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SteelMaster 1200WF

Table 1: I/H-Section Columns 30 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	0.303	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
35	0.303	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
40	0.303	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
45	0.303	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
50	0.303	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
55	0.303	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
60	0.303	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
65	0.303	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
70	0.303	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
75	0.303	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
80	0.303	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
85	0.320	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
90	0.337	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
95	0.354	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
100	0.371	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
105	0.388	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
110	0.405	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
115	0.422	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
120	0.439	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
125	0.456	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
130	0.473	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
135	0.489	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
140	0.506	0.312	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
145	0.523	0.327	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
150	0.540	0.342	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
155	0.557	0.357	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
160	0.574	0.372	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
165	0.591	0.387	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
170	0.608	0.403	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
175	0.625	0.418	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
180	0.642	0.433	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
185	0.659	0.448	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
190	0.676	0.463	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
195	0.693	0.478	0.288	0.278	0.278	0.278	0.278	0.278	0.278	0.278

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

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SteelMaster 1200WF

Table 1: I/H-Section Columns 30 Minutes (continued)										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
200	0.710	0.493	0.303	0.278	0.278	0.278	0.278	0.278	0.278	0.278
205	0.726	0.508	0.317	0.278	0.278	0.278	0.278	0.278	0.278	0.278
210	0.743	0.523	0.332	0.278	0.278	0.278	0.278	0.278	0.278	0.278
215	0.760	0.538	0.347	0.278	0.278	0.278	0.278	0.278	0.278	0.278
220	0.777	0.553	0.362	0.278	0.278	0.278	0.278	0.278	0.278	0.278
225	0.794	0.569	0.376	0.278	0.278	0.278	0.278	0.278	0.278	0.278
230	0.811	0.584	0.391	0.278	0.278	0.278	0.278	0.278	0.278	0.278
235	0.828	0.599	0.406	0.278	0.278	0.278	0.278	0.278	0.278	0.278
240	0.845	0.614	0.420	0.278	0.278	0.278	0.278	0.278	0.278	0.278
245	0.862	0.629	0.435	0.278	0.278	0.278	0.278	0.278	0.278	0.278
250	0.879	0.644	0.450	0.288	0.278	0.278	0.278	0.278	0.278	0.278
255	0.896	0.659	0.464	0.301	0.278	0.278	0.278	0.278	0.278	0.278
260	0.913	0.674	0.479	0.314	0.278	0.278	0.278	0.278	0.278	0.278
265	0.930	0.689	0.494	0.328	0.278	0.278	0.278	0.278	0.278	0.278
270	0.947	0.704	0.509	0.341	0.278	0.278	0.278	0.278	0.278	0.278
275	0.963	0.719	0.523	0.355	0.278	0.278	0.278	0.278	0.278	0.278
280	0.980	0.735	0.538	0.368	0.278	0.278	0.278	0.278	0.278	0.278
285	0.997	0.750	0.553	0.382	0.278	0.278	0.278	0.278	0.278	0.278
290	1.014	0.765	0.567	0.395	0.278	0.278	0.278	0.278	0.278	0.278
295	1.036	0.780	0.582	0.409	0.278	0.278	0.278	0.278	0.278	0.278
300	1.061	0.795	0.597	0.422	0.278	0.278	0.278	0.278	0.278	0.278
305	1.086	0.810	0.612	0.436	0.278	0.278	0.278	0.278	0.278	0.278
310	1.111	0.825	0.626	0.449	0.278	0.278	0.278	0.278	0.278	0.278
315	1.136	0.840	0.641	0.463	0.278	0.278	0.278	0.278	0.278	0.278
320	1.160	0.855	0.656	0.476	0.281	0.278	0.278	0.278	0.278	0.278
325	1.185	0.870	0.670	0.490	0.294	0.278	0.278	0.278	0.278	0.278
330	1.210	0.885	0.685	0.503	0.306	0.278	0.278	0.278	0.278	0.278
335	1.235	0.901	0.700	0.517	0.319	0.278	0.278	0.278	0.278	0.278
340	1.260	0.916	0.715	0.530	0.332	0.278	0.278	0.278	0.278	0.278
345	1.285	0.931	0.729	0.543	0.345	0.278	0.278	0.278	0.278	0.278
350	1.310	0.946	0.744	0.557	0.357	0.278	0.278	0.278	0.278	0.278
355	1.335	0.961	0.759	0.570	0.370	0.278	0.278	0.278	0.278	0.278
360	1.360	0.976	0.773	0.584	0.383	0.278	0.278	0.278	0.278	0.278
365	1.385	0.991	0.788	0.597	0.396	0.278	0.278	0.278	0.278	0.278
370	1.409	1.006	0.803	0.611	0.409	0.288	0.278	0.278	0.278	0.278
375	1.434	1.021	0.817	0.624	0.421	0.300	0.278	0.278	0.278	0.278
380	1.459	1.045	0.832	0.638	0.434	0.312	0.278	0.278	0.278	0.278
385	1.484	1.068	0.847	0.651	0.447	0.324	0.278	0.278	0.278	0.278
390	1.509	1.091	0.862	0.665	0.460	0.336	0.278	0.278	0.278	0.278

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

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SteelMaster 1200WF

Table 2: I/H-Section Columns 45 Minutes

Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
35	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
40	0.322	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
45	0.347	0.288	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
50	0.372	0.308	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
55	0.397	0.329	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
60	0.422	0.349	0.280	0.278	0.278	0.278	0.278	0.278	0.278	0.278
65	0.447	0.370	0.297	0.278	0.278	0.278	0.278	0.278	0.278	0.278
70	0.472	0.390	0.315	0.278	0.278	0.278	0.278	0.278	0.278	0.278
75	0.497	0.411	0.332	0.278	0.278	0.278	0.278	0.278	0.278	0.278
80	0.522	0.431	0.350	0.278	0.278	0.278	0.278	0.278	0.278	0.278
85	0.547	0.452	0.367	0.279	0.278	0.278	0.278	0.278	0.278	0.278
90	0.572	0.472	0.385	0.294	0.278	0.278	0.278	0.278	0.278	0.278
95	0.597	0.492	0.402	0.309	0.278	0.278	0.278	0.278	0.278	0.278
100	0.622	0.513	0.419	0.325	0.278	0.278	0.278	0.278	0.278	0.278
105	0.647	0.533	0.437	0.340	0.278	0.278	0.278	0.278	0.278	0.278
110	0.672	0.554	0.454	0.355	0.278	0.278	0.278	0.278	0.278	0.278
115	0.697	0.574	0.472	0.370	0.278	0.278	0.278	0.278	0.278	0.278
120	0.722	0.595	0.489	0.385	0.278	0.278	0.278	0.278	0.278	0.278
125	0.747	0.615	0.507	0.400	0.282	0.278	0.278	0.278	0.278	0.278
130	0.772	0.636	0.524	0.416	0.296	0.278	0.278	0.278	0.278	0.278
135	0.797	0.656	0.542	0.431	0.310	0.278	0.278	0.278	0.278	0.278
140	0.822	0.676	0.559	0.446	0.325	0.278	0.278	0.278	0.278	0.278
145	0.847	0.697	0.577	0.461	0.339	0.278	0.278	0.278	0.278	0.278
150	0.872	0.717	0.594	0.476	0.353	0.278	0.278	0.278	0.278	0.278
155	0.897	0.738	0.611	0.491	0.367	0.278	0.278	0.278	0.278	0.278
160	0.922	0.758	0.629	0.507	0.381	0.278	0.278	0.278	0.278	0.278
165	0.947	0.779	0.646	0.522	0.395	0.278	0.278	0.278	0.278	0.278
170	0.972	0.799	0.664	0.537	0.409	0.280	0.278	0.278	0.278	0.278
175	0.997	0.820	0.681	0.552	0.424	0.294	0.278	0.278	0.278	0.278
180	1.022	0.840	0.699	0.567	0.438	0.307	0.278	0.278	0.278	0.278
185	1.058	0.860	0.716	0.582	0.452	0.321	0.286	0.278	0.278	0.278
190	1.093	0.881	0.734	0.598	0.466	0.334	0.299	0.278	0.278	0.278
195	1.129	0.901	0.751	0.613	0.480	0.348	0.311	0.278	0.278	0.278

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

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SteelMaster 1200WF

Table 2: I/H-Section Columns 45 Minutes (continued)										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
200	1.164	0.922	0.768	0.628	0.494	0.361	0.324	0.278	0.278	0.278
205	1.200	0.942	0.786	0.643	0.508	0.375	0.337	0.280	0.278	0.278
210	1.235	0.963	0.803	0.658	0.523	0.388	0.350	0.292	0.278	0.278
215	1.271	0.983	0.821	0.673	0.537	0.402	0.363	0.304	0.278	0.278
220	1.306	1.004	0.838	0.688	0.551	0.415	0.376	0.316	0.278	0.278
225	1.342	1.026	0.856	0.704	0.565	0.429	0.388	0.328	0.278	0.278
230	1.377	1.058	0.873	0.719	0.579	0.442	0.401	0.340	0.278	0.278
235	1.413	1.090	0.891	0.734	0.593	0.455	0.414	0.352	0.278	0.278
240	1.448	1.121	0.908	0.749	0.607	0.469	0.427	0.364	0.278	0.278
245	1.484	1.153	0.926	0.764	0.622	0.482	0.440	0.376	0.278	0.278
250	1.519	1.185	0.943	0.779	0.636	0.496	0.453	0.388	0.278	0.278
255	1.555	1.217	0.960	0.795	0.650	0.509	0.466	0.400	0.278	0.278
260	1.590	1.249	0.978	0.810	0.664	0.523	0.478	0.412	0.289	0.278
265	1.626	1.281	0.995	0.825	0.678	0.536	0.491	0.424	0.299	0.278
270	1.661	1.313	1.013	0.840	0.692	0.550	0.504	0.435	0.310	0.278
275	1.697	1.345	1.037	0.855	0.706	0.563	0.517	0.447	0.320	0.278
280	1.732	1.377	1.067	0.870	0.721	0.577	0.530	0.459	0.331	0.278
285	1.768	1.408	1.097	0.886	0.735	0.590	0.543	0.471	0.341	0.278
290	1.804	1.440	1.127	0.901	0.749	0.604	0.555	0.483	0.352	0.278
295	1.839	1.472	1.157	0.916	0.763	0.617	0.568	0.495	0.362	0.278
300	1.875	1.504	1.187	0.931	0.777	0.631	0.581	0.507	0.373	0.278
305	1.910	1.536	1.217	0.946	0.791	0.644	0.594	0.519	0.383	0.278
310	1.946	1.568	1.248	0.961	0.805	0.658	0.607	0.531	0.394	0.278
315	1.981	1.600	1.278	0.977	0.820	0.671	0.620	0.543	0.404	0.278
320	2.017	1.632	1.308	0.992	0.834	0.684	0.632	0.555	0.415	0.278
325	2.052	1.663	1.338	1.007	0.848	0.698	0.645	0.567	0.426	0.278
330	2.088	1.695	1.368	1.023	0.862	0.711	0.658	0.579	0.436	0.279
335	2.123	1.727	1.398	1.052	0.876	0.725	0.671	0.591	0.447	0.288
340	2.159	1.759	1.428	1.081	0.890	0.738	0.684	0.603	0.457	0.297
345	2.194	1.791	1.458	1.110	0.904	0.752	0.697	0.615	0.468	0.306
350	2.230	1.823	1.488	1.139	0.919	0.765	0.710	0.627	0.478	0.315
355	2.265	1.855	1.518	1.168	0.933	0.779	0.722	0.639	0.489	0.324
360	2.301	1.887	1.548	1.197	0.947	0.792	0.735	0.651	0.499	0.333
365	2.336	1.919	1.578	1.226	0.961	0.806	0.748	0.663	0.510	0.342
370	2.372	1.950	1.609	1.255	0.975	0.819	0.761	0.675	0.520	0.351
375	2.407	1.982	1.639	1.284	0.989	0.833	0.774	0.687	0.531	0.360
380	2.443	2.014	1.669	1.313	1.003	0.846	0.787	0.699	0.541	0.369
385	2.478	2.046	1.699	1.342	1.018	0.860	0.799	0.711	0.552	0.378
390	2.514	2.078	1.729	1.371	1.041	0.873	0.812	0.723	0.562	0.387

Thickness is intumescent only. Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

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Reissued: 03rd May 2019
Valid to: 07th March 2024

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SteelMaster 1200WF

Table 3: I/H-Section Columns 60 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	0.430	0.299	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
35	0.498	0.337	0.294	0.278	0.278	0.278	0.278	0.278	0.278	0.278
40	0.566	0.376	0.317	0.278	0.278	0.278	0.278	0.278	0.278	0.278
45	0.634	0.414	0.341	0.295	0.278	0.278	0.278	0.278	0.278	0.278
50	0.702	0.452	0.364	0.315	0.278	0.278	0.278	0.278	0.278	0.278
55	0.770	0.491	0.388	0.335	0.285	0.278	0.278	0.278	0.278	0.278
60	0.838	0.529	0.411	0.356	0.303	0.278	0.278	0.278	0.278	0.278
65	0.906	0.568	0.435	0.376	0.321	0.278	0.278	0.278	0.278	0.278
70	0.975	0.606	0.458	0.396	0.338	0.282	0.278	0.278	0.278	0.278
75	1.035	0.644	0.482	0.416	0.356	0.298	0.278	0.278	0.278	0.278
80	1.078	0.683	0.505	0.436	0.374	0.313	0.288	0.278	0.278	0.278
85	1.122	0.721	0.529	0.456	0.391	0.329	0.303	0.278	0.278	0.278
90	1.166	0.760	0.552	0.477	0.409	0.344	0.317	0.278	0.278	0.278
95	1.209	0.798	0.576	0.497	0.427	0.359	0.332	0.287	0.278	0.278
100	1.253	0.836	0.599	0.517	0.444	0.375	0.346	0.301	0.278	0.278
105	1.296	0.875	0.623	0.537	0.462	0.390	0.361	0.314	0.278	0.278
110	1.340	0.913	0.646	0.557	0.480	0.405	0.376	0.328	0.278	0.278
115	1.383	0.952	0.670	0.578	0.497	0.421	0.390	0.341	0.278	0.278
120	1.427	0.990	0.693	0.598	0.515	0.436	0.405	0.355	0.278	0.278
125	1.471	1.028	0.717	0.618	0.533	0.452	0.419	0.368	0.278	0.278
130	1.514	1.065	0.740	0.638	0.550	0.467	0.434	0.382	0.278	0.278
135	1.558	1.102	0.764	0.658	0.568	0.482	0.448	0.395	0.286	0.278
140	1.601	1.139	0.787	0.678	0.585	0.498	0.463	0.409	0.299	0.278
145	1.645	1.176	0.811	0.699	0.603	0.513	0.477	0.423	0.311	0.278
150	1.688	1.213	0.834	0.719	0.621	0.529	0.492	0.436	0.324	0.278
155	1.732	1.250	0.858	0.739	0.638	0.544	0.506	0.450	0.337	0.278
160	1.776	1.286	0.881	0.759	0.656	0.559	0.521	0.463	0.350	0.278
165	1.819	1.323	0.905	0.779	0.674	0.575	0.535	0.477	0.363	0.278
170	1.863	1.360	0.928	0.799	0.691	0.590	0.550	0.490	0.376	0.278
175	1.906	1.397	0.952	0.820	0.709	0.605	0.564	0.504	0.389	0.278
180	1.950	1.434	0.975	0.840	0.727	0.621	0.579	0.517	0.402	0.279
185	1.993	1.471	0.999	0.860	0.744	0.636	0.594	0.531	0.415	0.291
190	2.037	1.508	1.023	0.880	0.762	0.652	0.608	0.545	0.428	0.303
195	2.081	1.545	1.061	0.900	0.780	0.667	0.623	0.558	0.440	0.315

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 3: I/H-Section Columns 60 Minutes (continued)										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
200	2.124	1.582	1.099	0.920	0.797	0.682	0.637	0.572	0.453	0.327
205	2.168	1.619	1.137	0.941	0.815	0.698	0.652	0.585	0.466	0.339
210	2.211	1.656	1.175	0.961	0.833	0.713	0.666	0.599	0.479	0.351
215	2.255	1.692	1.213	0.981	0.850	0.729	0.681	0.612	0.492	0.363
220	2.298	1.729	1.251	1.001	0.868	0.744	0.695	0.626	0.505	0.375
225	2.342	1.766	1.289	1.022	0.886	0.759	0.710	0.640	0.518	0.387
230	2.385	1.803	1.327	1.058	0.903	0.775	0.724	0.653	0.531	0.399
235	2.429	1.840	1.365	1.093	0.921	0.790	0.739	0.667	0.544	0.411
240	2.473	1.877	1.404	1.129	0.938	0.805	0.753	0.680	0.557	0.423
245	2.516	1.914	1.442	1.165	0.956	0.821	0.768	0.694	0.569	0.435
250	2.551	1.951	1.480	1.201	0.974	0.836	0.782	0.707	0.582	0.448
255	2.587	1.988	1.518	1.237	0.991	0.852	0.797	0.721	0.595	0.460
260	2.623	2.025	1.556	1.273	1.009	0.867	0.812	0.734	0.608	0.472
265	2.659	2.062	1.594	1.309	1.032	0.882	0.826	0.748	0.621	0.484
270	2.694	2.099	1.632	1.345	1.066	0.898	0.841	0.762	0.634	0.496
275	2.730	2.135	1.670	1.381	1.100	0.913	0.855	0.775	0.647	0.508
280	2.766	2.172	1.708	1.417	1.134	0.929	0.870	0.789	0.660	0.520
285	2.801	2.209	1.746	1.453	1.168	0.944	0.884	0.802	0.673	0.532
290	2.837	2.246	1.784	1.489	1.202	0.959	0.899	0.816	0.686	0.544
295	2.873	2.283	1.822	1.525	1.235	0.975	0.913	0.829	0.698	0.556
300	2.909	2.320	1.860	1.561	1.269	0.990	0.928	0.843	0.711	0.568
305	2.944	2.357	1.898	1.597	1.303	1.005	0.942	0.856	0.724	0.580
310	2.980	2.394	1.936	1.633	1.337	1.021	0.957	0.870	0.737	0.592
315	3.016	2.431	1.974	1.668	1.371	1.053	0.971	0.884	0.750	0.604
320	3.052	2.468	2.013	1.704	1.405	1.085	0.986	0.897	0.763	0.616
325	3.087	2.505	2.051	1.740	1.439	1.118	1.000	0.911	0.776	0.628
330	3.123	2.543	2.089	1.776	1.473	1.150	1.015	0.924	0.789	0.640
335	3.159	2.582	2.127	1.812	1.507	1.182	1.040	0.938	0.802	0.652
340	3.194	2.621	2.165	1.848	1.541	1.215	1.072	0.951	0.815	0.664
345	3.230	2.660	2.203	1.884	1.575	1.247	1.104	0.965	0.827	0.676
350	3.266	2.699	2.241	1.920	1.609	1.279	1.136	0.978	0.840	0.688
355	3.302	2.738	2.279	1.956	1.642	1.312	1.168	0.992	0.853	0.700
360	3.337	2.776	2.317	1.992	1.676	1.344	1.200	1.006	0.866	0.712
365	3.373	2.815	2.355	2.028	1.710	1.376	1.232	1.019	0.879	0.724
370	3.409	2.854	2.393	2.064	1.744	1.409	1.264	1.048	0.892	0.736
375	3.445	2.893	2.431	2.100	1.778	1.441	1.296	1.079	0.905	0.748
380	3.480	2.932	2.469	2.136	1.812	1.473	1.328	1.111	0.918	0.760
385	3.516	2.971	2.507	2.172	1.846	1.506	1.360	1.142	0.931	0.772
390	3.552	3.010	2.548	2.207	1.880	1.538	1.392	1.173	0.944	0.784

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 4: I/H-Section Columns 75 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	0.702	0.510	0.356	0.293	0.278	0.278	0.278	0.278	0.278	0.278
35	0.807	0.585	0.407	0.322	0.287	0.278	0.278	0.278	0.278	0.278
40	0.913	0.659	0.459	0.350	0.310	0.278	0.278	0.278	0.278	0.278
45	1.018	0.733	0.510	0.379	0.333	0.294	0.279	0.278	0.278	0.278
50	1.085	0.808	0.561	0.407	0.355	0.314	0.298	0.278	0.278	0.278
55	1.152	0.882	0.612	0.436	0.378	0.334	0.317	0.290	0.278	0.278
60	1.218	0.956	0.664	0.464	0.401	0.354	0.336	0.307	0.278	0.278
65	1.284	1.027	0.715	0.492	0.423	0.374	0.355	0.325	0.278	0.278
70	1.351	1.075	0.766	0.521	0.446	0.394	0.374	0.342	0.287	0.278
75	1.417	1.123	0.817	0.549	0.469	0.414	0.393	0.360	0.302	0.278
80	1.483	1.172	0.869	0.578	0.491	0.434	0.412	0.377	0.317	0.278
85	1.549	1.220	0.920	0.606	0.514	0.454	0.431	0.395	0.333	0.278
90	1.616	1.268	0.971	0.635	0.537	0.474	0.450	0.412	0.348	0.278
95	1.682	1.316	1.022	0.663	0.559	0.494	0.469	0.430	0.363	0.289
100	1.748	1.364	1.065	0.691	0.582	0.514	0.488	0.447	0.379	0.302
105	1.815	1.412	1.107	0.720	0.605	0.534	0.507	0.465	0.394	0.316
110	1.881	1.460	1.150	0.748	0.627	0.554	0.525	0.482	0.409	0.330
115	1.947	1.508	1.192	0.777	0.650	0.574	0.544	0.500	0.424	0.343
120	2.013	1.556	1.234	0.805	0.672	0.594	0.563	0.517	0.440	0.357
125	2.080	1.604	1.277	0.834	0.695	0.614	0.582	0.535	0.455	0.370
130	2.146	1.652	1.319	0.862	0.718	0.634	0.601	0.552	0.470	0.384
135	2.212	1.700	1.362	0.890	0.740	0.654	0.620	0.570	0.486	0.398
140	2.279	1.749	1.404	0.919	0.763	0.674	0.639	0.587	0.501	0.411
145	2.345	1.797	1.447	0.947	0.786	0.694	0.658	0.605	0.516	0.425
150	2.411	1.845	1.489	0.976	0.808	0.714	0.677	0.622	0.532	0.438
155	2.477	1.893	1.532	1.004	0.831	0.734	0.696	0.640	0.547	0.452
160	2.530	1.941	1.574	1.038	0.854	0.754	0.715	0.657	0.562	0.466
165	2.567	1.989	1.617	1.082	0.876	0.774	0.734	0.675	0.578	0.479
170	2.603	2.037	1.659	1.125	0.899	0.794	0.753	0.692	0.593	0.493
175	2.640	2.085	1.702	1.168	0.922	0.814	0.772	0.710	0.608	0.506
180	2.677	2.133	1.744	1.212	0.944	0.834	0.791	0.727	0.624	0.520
185	2.714	2.181	1.787	1.255	0.967	0.854	0.810	0.745	0.639	0.534
190	2.750	2.229	1.829	1.298	0.989	0.874	0.829	0.762	0.654	0.547
195	2.787	2.277	1.871	1.342	1.012	0.894	0.848	0.780	0.669	0.561

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 4: I/H-Section Columns 75 Minutes (continued)

Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
200	2.824	2.325	1.914	1.385	1.046	0.914	0.867	0.797	0.685	0.574
205	2.861	2.374	1.956	1.428	1.086	0.934	0.886	0.815	0.700	0.588
210	2.897	2.422	1.999	1.471	1.127	0.954	0.905	0.832	0.715	0.602
215	2.934	2.470	2.041	1.515	1.167	0.974	0.924	0.850	0.731	0.615
220	2.971	2.517	2.084	1.558	1.208	0.994	0.943	0.867	0.746	0.629
225	3.007	2.556	2.126	1.601	1.248	1.014	0.962	0.885	0.761	0.643
230	3.044	2.595	2.169	1.645	1.289	1.046	0.980	0.902	0.777	0.656
235	3.081	2.633	2.211	1.688	1.329	1.084	0.999	0.920	0.792	0.670
240	3.118	2.672	2.254	1.731	1.370	1.122	1.018	0.937	0.807	0.683
245	3.154	2.711	2.296	1.775	1.410	1.160	1.053	0.955	0.823	0.697
250	3.191	2.750	2.339	1.818	1.451	1.198	1.090	0.972	0.838	0.711
255	3.228	2.789	2.381	1.861	1.491	1.236	1.128	0.990	0.853	0.724
260	3.264	2.828	2.423	1.904	1.532	1.274	1.165	1.007	0.869	0.738
265	3.301	2.866	2.466	1.948	1.572	1.312	1.202	1.028	0.884	0.751
270	3.338	2.905	2.508	1.991	1.613	1.350	1.239	1.065	0.899	0.765
275	3.375	2.944	2.550	2.034	1.653	1.387	1.276	1.101	0.915	0.779
280	3.411	2.983	2.592	2.078	1.694	1.425	1.314	1.138	0.930	0.792
285	3.448	3.022	2.634	2.121	1.734	1.463	1.351	1.174	0.945	0.806
290	3.485	3.061	2.676	2.164	1.775	1.501	1.388	1.211	0.960	0.819
295	3.522	3.099	2.717	2.208	1.815	1.539	1.425	1.247	0.976	0.833
300	3.558	3.138	2.759	2.251	1.856	1.577	1.463	1.283	0.991	0.847
305	3.595	3.177	2.801	2.294	1.896	1.615	1.500	1.320	1.006	0.860
310	3.632	3.216	2.843	2.338	1.937	1.653	1.537	1.356	1.023	0.874
315	3.668	3.255	2.885	2.381	1.977	1.691	1.574	1.393	1.058	0.887
320	3.705	3.294	2.926	2.424	2.018	1.728	1.611	1.429	1.093	0.901
325	3.742	3.332	2.968	2.467	2.059	1.766	1.649	1.466	1.127	0.915
330	3.779	3.371	3.010	2.511	2.099	1.804	1.686	1.502	1.162	0.928
335	3.815	3.410	3.052	2.558	2.140	1.842	1.723	1.539	1.197	0.942
340	3.852	3.449	3.094	2.605	2.180	1.880	1.760	1.575	1.232	0.955
345	3.889	3.488	3.135	2.652	2.221	1.918	1.797	1.611	1.267	0.969
350	3.925	3.527	3.177	2.699	2.261	1.956	1.835	1.648	1.302	0.983
355	3.962	3.565	3.219	2.746	2.302	1.994	1.872	1.684	1.337	0.996
360	3.999	3.604	3.261	2.793	2.342	2.032	1.909	1.721	1.372	1.010
365	4.038	3.643	3.303	2.840	2.383	2.070	1.946	1.757	1.407	1.027
370	4.105	3.682	3.344	2.887	2.423	2.107	1.984	1.794	1.442	1.060
375	4.172	3.721	3.386	2.934	2.464	2.145	2.021	1.830	1.477	1.092
380	4.239	3.760	3.428	2.981	2.504	2.183	2.058	1.867	1.511	1.125
385	4.306	3.799	3.470	3.028	2.552	2.221	2.095	1.903	1.546	1.158
390	4.373	3.837	3.512	3.075	2.601	2.259	2.132	1.939	1.581	1.191

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 5: I/H-Section Columns 90 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	1.003	0.737	0.569	0.422	0.306	0.283	0.278	0.278	0.278	0.278
35	1.205	0.843	0.650	0.482	0.346	0.308	0.295	0.278	0.278	0.278
40	1.407	0.948	0.731	0.541	0.387	0.333	0.319	0.297	0.278	0.278
45	1.610	1.046	0.811	0.601	0.427	0.357	0.343	0.319	0.279	0.278
50	1.812	1.127	0.892	0.660	0.467	0.382	0.366	0.341	0.298	0.278
55	2.014	1.207	0.973	0.720	0.508	0.407	0.390	0.363	0.318	0.278
60	2.217	1.288	1.042	0.779	0.548	0.432	0.413	0.385	0.337	0.290
65	2.419	1.369	1.094	0.839	0.588	0.457	0.437	0.406	0.356	0.307
70	2.540	1.449	1.147	0.898	0.629	0.482	0.461	0.428	0.376	0.325
75	2.589	1.530	1.199	0.958	0.669	0.506	0.484	0.450	0.395	0.342
80	2.639	1.610	1.252	1.017	0.709	0.531	0.508	0.472	0.414	0.359
85	2.688	1.691	1.304	1.065	0.750	0.556	0.531	0.494	0.434	0.376
90	2.738	1.772	1.356	1.112	0.790	0.581	0.555	0.516	0.453	0.394
95	2.788	1.852	1.409	1.159	0.831	0.606	0.579	0.538	0.472	0.411
100	2.837	1.933	1.461	1.206	0.871	0.631	0.602	0.559	0.492	0.428
105	2.887	2.013	1.514	1.253	0.911	0.655	0.626	0.581	0.511	0.445
110	2.936	2.094	1.566	1.299	0.952	0.680	0.649	0.603	0.530	0.463
115	2.986	2.175	1.619	1.346	0.992	0.705	0.673	0.625	0.550	0.480
120	3.036	2.255	1.671	1.393	1.034	0.730	0.697	0.647	0.569	0.497
125	3.085	2.336	1.723	1.440	1.079	0.755	0.720	0.669	0.588	0.514
130	3.135	2.416	1.776	1.487	1.124	0.780	0.744	0.691	0.608	0.532
135	3.184	2.497	1.828	1.534	1.169	0.804	0.767	0.712	0.627	0.549
140	3.234	2.547	1.881	1.581	1.214	0.829	0.791	0.734	0.646	0.566
145	3.284	2.590	1.933	1.628	1.259	0.854	0.815	0.756	0.666	0.584
150	3.333	2.633	1.985	1.675	1.304	0.879	0.838	0.778	0.685	0.601
155	3.383	2.676	2.038	1.722	1.348	0.904	0.862	0.800	0.704	0.618
160	3.432	2.719	2.090	1.768	1.393	0.929	0.885	0.822	0.724	0.635
165	3.482	2.762	2.143	1.815	1.438	0.953	0.909	0.844	0.743	0.653
170	3.532	2.805	2.195	1.862	1.483	0.978	0.933	0.865	0.762	0.670
175	3.581	2.848	2.248	1.909	1.528	1.003	0.956	0.887	0.782	0.687
180	3.631	2.891	2.300	1.956	1.573	1.034	0.980	0.909	0.801	0.704
185	3.680	2.933	2.352	2.003	1.618	1.080	1.003	0.931	0.820	0.722
190	3.730	2.976	2.405	2.050	1.663	1.126	1.032	0.953	0.840	0.739
195	3.780	3.019	2.457	2.097	1.708	1.172	1.075	0.975	0.859	0.756

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 5: I/H-Section Columns 90 Minutes (continued)

Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
200	3.829	3.062	2.510	2.144	1.753	1.219	1.118	0.997	0.878	0.773
205	3.879	3.105	2.554	2.190	1.798	1.265	1.161	1.018	0.898	0.791
210	3.928	3.148	2.597	2.237	1.843	1.311	1.204	1.058	0.917	0.808
215	3.978	3.191	2.641	2.284	1.888	1.357	1.248	1.100	0.936	0.825
220	4.028	3.234	2.684	2.331	1.933	1.403	1.291	1.142	0.956	0.842
225	4.071	3.277	2.727	2.378	1.978	1.449	1.334	1.184	0.975	0.860
230	4.113	3.320	2.771	2.425	2.023	1.496	1.377	1.227	0.994	0.877
235	4.155	3.362	2.814	2.472	2.068	1.542	1.420	1.269	1.014	0.894
240	4.198	3.405	2.858	2.519	2.113	1.588	1.463	1.311	1.046	0.911
245	4.240	3.448	2.901	2.564	2.158	1.634	1.506	1.353	1.086	0.929
250	4.282	3.491	2.945	2.609	2.203	1.680	1.549	1.395	1.126	0.946
255	4.324	3.534	2.988	2.655	2.248	1.727	1.593	1.437	1.166	0.963
260	4.367	3.577	3.032	2.700	2.293	1.773	1.636	1.479	1.206	0.981
265	4.409	3.620	3.075	2.745	2.338	1.819	1.679	1.521	1.246	0.998
270	4.451	3.663	3.118	2.791	2.383	1.865	1.722	1.563	1.286	1.015
275	4.494	3.706	3.162	2.836	2.428	1.911	1.765	1.606	1.326	1.045
280	4.536	3.748	3.205	2.881	2.473	1.957	1.808	1.648	1.366	1.083
285	4.578	3.791	3.249	2.927	2.518	2.004	1.851	1.690	1.406	1.120
290	4.620	3.834	3.292	2.972	2.567	2.050	1.895	1.732	1.446	1.157
295	4.663	3.877	3.336	3.017	2.615	2.096	1.938	1.774	1.486	1.194
300	4.705	3.920	3.379	3.062	2.663	2.142	1.981	1.816	1.526	1.232
305	4.747	3.963	3.422	3.108	2.712	2.188	2.024	1.858	1.566	1.269
310	4.790	4.006	3.466	3.153	2.760	2.234	2.067	1.900	1.606	1.306
315	4.832	4.055	3.509	3.198	2.808	2.281	2.110	1.942	1.646	1.343
320	4.874	4.115	3.553	3.244	2.856	2.327	2.153	1.985	1.686	1.381
325	4.916	4.176	3.596	3.289	2.905	2.373	2.196	2.027	1.726	1.418
330	4.959	4.236	3.640	3.334	2.953	2.419	2.240	2.069	1.766	1.455
335	5.001	4.296	3.683	3.380	3.001	2.465	2.283	2.111	1.806	1.492
340	5.043	4.356	3.727	3.425	3.049	2.512	2.326	2.153	1.846	1.530
345	5.086	4.416	3.770	3.470	3.098	2.565	2.369	2.195	1.886	1.567
350	5.128	4.477	3.813	3.516	3.146	2.619	2.412	2.237	1.926	1.604
355	5.170	4.537	3.857	3.561	3.194	2.672	2.455	2.279	1.966	1.641
360	5.213	4.597	3.900	3.606	3.243	2.726	2.498	2.321	2.006	1.679
365	5.255	4.657	3.944	3.652	3.291	2.780	2.549	2.364	2.046	1.716
370	5.297	4.717	3.987	3.697	3.339	2.833	2.604	2.406	2.086	1.753
375	5.339	4.778	4.031	3.742	3.387	2.887	2.659	2.448	2.126	1.790
380	5.382	4.838	4.104	3.788	3.436	2.941	2.714	2.490	2.166	1.828
385	5.424	4.898	4.180	3.833	3.484	2.994	2.769	2.537	2.206	1.865
390	5.466	4.958	4.255	3.878	3.532	3.048	2.824	2.589	2.246	1.902

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 6: I/H-Section Columns 120 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	2.457	1.547	0.991	0.789	0.630	0.495	0.443	0.356	0.284	0.278
35	2.660	1.869	1.205	0.900	0.720	0.569	0.511	0.414	0.323	0.294
40	2.863	2.192	1.419	1.010	0.809	0.643	0.578	0.473	0.362	0.320
45	3.066	2.513	1.632	1.129	0.899	0.716	0.646	0.532	0.401	0.345
50	3.269	2.638	1.846	1.249	0.988	0.790	0.714	0.590	0.440	0.370
55	3.472	2.762	2.059	1.368	1.058	0.864	0.782	0.649	0.479	0.395
60	3.675	2.887	2.273	1.488	1.117	0.938	0.849	0.708	0.518	0.420
65	3.878	3.011	2.487	1.608	1.176	1.012	0.917	0.766	0.557	0.446
70	4.058	3.136	2.580	1.728	1.235	1.068	0.985	0.825	0.596	0.471
75	4.163	3.261	2.656	1.848	1.294	1.121	1.045	0.884	0.634	0.496
80	4.269	3.385	2.732	1.967	1.353	1.175	1.097	0.942	0.673	0.521
85	4.374	3.510	2.808	2.087	1.412	1.228	1.148	1.001	0.712	0.547
90	4.480	3.634	2.884	2.207	1.471	1.282	1.200	1.054	0.751	0.572
95	4.586	3.759	2.960	2.327	1.530	1.335	1.251	1.104	0.790	0.597
100	4.691	3.883	3.036	2.446	1.589	1.389	1.303	1.154	0.829	0.622
105	4.797	4.008	3.111	2.545	1.648	1.442	1.354	1.204	0.868	0.647
110	4.902	4.083	3.187	2.617	1.707	1.495	1.406	1.254	0.907	0.673
115	5.008	4.144	3.263	2.689	1.766	1.549	1.457	1.304	0.946	0.698
120	5.114	4.206	3.339	2.761	1.825	1.602	1.509	1.355	0.985	0.723
125	5.219	4.268	3.415	2.833	1.884	1.656	1.560	1.405	1.025	0.748
130	5.325	4.330	3.491	2.905	1.943	1.709	1.612	1.455	1.075	0.773
135	5.430	4.392	3.567	2.977	2.002	1.763	1.664	1.505	1.125	0.799
140	5.536	4.454	3.643	3.049	2.060	1.816	1.715	1.555	1.174	0.824
145	5.641	4.516	3.719	3.121	2.119	1.870	1.767	1.605	1.224	0.849
150	5.747	4.578	3.795	3.193	2.178	1.923	1.818	1.655	1.274	0.874
155	-	4.640	3.871	3.265	2.237	1.976	1.870	1.705	1.324	0.900
160	-	4.702	3.947	3.337	2.296	2.030	1.921	1.755	1.374	0.925
165	-	4.764	4.023	3.409	2.355	2.083	1.973	1.805	1.424	0.950
170	-	4.826	4.072	3.481	2.414	2.137	2.024	1.855	1.474	0.975
175	-	4.888	4.117	3.553	2.473	2.190	2.076	1.905	1.524	1.000
180	-	4.950	4.162	3.625	2.542	2.244	2.127	1.955	1.574	1.031
185	-	5.012	4.207	3.697	2.633	2.297	2.179	2.005	1.624	1.083
190	-	5.073	4.251	3.769	2.724	2.351	2.230	2.055	1.674	1.135
195	-	5.135	4.296	3.841	2.815	2.404	2.282	2.106	1.724	1.188

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 6: I/H-Section Columns 120 Minutes (continued)										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
200	-	5.197	4.341	3.913	2.906	2.457	2.333	2.156	1.773	1.240
205	-	5.259	4.386	3.985	2.997	2.511	2.385	2.206	1.823	1.293
210	-	5.321	4.431	4.047	3.088	2.564	2.437	2.256	1.873	1.345
215	-	5.383	4.476	4.090	3.179	2.617	2.488	2.306	1.923	1.397
220	-	5.445	4.520	4.133	3.269	2.670	2.539	2.356	1.973	1.450
225	-	5.507	4.565	4.176	3.360	2.723	2.590	2.406	2.023	1.502
230	-	5.569	4.610	4.219	3.451	2.776	2.640	2.456	2.073	1.555
235	-	5.631	4.655	4.261	3.542	2.829	2.691	2.506	2.123	1.607
240	-	5.693	4.700	4.304	3.633	2.882	2.742	2.556	2.173	1.659
245	-	-	4.744	4.347	3.724	2.935	2.792	2.607	2.223	1.712
250	-	-	4.789	4.390	3.815	2.988	2.843	2.657	2.273	1.764
255	-	-	4.834	4.433	3.906	3.041	2.894	2.708	2.323	1.817
260	-	-	4.879	4.476	3.997	3.094	2.944	2.758	2.372	1.869
265	-	-	4.924	4.518	4.063	3.147	2.995	2.808	2.422	1.921
270	-	-	4.969	4.561	4.112	3.199	3.046	2.859	2.472	1.974
275	-	-	5.013	4.604	4.162	3.252	3.096	2.909	2.522	2.026
280	-	-	5.058	4.647	4.212	3.305	3.147	2.960	2.573	2.079
285	-	-	5.103	4.690	4.262	3.358	3.197	3.010	2.624	2.131
290	-	-	5.148	4.732	4.311	3.411	3.248	3.060	2.675	2.183
295	-	-	5.193	4.775	4.361	3.464	3.299	3.111	2.725	2.236
300	-	-	5.238	4.818	4.411	3.517	3.349	3.161	2.776	2.288
305	-	-	5.282	4.861	4.461	3.570	3.400	3.212	2.827	2.341
310	-	-	5.327	4.904	4.510	3.623	3.451	3.262	2.877	2.393
315	-	-	5.372	4.947	4.560	3.676	3.501	3.312	2.928	2.445
320	-	-	5.417	4.989	4.610	3.729	3.552	3.363	2.979	2.498
325	-	-	5.462	5.032	4.659	3.782	3.603	3.413	3.029	2.550
330	-	-	5.507	5.075	4.709	3.835	3.653	3.464	3.080	2.602
335	-	-	5.551	5.118	4.759	3.888	3.704	3.514	3.131	2.654
340	-	-	5.596	5.161	4.809	3.941	3.755	3.564	3.182	2.706
345	-	-	5.641	5.203	4.858	3.994	3.805	3.615	3.232	2.757
350	-	-	5.686	5.246	4.908	4.054	3.856	3.665	3.283	2.809
355	-	-	5.731	5.289	4.958	4.132	3.906	3.716	3.334	2.861
360	-	-	5.775	5.332	5.008	4.210	3.957	3.766	3.384	2.913
365	-	-	5.820	5.375	5.057	4.289	4.008	3.816	3.435	2.965
370	-	-	-	5.417	5.107	4.367	4.074	3.867	3.486	3.017
375	-	-	-	5.460	5.157	4.445	4.157	3.917	3.537	3.069
380	-	-	-	5.503	5.206	4.524	4.240	3.968	3.587	3.121
385	-	-	-	5.546	5.256	4.602	4.322	4.018	3.638	3.173
390	-	-	-	5.589	5.306	4.680	4.405	4.089	3.689	3.225

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 7: I/H-Section Columns 150 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	2.853	2.789	1.605	1.476	0.931	0.769	0.751	0.670	0.525	0.380
35	3.553	3.115	2.187	1.807	1.186	0.904	0.860	0.772	0.615	0.461
40	4.253	3.440	2.769	2.137	1.441	1.039	0.970	0.874	0.705	0.542
45	4.588	3.766	3.033	2.467	1.696	1.247	1.111	0.976	0.795	0.623
50	4.922	4.071	3.296	2.687	1.952	1.456	1.280	1.082	0.885	0.704
55	5.257	4.284	3.559	2.888	2.207	1.665	1.449	1.191	0.975	0.785
60	5.592	4.497	3.822	3.090	2.462	1.874	1.617	1.300	1.049	0.866
65	5.926	4.710	4.062	3.291	2.630	2.083	1.786	1.409	1.106	0.946
70	-	4.923	4.206	3.493	2.777	2.291	1.955	1.518	1.162	1.025
75	-	5.137	4.351	3.694	2.923	2.500	2.124	1.627	1.219	1.075
80	-	5.350	4.495	3.896	3.070	2.593	2.293	1.736	1.276	1.126
85	-	5.563	4.640	4.064	3.216	2.678	2.462	1.845	1.333	1.176
90	-	5.776	4.784	4.162	3.362	2.764	2.568	1.955	1.390	1.227
95	-	5.989	4.929	4.260	3.509	2.849	2.646	2.064	1.446	1.277
100	-	-	5.073	4.358	3.655	2.935	2.724	2.173	1.503	1.328
105	-	-	5.218	4.455	3.802	3.020	2.802	2.282	1.560	1.378
110	-	-	5.362	4.553	3.948	3.105	2.880	2.391	1.617	1.429
115	-	-	5.507	4.651	4.064	3.191	2.958	2.500	1.674	1.479
120	-	-	5.651	4.749	4.137	3.276	3.036	2.585	1.731	1.530
125	-	-	5.796	4.847	4.211	3.361	3.115	2.667	1.787	1.580
130	-	-	5.940	4.945	4.284	3.447	3.193	2.748	1.844	1.631
135	-	-	-	5.042	4.358	3.532	3.271	2.830	1.901	1.681
140	-	-	-	5.140	4.431	3.617	3.349	2.912	1.958	1.732
145	-	-	-	5.238	4.505	3.703	3.427	2.993	2.015	1.782
150	-	-	-	5.336	4.578	3.788	3.505	3.075	2.071	1.833
155	-	-	-	5.434	4.651	3.873	3.583	3.157	2.128	1.883
160	-	-	-	5.532	4.725	3.959	3.661	3.238	2.185	1.934
165	-	-	-	5.629	4.798	4.039	3.740	3.320	2.242	1.984
170	-	-	-	5.727	4.872	4.089	3.818	3.401	2.299	2.035
175	-	-	-	5.825	4.945	4.139	3.896	3.483	2.356	2.085
180	-	-	-	5.923	5.019	4.189	3.974	3.565	2.412	2.136
185	-	-	-	6.021	5.092	4.239	4.043	3.646	2.469	2.186
190	-	-	-	-	5.166	4.288	4.085	3.728	2.534	2.237
195	-	-	-	-	5.239	4.338	4.126	3.810	2.626	2.287

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 7: I/H-Section Columns 150 Minutes (continued)

Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
200	-	-	-	-	5.313	4.388	4.168	3.891	2.719	2.338
205	-	-	-	-	5.386	4.438	4.209	3.973	2.811	2.388
210	-	-	-	-	5.460	4.487	4.251	4.045	2.903	2.439
215	-	-	-	-	5.533	4.537	4.292	4.088	2.995	2.489
220	-	-	-	-	5.606	4.587	4.334	4.132	3.087	2.540
225	-	-	-	-	5.680	4.637	4.375	4.175	3.180	2.593
230	-	-	-	-	5.753	4.686	4.417	4.219	3.272	2.645
235	-	-	-	-	5.827	4.736	4.458	4.262	3.364	2.697
240	-	-	-	-	5.900	4.786	4.500	4.306	3.456	2.749
245	-	-	-	-	-	4.836	4.541	4.349	3.549	2.801
250	-	-	-	-	-	4.885	4.583	4.393	3.641	2.854
255	-	-	-	-	-	4.935	4.624	4.436	3.733	2.906
260	-	-	-	-	-	4.985	4.666	4.480	3.825	2.958
265	-	-	-	-	-	5.035	4.707	4.523	3.918	3.010
270	-	-	-	-	-	5.085	4.749	4.567	4.010	3.062
275	-	-	-	-	-	5.134	4.790	4.610	4.074	3.114
280	-	-	-	-	-	5.184	4.832	4.654	4.128	3.167
285	-	-	-	-	-	5.234	4.873	4.697	4.182	3.219
290	-	-	-	-	-	5.284	4.915	4.741	4.236	3.271
295	-	-	-	-	-	5.333	4.956	4.784	4.290	3.323
300	-	-	-	-	-	5.383	4.998	4.828	4.344	3.375
305	-	-	-	-	-	5.433	5.039	4.871	4.399	3.428
310	-	-	-	-	-	5.483	5.081	4.915	4.453	3.480
315	-	-	-	-	-	5.532	5.122	4.958	4.507	3.532
320	-	-	-	-	-	5.582	5.164	5.002	4.561	3.584
325	-	-	-	-	-	5.632	5.205	5.045	4.615	3.636
330	-	-	-	-	-	5.682	5.247	5.089	4.669	3.689
335	-	-	-	-	-	5.731	5.288	5.133	4.724	3.741
340	-	-	-	-	-	5.781	5.330	5.176	4.778	3.793
345	-	-	-	-	-	5.831	5.371	5.220	4.832	3.845
350	-	-	-	-	-	-	5.413	5.263	4.886	3.897
355	-	-	-	-	-	-	5.454	5.307	4.940	3.949
360	-	-	-	-	-	-	5.496	5.350	4.994	4.002
365	-	-	-	-	-	-	5.537	5.394	5.049	4.072
370	-	-	-	-	-	-	5.579	5.437	5.103	4.170
375	-	-	-	-	-	-	5.620	5.481	5.157	4.268
380	-	-	-	-	-	-	5.662	5.524	5.211	4.366
385	-	-	-	-	-	-	5.703	5.568	5.265	4.464
390	-	-	-	-	-	-	5.745	5.611	5.319	4.562

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 8: I/H-Section Columns 180 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	4.743	3.861	2.578	2.578	1.425	1.222	1.051	0.885	0.885	0.715
35	4.743	4.301	3.212	2.971	2.094	1.920	1.813	1.551	0.953	0.840
40	-	4.741	4.056	3.364	2.763	2.618	2.575	2.524	1.021	0.965
45	-	5.182	4.395	3.758	3.087	2.823	2.749	2.657	2.523	1.200
50	-	5.622	4.734	4.112	3.410	3.028	2.923	2.791	2.606	1.525
55	-	-	5.073	4.377	3.734	3.233	3.098	2.924	2.689	1.850
60	-	-	5.412	4.642	4.048	3.439	3.272	3.057	2.772	2.175
65	-	-	5.751	4.907	4.251	3.644	3.446	3.191	2.855	2.501
70	-	-	-	5.172	4.454	3.849	3.620	3.324	2.938	2.570
75	-	-	-	5.437	4.657	4.049	3.794	3.458	3.021	2.628
80	-	-	-	5.702	4.859	4.201	3.968	3.591	3.104	2.687
85	-	-	-	5.966	5.062	4.352	4.116	3.724	3.187	2.746
90	-	-	-	-	5.265	4.504	4.247	3.858	3.270	2.805
95	-	-	-	-	5.468	4.656	4.379	3.991	3.353	2.864
100	-	-	-	-	5.670	4.808	4.511	4.104	3.436	2.923
105	-	-	-	-	5.873	4.960	4.642	4.206	3.519	2.981
110	-	-	-	-	-	5.111	4.774	4.309	3.602	3.040
115	-	-	-	-	-	5.263	4.906	4.412	3.685	3.099
120	-	-	-	-	-	5.415	5.037	4.515	3.768	3.158
125	-	-	-	-	-	5.567	5.169	4.618	3.850	3.217
130	-	-	-	-	-	5.719	5.301	4.721	3.933	3.276
135	-	-	-	-	-	5.870	5.432	4.824	4.016	3.335
140	-	-	-	-	-	-	5.564	4.927	4.096	3.393
145	-	-	-	-	-	-	5.696	5.030	4.176	3.452
150	-	-	-	-	-	-	5.827	5.132	4.255	3.511
155	-	-	-	-	-	-	5.959	5.235	4.335	3.570
160	-	-	-	-	-	-	-	5.338	4.414	3.629
165	-	-	-	-	-	-	-	5.441	4.493	3.688
170	-	-	-	-	-	-	-	5.544	4.573	3.746
175	-	-	-	-	-	-	-	5.647	4.652	3.805
180	-	-	-	-	-	-	-	5.750	4.732	3.864
185	-	-	-	-	-	-	-	5.853	4.811	3.923
190	-	-	-	-	-	-	-	5.956	4.890	3.982
195	-	-	-	-	-	-	-	-	4.970	4.039

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 8: I/H-Section Columns 180 Minutes (continued)										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
200	-	-	-	-	-	-	-	-	5.049	4.084
205	-	-	-	-	-	-	-	-	5.128	4.129
210	-	-	-	-	-	-	-	-	5.208	4.174
215	-	-	-	-	-	-	-	-	5.287	4.219
220	-	-	-	-	-	-	-	-	5.367	4.264
225	-	-	-	-	-	-	-	-	5.446	4.309
230	-	-	-	-	-	-	-	-	5.525	4.354
235	-	-	-	-	-	-	-	-	5.605	4.399
240	-	-	-	-	-	-	-	-	5.684	4.443
245	-	-	-	-	-	-	-	-	5.763	4.488
250	-	-	-	-	-	-	-	-	5.843	4.533
255	-	-	-	-	-	-	-	-	5.922	4.578
260	-	-	-	-	-	-	-	-	-	4.623
265	-	-	-	-	-	-	-	-	-	4.668
270	-	-	-	-	-	-	-	-	-	4.713
275	-	-	-	-	-	-	-	-	-	4.758
280	-	-	-	-	-	-	-	-	-	4.803
285	-	-	-	-	-	-	-	-	-	4.848
290	-	-	-	-	-	-	-	-	-	4.893
295	-	-	-	-	-	-	-	-	-	4.938
300	-	-	-	-	-	-	-	-	-	4.983
305	-	-	-	-	-	-	-	-	-	5.028
310	-	-	-	-	-	-	-	-	-	5.073
315	-	-	-	-	-	-	-	-	-	5.118
320	-	-	-	-	-	-	-	-	-	5.163
325	-	-	-	-	-	-	-	-	-	5.208
330	-	-	-	-	-	-	-	-	-	5.253
335	-	-	-	-	-	-	-	-	-	5.298
340	-	-	-	-	-	-	-	-	-	5.343
345	-	-	-	-	-	-	-	-	-	5.388
350	-	-	-	-	-	-	-	-	-	5.433
355	-	-	-	-	-	-	-	-	-	5.477
360	-	-	-	-	-	-	-	-	-	5.522
365	-	-	-	-	-	-	-	-	-	5.567
370	-	-	-	-	-	-	-	-	-	5.612
375	-	-	-	-	-	-	-	-	-	5.657
380	-	-	-	-	-	-	-	-	-	5.702
385	-	-	-	-	-	-	-	-	-	5.747
390	-	-	-	-	-	-	-	-	-	5.792

Thickness is intumescent only.

Results also apply to I/H section beams with 4 sides fire exposure subject to a maximum DFT of 4.455mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 9: I/H-Section Beams 30 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	0.293	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
40	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
50	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
55	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
60	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
65	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
70	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
75	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
80	0.313	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
85	0.339	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
90	0.365	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
95	0.391	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
100	0.417	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
105	0.444	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
110	0.470	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
115	0.496	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
120	0.522	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
125	0.548	0.298	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
130	0.575	0.323	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
135	0.601	0.348	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
140	0.627	0.373	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
145	0.653	0.399	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
150	0.680	0.424	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
155	0.706	0.449	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
160	0.732	0.474	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
165	0.758	0.500	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
170	0.784	0.525	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
175	0.811	0.550	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
180	0.837	0.575	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
185	0.863	0.601	0.304	0.293	0.293	0.293	0.293	0.293	0.293	0.293
190	0.889	0.626	0.318	0.293	0.293	0.293	0.293	0.293	0.293	0.293
195	0.915	0.651	0.332	0.293	0.293	0.293	0.293	0.293	0.293	0.293
200	0.942	0.676	0.346	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 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 9: I/H-Section Beams 30 Minutes (continued)										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
205	0.968	0.702	0.360	0.293	0.293	0.293	0.293	0.293	0.293	0.293
210	0.994	0.727	0.374	0.293	0.293	0.293	0.293	0.293	0.293	0.293
215	1.020	0.752	0.388	0.293	0.293	0.293	0.293	0.293	0.293	0.293
220	1.046	0.778	0.402	0.293	0.293	0.293	0.293	0.293	0.293	0.293
225	1.073	0.803	0.416	0.293	0.293	0.293	0.293	0.293	0.293	0.293
230	1.097	0.828	0.430	0.293	0.293	0.293	0.293	0.293	0.293	0.293
235	1.115	0.853	0.444	0.293	0.293	0.293	0.293	0.293	0.293	0.293
240	1.133	0.879	0.458	0.293	0.293	0.293	0.293	0.293	0.293	0.293
245	1.151	0.904	0.472	0.301	0.293	0.293	0.293	0.293	0.293	0.293
250	1.169	0.929	0.486	0.314	0.293	0.293	0.293	0.293	0.293	0.293
255	1.187	0.954	0.501	0.327	0.293	0.293	0.293	0.293	0.293	0.293
260	1.205	0.980	0.515	0.341	0.293	0.293	0.293	0.293	0.293	0.293
265	1.224	1.005	0.529	0.354	0.293	0.293	0.293	0.293	0.293	0.293
270	1.242	1.030	0.543	0.367	0.293	0.293	0.293	0.293	0.293	0.293
275	1.260	1.055	0.557	0.380	0.293	0.293	0.293	0.293	0.293	0.293
280	1.278	1.081	0.571	0.393	0.293	0.293	0.293	0.293	0.293	0.293
285	1.296	1.101	0.585	0.406	0.293	0.293	0.293	0.293	0.293	0.293
290	1.314	1.117	0.599	0.420	0.293	0.293	0.293	0.293	0.293	0.293
295	1.332	1.133	0.613	0.433	0.293	0.293	0.293	0.293	0.293	0.293
300	1.350	1.148	0.627	0.446	0.293	0.293	0.293	0.293	0.293	0.293
305	1.368	1.164	0.641	0.459	0.293	0.293	0.293	0.293	0.293	0.293
310	1.386	1.180	0.655	0.472	0.297	0.293	0.293	0.293	0.293	0.293
315	1.404	1.196	0.669	0.485	0.310	0.293	0.293	0.293	0.293	0.293
320	1.422	1.212	0.683	0.498	0.322	0.293	0.293	0.293	0.293	0.293
325	1.440	1.228	0.697	0.512	0.335	0.293	0.293	0.293	0.293	0.293
330	1.459	1.243	0.711	0.525	0.347	0.293	0.293	0.293	0.293	0.293

Thickness is intumescent only.
Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 10: I/H-Section Beams 45 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	0.293	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
40	0.329	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
45	0.392	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
50	0.456	0.306	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
55	0.520	0.348	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
60	0.584	0.390	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
65	0.647	0.432	0.298	0.293	0.293	0.293	0.293	0.293	0.293	0.293
70	0.711	0.473	0.336	0.293	0.293	0.293	0.293	0.293	0.293	0.293
75	0.775	0.515	0.373	0.293	0.293	0.293	0.293	0.293	0.293	0.293
80	0.839	0.557	0.411	0.293	0.293	0.293	0.293	0.293	0.293	0.293
85	0.903	0.598	0.449	0.303	0.293	0.293	0.293	0.293	0.293	0.293
90	0.966	0.640	0.487	0.318	0.293	0.293	0.293	0.293	0.293	0.293
95	1.030	0.682	0.524	0.333	0.293	0.293	0.293	0.293	0.293	0.293
100	1.086	0.723	0.562	0.348	0.293	0.293	0.293	0.293	0.293	0.293
105	1.109	0.765	0.600	0.363	0.293	0.293	0.293	0.293	0.293	0.293
110	1.132	0.807	0.638	0.377	0.293	0.293	0.293	0.293	0.293	0.293
115	1.155	0.848	0.675	0.392	0.302	0.293	0.293	0.293	0.293	0.293
120	1.178	0.890	0.713	0.407	0.316	0.293	0.293	0.293	0.293	0.293
125	1.201	0.932	0.751	0.422	0.330	0.293	0.293	0.293	0.293	0.293
130	1.224	0.973	0.789	0.437	0.344	0.293	0.293	0.293	0.293	0.293
135	1.247	1.015	0.826	0.451	0.358	0.293	0.293	0.293	0.293	0.293
140	1.270	1.057	0.864	0.466	0.372	0.293	0.293	0.293	0.293	0.293
145	1.293	1.090	0.902	0.481	0.386	0.293	0.293	0.293	0.293	0.293
150	1.316	1.111	0.940	0.496	0.400	0.293	0.293	0.293	0.293	0.293
155	1.339	1.132	0.977	0.510	0.414	0.295	0.293	0.293	0.293	0.293
160	1.362	1.154	1.015	0.525	0.428	0.308	0.293	0.293	0.293	0.293
165	1.385	1.175	1.053	0.540	0.442	0.322	0.293	0.293	0.293	0.293
170	1.408	1.196	1.086	0.555	0.456	0.335	0.293	0.293	0.293	0.293
175	1.431	1.217	1.105	0.570	0.470	0.348	0.303	0.293	0.293	0.293
180	1.454	1.239	1.124	0.584	0.484	0.361	0.316	0.293	0.293	0.293
185	1.478	1.260	1.143	0.599	0.498	0.374	0.329	0.293	0.293	0.293
190	1.501	1.281	1.161	0.614	0.512	0.388	0.342	0.293	0.293	0.293
195	1.524	1.302	1.180	0.629	0.526	0.401	0.354	0.293	0.293	0.293
200	1.547	1.324	1.199	0.644	0.540	0.414	0.367	0.295	0.293	0.293

Thickness is intumescent only.

Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 10: I/H-Section Beams 45 Minutes (continued)										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
205	1.570	1.345	1.218	0.658	0.554	0.427	0.380	0.307	0.293	0.293
210	1.593	1.366	1.237	0.673	0.568	0.440	0.393	0.319	0.293	0.293
215	1.616	1.387	1.256	0.688	0.582	0.453	0.405	0.331	0.293	0.293
220	1.639	1.409	1.275	0.703	0.596	0.467	0.418	0.343	0.293	0.293
225	1.662	1.430	1.294	0.718	0.610	0.480	0.431	0.355	0.293	0.293
230	1.685	1.451	1.313	0.732	0.624	0.493	0.444	0.367	0.293	0.293
235	1.708	1.472	1.332	0.747	0.638	0.506	0.456	0.379	0.293	0.293
240	1.731	1.494	1.351	0.762	0.652	0.519	0.469	0.391	0.293	0.293
245	1.754	1.515	1.369	0.777	0.666	0.533	0.482	0.403	0.293	0.293
250	1.777	1.536	1.388	0.791	0.680	0.546	0.494	0.415	0.293	0.293
255	1.800	1.557	1.407	0.806	0.694	0.559	0.507	0.427	0.293	0.293
260	1.823	1.579	1.426	0.821	0.708	0.572	0.520	0.439	0.293	0.293
265	1.846	1.600	1.445	0.836	0.722	0.585	0.533	0.451	0.293	0.293
270	1.869	1.621	1.464	0.851	0.736	0.598	0.545	0.463	0.293	0.293
275	1.893	1.642	1.483	0.865	0.750	0.612	0.558	0.475	0.293	0.293
280	1.916	1.664	1.502	0.880	0.764	0.625	0.571	0.487	0.293	0.293
285	1.939	1.685	1.521	0.895	0.778	0.638	0.584	0.499	0.296	0.293
290	1.962	1.706	1.540	0.910	0.792	0.651	0.596	0.511	0.307	0.293
295	1.985	1.728	1.558	0.925	0.806	0.664	0.609	0.523	0.319	0.293
300	2.008	1.749	1.577	0.939	0.819	0.678	0.622	0.535	0.330	0.293
305	2.031	1.770	1.596	0.954	0.833	0.691	0.635	0.547	0.342	0.293
310	2.054	1.791	1.615	0.969	0.847	0.704	0.647	0.559	0.353	0.293
315	2.077	1.813	1.634	0.984	0.861	0.717	0.660	0.571	0.365	0.293
320	2.100	1.834	1.653	0.998	0.875	0.730	0.673	0.583	0.376	0.293
325	2.123	1.855	1.672	1.013	0.889	0.743	0.686	0.595	0.388	0.293
330	2.146	1.876	1.691	1.028	0.903	0.757	0.698	0.607	0.399	0.293

Thickness is intumescent only.
Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 11: I/H-Section Beams 60 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	0.439	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
35	0.545	0.365	0.293	0.293	0.293	0.293	0.293	0.293	0.293	0.293
40	0.652	0.445	0.321	0.293	0.293	0.293	0.293	0.293	0.293	0.293
45	0.758	0.525	0.389	0.293	0.293	0.293	0.293	0.293	0.293	0.293
50	0.865	0.605	0.458	0.321	0.293	0.293	0.293	0.293	0.293	0.293
55	0.971	0.685	0.527	0.353	0.293	0.293	0.293	0.293	0.293	0.293
60	1.077	0.765	0.595	0.385	0.312	0.293	0.293	0.293	0.293	0.293
65	1.118	0.845	0.664	0.416	0.331	0.293	0.293	0.293	0.293	0.293
70	1.147	0.924	0.733	0.448	0.350	0.298	0.293	0.293	0.293	0.293
75	1.176	1.004	0.801	0.480	0.369	0.313	0.293	0.293	0.293	0.293
80	1.205	1.084	0.870	0.512	0.388	0.328	0.305	0.293	0.293	0.293
85	1.234	1.116	0.938	0.544	0.407	0.344	0.320	0.293	0.293	0.293
90	1.263	1.142	1.007	0.575	0.427	0.359	0.335	0.295	0.293	0.293
95	1.292	1.167	1.076	0.607	0.446	0.374	0.349	0.309	0.293	0.293
100	1.321	1.193	1.110	0.639	0.465	0.389	0.364	0.323	0.293	0.293
105	1.350	1.219	1.133	0.671	0.484	0.404	0.379	0.336	0.293	0.293
110	1.379	1.244	1.156	0.703	0.503	0.420	0.393	0.350	0.293	0.293
115	1.408	1.270	1.179	0.735	0.523	0.435	0.408	0.364	0.293	0.293
120	1.437	1.296	1.202	0.766	0.542	0.450	0.422	0.378	0.293	0.293
125	1.466	1.321	1.225	0.798	0.561	0.465	0.437	0.392	0.293	0.293
130	1.495	1.347	1.248	0.830	0.580	0.480	0.452	0.405	0.304	0.293
135	1.524	1.373	1.271	0.862	0.599	0.496	0.466	0.419	0.317	0.293
140	1.553	1.398	1.294	0.894	0.619	0.511	0.481	0.433	0.329	0.293
145	1.582	1.424	1.317	0.926	0.638	0.526	0.495	0.447	0.342	0.293
150	1.611	1.450	1.340	0.957	0.657	0.541	0.510	0.460	0.355	0.293
155	1.640	1.476	1.362	0.989	0.676	0.556	0.525	0.474	0.368	0.293
160	1.669	1.501	1.385	1.021	0.695	0.572	0.539	0.488	0.380	0.293
165	1.698	1.527	1.408	1.053	0.715	0.587	0.554	0.502	0.393	0.293
170	1.727	1.553	1.431	1.085	0.734	0.602	0.568	0.516	0.406	0.293
175	1.756	1.578	1.454	1.111	0.753	0.617	0.583	0.529	0.419	0.302
180	1.785	1.604	1.477	1.136	0.772	0.632	0.598	0.543	0.432	0.314
185	1.814	1.630	1.500	1.161	0.791	0.648	0.612	0.557	0.444	0.326
190	1.843	1.655	1.523	1.186	0.811	0.663	0.627	0.571	0.457	0.338
195	1.872	1.681	1.546	1.211	0.830	0.678	0.641	0.584	0.470	0.350
200	1.901	1.707	1.569	1.236	0.849	0.693	0.656	0.598	0.483	0.362

Thickness is intumescent only.

Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 11: I/H-Section Beams 60 Minutes (continued)										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
205	1.930	1.733	1.592	1.261	0.868	0.708	0.671	0.612	0.495	0.374
210	1.959	1.758	1.615	1.286	0.887	0.724	0.685	0.626	0.508	0.386
215	1.988	1.784	1.638	1.311	0.906	0.739	0.700	0.640	0.521	0.398
220	2.017	1.810	1.661	1.336	0.926	0.754	0.714	0.653	0.534	0.410
225	2.046	1.835	1.684	1.361	0.945	0.769	0.729	0.667	0.546	0.422
230	2.075	1.861	1.707	1.386	0.964	0.784	0.744	0.681	0.559	0.434
235	2.104	1.887	1.730	1.410	0.983	0.800	0.758	0.695	0.572	0.446
240	2.133	1.912	1.752	1.435	1.002	0.815	0.773	0.708	0.585	0.458
245	2.162	1.938	1.775	1.460	1.022	0.830	0.787	0.722	0.598	0.470
250	2.191	1.964	1.798	1.485	1.041	0.845	0.802	0.736	0.610	0.482
255	2.220	1.989	1.821	1.510	1.060	0.860	0.817	0.750	0.623	0.494
260	2.249	2.015	1.844	1.535	1.079	0.876	0.831	0.764	0.636	0.506
265	2.278	2.041	1.867	1.560	1.101	0.891	0.846	0.777	0.649	0.518
270	2.308	2.067	1.890	1.585	1.130	0.906	0.860	0.791	0.661	0.530
275	2.337	2.092	1.913	1.610	1.160	0.921	0.875	0.805	0.674	0.542
280	2.366	2.118	1.936	1.635	1.189	0.936	0.890	0.819	0.687	0.554
285	2.395	2.144	1.959	1.660	1.218	0.952	0.904	0.832	0.700	0.566
290	2.424	2.169	1.982	1.685	1.247	0.967	0.919	0.846	0.712	0.578
295	2.453	2.195	2.005	1.710	1.277	0.982	0.934	0.860	0.725	0.590
300	2.482	2.221	2.028	1.735	1.306	0.997	0.948	0.874	0.738	0.602
305	2.511	2.246	2.051	1.759	1.335	1.012	0.963	0.888	0.751	0.614
310	2.557	2.272	2.074	1.784	1.364	1.028	0.977	0.901	0.764	0.626
315	2.608	2.298	2.097	1.809	1.393	1.043	0.992	0.915	0.776	0.638
320	2.659	2.323	2.119	1.834	1.423	1.058	1.007	0.929	0.789	0.650
325	2.710	2.349	2.142	1.859	1.452	1.073	1.021	0.943	0.802	0.662
330	2.761	2.375	2.165	1.884	1.481	1.088	1.036	0.956	0.815	0.674

Thickness is intumescent only.
Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 12: I/H-Section Beams 75 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	0.672	0.501	0.362	0.293	0.293	0.293	0.293	0.293	0.293	0.293
35	0.804	0.607	0.457	0.328	0.293	0.293	0.293	0.293	0.293	0.293
40	0.937	0.712	0.552	0.390	0.307	0.293	0.293	0.293	0.293	0.293
45	1.070	0.818	0.647	0.452	0.350	0.293	0.293	0.293	0.293	0.293
50	1.134	0.923	0.741	0.514	0.394	0.319	0.298	0.293	0.293	0.293
55	1.193	1.028	0.836	0.575	0.437	0.349	0.323	0.295	0.293	0.293
60	1.251	1.099	0.931	0.637	0.481	0.378	0.349	0.314	0.293	0.293
65	1.309	1.136	1.025	0.699	0.524	0.408	0.374	0.333	0.293	0.293
70	1.367	1.173	1.093	0.760	0.568	0.438	0.399	0.352	0.295	0.293
75	1.425	1.210	1.121	0.822	0.611	0.467	0.425	0.370	0.310	0.293
80	1.484	1.246	1.149	0.884	0.655	0.497	0.450	0.389	0.325	0.293
85	1.542	1.283	1.177	0.945	0.699	0.527	0.475	0.408	0.340	0.293
90	1.600	1.320	1.205	1.007	0.742	0.556	0.501	0.427	0.355	0.297
95	1.658	1.357	1.233	1.069	0.786	0.586	0.526	0.446	0.370	0.311
100	1.716	1.393	1.261	1.103	0.829	0.616	0.551	0.465	0.385	0.325
105	1.775	1.430	1.290	1.130	0.873	0.645	0.577	0.484	0.400	0.339
110	1.833	1.467	1.318	1.157	0.916	0.675	0.602	0.503	0.416	0.353
115	1.891	1.504	1.346	1.184	0.960	0.705	0.627	0.522	0.431	0.367
120	1.949	1.540	1.374	1.211	1.003	0.734	0.653	0.541	0.446	0.381
125	2.008	1.577	1.402	1.238	1.047	0.764	0.678	0.560	0.461	0.395
130	2.066	1.614	1.430	1.265	1.087	0.794	0.703	0.579	0.476	0.409
135	2.124	1.651	1.458	1.292	1.113	0.823	0.729	0.598	0.491	0.423
140	2.182	1.687	1.487	1.319	1.140	0.853	0.754	0.617	0.506	0.437
145	2.240	1.724	1.515	1.346	1.166	0.883	0.779	0.636	0.521	0.451
150	2.299	1.761	1.543	1.373	1.193	0.912	0.805	0.655	0.536	0.465
155	2.357	1.798	1.571	1.400	1.219	0.942	0.830	0.674	0.551	0.479
160	2.415	1.834	1.599	1.427	1.246	0.972	0.855	0.693	0.566	0.493
165	2.473	1.871	1.627	1.454	1.272	1.001	0.881	0.712	0.581	0.507
170	2.527	1.908	1.655	1.481	1.299	1.031	0.906	0.731	0.596	0.521
175	2.565	1.945	1.684	1.508	1.325	1.061	0.931	0.750	0.611	0.535
180	2.604	1.981	1.712	1.535	1.352	1.089	0.957	0.769	0.626	0.549
185	2.642	2.018	1.740	1.562	1.378	1.117	0.982	0.787	0.641	0.563
190	2.681	2.055	1.768	1.589	1.405	1.144	1.007	0.806	0.656	0.577
195	2.719	2.092	1.796	1.616	1.431	1.171	1.033	0.825	0.671	0.590
200	2.758	2.128	1.824	1.643	1.458	1.198	1.058	0.844	0.687	0.604

Thickness is intumescent only.

Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 12: I/H-Section Beams 75 Minutes (continued)										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
205	2.796	2.165	1.852	1.670	1.484	1.225	1.083	0.863	0.702	0.618
210	2.835	2.202	1.881	1.697	1.510	1.253	1.111	0.882	0.717	0.632
215	2.873	2.239	1.909	1.724	1.537	1.280	1.139	0.901	0.732	0.646
220	2.912	2.275	1.937	1.751	1.563	1.307	1.167	0.920	0.747	0.660
225	2.951	2.312	1.965	1.778	1.590	1.334	1.196	0.939	0.762	0.674
230	2.989	2.349	1.993	1.805	1.616	1.361	1.224	0.958	0.777	0.688
235	3.028	2.386	2.021	1.832	1.643	1.389	1.252	0.977	0.792	0.702
240	3.066	2.422	2.049	1.859	1.669	1.416	1.280	0.996	0.807	0.716
245	3.105	2.459	2.077	1.886	1.696	1.443	1.308	1.015	0.822	0.730
250	3.143	2.496	2.106	1.913	1.722	1.470	1.336	1.034	0.837	0.744
255	3.182	2.538	2.134	1.940	1.749	1.497	1.364	1.053	0.852	0.758
260	3.220	2.587	2.162	1.967	1.775	1.524	1.392	1.072	0.867	0.772
265	3.259	2.636	2.190	1.994	1.802	1.552	1.420	1.097	0.882	0.786
270	3.297	2.685	2.218	2.021	1.828	1.579	1.448	1.129	0.897	0.800
275	3.336	2.734	2.246	2.048	1.855	1.606	1.476	1.161	0.912	0.814
280	3.374	2.783	2.274	2.075	1.881	1.633	1.504	1.193	0.927	0.828
285	3.413	2.833	2.303	2.102	1.908	1.660	1.532	1.224	0.942	0.842
290	3.452	2.882	2.331	2.129	1.934	1.688	1.560	1.256	0.958	0.856
295	3.490	2.931	2.359	2.156	1.961	1.715	1.588	1.288	0.973	0.870
300	3.529	2.980	2.387	2.183	1.987	1.742	1.616	1.319	0.988	0.884
305	3.567	3.029	2.415	2.210	2.014	1.769	1.644	1.351	1.003	0.898
310	3.606	3.078	2.443	2.237	2.040	1.796	1.672	1.383	1.018	0.912
315	3.644	3.127	2.471	2.264	2.067	1.824	1.700	1.415	1.033	0.925
320	3.683	3.176	2.500	2.291	2.093	1.851	1.728	1.446	1.048	0.939
325	3.721	3.226	2.539	2.318	2.120	1.878	1.756	1.478	1.063	0.953
330	3.760	3.275	2.595	2.345	2.146	1.905	1.784	1.510	1.078	0.967

Thickness is intumescent only.
Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 13: I/H-Section Beams 90 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	0.947	0.733	0.567	0.436	0.308	0.293	0.293	0.293	0.293	0.293
35	1.149	0.873	0.692	0.526	0.380	0.297	0.293	0.293	0.293	0.293
40	1.352	1.013	0.818	0.617	0.452	0.351	0.322	0.293	0.293	0.293
45	1.554	1.124	0.943	0.708	0.524	0.406	0.370	0.324	0.293	0.293
50	1.756	1.197	1.068	0.798	0.595	0.460	0.417	0.361	0.296	0.293
55	1.959	1.270	1.127	0.889	0.667	0.514	0.465	0.399	0.322	0.293
60	2.161	1.343	1.170	0.979	0.739	0.568	0.513	0.437	0.349	0.299
65	2.363	1.415	1.213	1.070	0.811	0.622	0.560	0.474	0.375	0.316
70	2.526	1.488	1.256	1.116	0.882	0.676	0.608	0.512	0.402	0.334
75	2.565	1.561	1.298	1.147	0.954	0.731	0.655	0.550	0.428	0.351
80	2.603	1.634	1.341	1.178	1.026	0.785	0.703	0.588	0.455	0.368
85	2.641	1.707	1.384	1.210	1.095	0.839	0.751	0.625	0.481	0.385
90	2.679	1.780	1.427	1.241	1.124	0.893	0.798	0.663	0.508	0.403
95	2.718	1.853	1.469	1.272	1.153	0.947	0.846	0.701	0.534	0.420
100	2.756	1.926	1.512	1.303	1.182	1.002	0.893	0.738	0.561	0.437
105	2.794	1.999	1.555	1.334	1.211	1.056	0.941	0.776	0.587	0.454
110	2.833	2.072	1.598	1.365	1.240	1.102	0.989	0.814	0.614	0.471
115	2.871	2.144	1.640	1.396	1.269	1.130	1.036	0.852	0.640	0.489
120	2.909	2.217	1.683	1.428	1.298	1.157	1.084	0.889	0.667	0.506
125	2.948	2.290	1.726	1.459	1.327	1.185	1.115	0.927	0.693	0.523
130	2.986	2.363	1.768	1.490	1.356	1.213	1.143	0.965	0.720	0.540
135	3.024	2.436	1.811	1.521	1.385	1.241	1.171	1.002	0.746	0.557
140	3.062	2.509	1.854	1.552	1.414	1.269	1.199	1.040	0.773	0.575
145	3.101	2.551	1.897	1.583	1.443	1.297	1.226	1.078	0.799	0.592
150	3.139	2.588	1.939	1.614	1.472	1.325	1.254	1.110	0.826	0.609
155	3.177	2.626	1.982	1.645	1.501	1.353	1.282	1.138	0.852	0.626
160	3.216	2.664	2.025	1.677	1.530	1.381	1.309	1.166	0.879	0.643
165	3.254	2.702	2.068	1.708	1.559	1.409	1.337	1.195	0.905	0.661
170	3.292	2.740	2.110	1.739	1.588	1.436	1.365	1.223	0.932	0.678
175	3.331	2.777	2.153	1.770	1.617	1.464	1.393	1.251	0.958	0.695
180	3.369	2.815	2.196	1.801	1.646	1.492	1.420	1.279	0.985	0.712
185	3.407	2.853	2.239	1.832	1.675	1.520	1.448	1.308	1.011	0.730
190	3.445	2.891	2.281	1.863	1.704	1.548	1.476	1.336	1.037	0.747
195	3.484	2.929	2.324	1.895	1.733	1.576	1.504	1.364	1.064	0.764
200	3.522	2.966	2.367	1.926	1.762	1.604	1.531	1.392	1.090	0.781

Thickness is intumescent only.

Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 13: I/H-Section Beams 90 Minutes (continued)										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
205	3.560	3.004	2.410	1.957	1.791	1.632	1.559	1.421	1.120	0.798
210	3.599	3.042	2.452	1.988	1.820	1.660	1.587	1.449	1.150	0.816
215	3.637	3.080	2.495	2.019	1.849	1.687	1.614	1.477	1.179	0.833
220	3.675	3.118	2.540	2.050	1.878	1.715	1.642	1.505	1.209	0.850
225	3.714	3.156	2.586	2.081	1.907	1.743	1.670	1.533	1.239	0.867
230	3.752	3.193	2.633	2.112	1.936	1.771	1.698	1.562	1.268	0.884
235	3.790	3.231	2.679	2.144	1.965	1.799	1.725	1.590	1.298	0.902
240	3.828	3.269	2.726	2.175	1.994	1.827	1.753	1.618	1.328	0.919
245	3.867	3.307	2.772	2.206	2.023	1.855	1.781	1.646	1.358	0.936
250	3.905	3.345	2.819	2.237	2.052	1.883	1.808	1.675	1.387	0.953
255	3.943	3.382	2.865	2.268	2.081	1.911	1.836	1.703	1.417	0.970
260	-	3.420	2.912	2.299	2.110	1.939	1.864	1.731	1.447	0.988
265	-	3.458	2.958	2.330	2.139	1.966	1.892	1.759	1.476	1.005
270	-	3.496	3.004	2.361	2.168	1.994	1.919	1.788	1.506	1.022
275	-	3.534	3.051	2.393	2.197	2.022	1.947	1.816	1.536	1.039
280	-	3.571	3.097	2.424	2.226	2.050	1.975	1.844	1.566	1.057
285	-	3.609	3.144	2.455	2.255	2.078	2.003	1.872	1.595	1.074
290	-	3.647	3.190	2.486	2.284	2.106	2.030	1.901	1.625	1.091
295	-	3.685	3.237	2.517	2.313	2.134	2.058	1.929	1.655	1.124
300	-	3.723	3.283	2.582	2.342	2.162	2.086	1.957	1.684	1.160
305	-	3.760	3.330	2.647	2.371	2.190	2.113	1.985	1.714	1.195
310	-	3.798	3.376	2.711	2.400	2.217	2.141	2.014	1.744	1.231
315	-	3.836	3.423	2.776	2.429	2.245	2.169	2.042	1.774	1.267
320	-	3.874	3.469	2.841	2.458	2.273	2.197	2.070	1.803	1.302
325	-	3.912	3.516	2.905	2.487	2.301	2.224	2.098	1.833	1.338
330	-	3.949	3.562	2.970	2.516	2.329	2.252	2.127	1.863	1.373

Thickness is intumescent only.
Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 14: I/H-Section Beams 120 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	2.448	1.500	0.926	0.787	0.636	0.509	0.459	0.380	0.293	0.293
35	2.678	1.832	1.140	0.925	0.752	0.610	0.555	0.468	0.337	0.293
40	2.908	2.164	1.355	1.063	0.869	0.710	0.651	0.556	0.413	0.328
45	3.139	2.496	1.569	1.175	0.985	0.811	0.746	0.643	0.490	0.392
50	3.369	2.636	1.783	1.280	1.097	0.912	0.842	0.731	0.567	0.457
55	3.599	2.762	1.998	1.385	1.150	1.013	0.937	0.819	0.643	0.522
60	3.829	2.889	2.212	1.490	1.204	1.102	1.033	0.907	0.720	0.587
65	4.059	3.015	2.427	1.595	1.257	1.145	1.108	0.995	0.797	0.651
70	4.289	3.142	2.551	1.699	1.311	1.188	1.147	1.083	0.873	0.716
75	-	3.268	2.610	1.804	1.364	1.231	1.186	1.123	0.950	0.781
80	-	3.395	2.669	1.909	1.418	1.274	1.225	1.158	1.027	0.846
85	-	3.521	2.729	2.014	1.471	1.316	1.265	1.192	1.097	0.911
90	-	3.648	2.788	2.119	1.525	1.359	1.304	1.227	1.127	0.975
95	-	3.775	2.847	2.224	1.578	1.402	1.343	1.261	1.158	1.040
100	-	3.901	2.906	2.329	1.632	1.445	1.382	1.296	1.188	1.098
105	-	4.028	2.965	2.434	1.686	1.488	1.422	1.330	1.219	1.127
110	-	4.154	3.024	2.525	1.739	1.531	1.461	1.365	1.249	1.155
115	-	-	3.083	2.562	1.793	1.574	1.500	1.399	1.280	1.184
120	-	-	3.143	2.600	1.846	1.617	1.539	1.434	1.310	1.212
125	-	-	3.202	2.637	1.900	1.660	1.579	1.468	1.340	1.241
130	-	-	3.261	2.675	1.953	1.703	1.618	1.503	1.371	1.269
135	-	-	3.320	2.712	2.007	1.746	1.657	1.537	1.401	1.298
140	-	-	3.379	2.750	2.060	1.789	1.696	1.572	1.432	1.326
145	-	-	3.438	2.787	2.114	1.832	1.736	1.606	1.462	1.355
150	-	-	3.497	2.825	2.167	1.875	1.775	1.641	1.492	1.383
155	-	-	3.557	2.862	2.221	1.917	1.814	1.675	1.523	1.412
160	-	-	3.616	2.900	2.275	1.960	1.853	1.710	1.553	1.440
165	-	-	3.675	2.937	2.328	2.003	1.893	1.744	1.584	1.468
170	-	-	3.734	2.975	2.382	2.046	1.932	1.779	1.614	1.497
175	-	-	3.793	3.012	2.435	2.089	1.971	1.813	1.645	1.525
180	-	-	3.852	3.050	2.489	2.132	2.010	1.848	1.675	1.554
185	-	-	3.911	3.087	2.541	2.175	2.050	1.882	1.705	1.582
190	-	-	3.971	3.125	2.591	2.218	2.089	1.917	1.736	1.611
195	-	-	4.030	3.162	2.642	2.261	2.128	1.951	1.766	1.639
200	-	-	4.089	3.200	2.692	2.304	2.167	1.986	1.797	1.668

Thickness is intumescent only.
Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 14: I/H-Section Beams 120 Minutes (continued)										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
205	-	-	4.148	3.237	2.743	2.347	2.207	2.020	1.827	1.696
210	-	-	4.207	3.275	2.793	2.390	2.246	2.055	1.857	1.725
215	-	-	4.266	3.312	2.844	2.433	2.285	2.089	1.888	1.753
220	-	-	4.325	3.350	2.894	2.476	2.324	2.124	1.918	1.782
225	-	-	-	3.387	2.945	2.519	2.364	2.158	1.949	1.810
230	-	-	-	3.425	2.995	2.576	2.403	2.193	1.979	1.839
235	-	-	-	3.462	3.046	2.633	2.442	2.227	2.010	1.867
240	-	-	-	3.500	3.096	2.690	2.481	2.262	2.040	1.896
245	-	-	-	3.537	3.147	2.746	2.523	2.296	2.070	1.924
250	-	-	-	3.575	3.197	2.803	2.584	2.331	2.101	1.953
255	-	-	-	3.612	3.248	2.860	2.646	2.365	2.131	1.981
260	-	-	-	3.650	3.298	2.917	2.707	2.400	2.162	2.010
265	-	-	-	3.688	3.349	2.974	2.768	2.434	2.192	2.038
270	-	-	-	3.725	3.399	3.031	2.830	2.469	2.222	2.067
275	-	-	-	3.763	3.450	3.088	2.891	2.503	2.253	2.095
280	-	-	-	3.800	3.500	3.145	2.953	2.559	2.283	2.123
285	-	-	-	3.838	3.551	3.201	3.014	2.629	2.314	2.152
290	-	-	-	3.875	3.601	3.258	3.075	2.700	2.344	2.180
295	-	-	-	3.913	3.652	3.315	3.137	2.770	2.375	2.209
300	-	-	-	3.950	3.702	3.372	3.198	2.841	2.405	2.237
305	-	-	-	3.988	3.753	3.429	3.260	2.911	2.435	2.266
310	-	-	-	4.025	3.803	3.486	3.321	2.981	2.466	2.294
315	-	-	-	4.063	3.854	3.543	3.382	3.052	2.496	2.323
320	-	-	-	4.100	3.904	3.600	3.444	3.122	2.542	2.351
325	-	-	-	4.138	3.955	3.656	3.505	3.193	2.619	2.380
330	-	-	-	4.175	4.005	3.713	3.567	3.263	2.697	2.408

Thickness is intumescent only.
Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 15: I/H-Section Beams 150 Minutes										
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	3.573	2.794	1.538	1.291	0.765	0.765	0.718	0.648	0.519	0.402
35	3.573	3.128	2.142	1.666	1.001	0.897	0.846	0.768	0.633	0.512
40	-	3.463	2.746	2.042	1.272	1.030	0.974	0.889	0.747	0.622
45	-	3.797	2.991	2.417	1.543	1.195	1.104	1.010	0.861	0.732
50	-	4.132	3.236	2.634	1.814	1.379	1.245	1.112	0.974	0.841
55	-	-	3.481	2.793	2.085	1.564	1.387	1.189	1.084	0.951
60	-	-	3.726	2.953	2.356	1.749	1.528	1.265	1.134	1.061
65	-	-	3.971	3.113	2.554	1.934	1.670	1.341	1.185	1.115
70	-	-	4.216	3.272	2.644	2.118	1.811	1.418	1.235	1.157
75	-	-	-	3.432	2.735	2.303	1.953	1.494	1.285	1.198
80	-	-	-	3.591	2.825	2.488	2.094	1.570	1.335	1.240
85	-	-	-	3.751	2.915	2.561	2.236	1.647	1.385	1.281
90	-	-	-	3.910	3.006	2.614	2.377	1.723	1.435	1.323
95	-	-	-	4.070	3.096	2.666	2.518	1.799	1.486	1.364
100	-	-	-	4.229	3.187	2.719	2.567	1.876	1.536	1.406
105	-	-	-	4.389	3.277	2.771	2.616	1.952	1.586	1.447
110	-	-	-	-	3.368	2.824	2.665	2.028	1.636	1.489
115	-	-	-	-	3.458	2.876	2.714	2.105	1.686	1.530
120	-	-	-	-	3.548	2.929	2.763	2.181	1.737	1.572
125	-	-	-	-	3.639	2.981	2.813	2.257	1.787	1.614
130	-	-	-	-	3.729	3.034	2.862	2.334	1.837	1.655
135	-	-	-	-	3.820	3.086	2.911	2.410	1.887	1.697
140	-	-	-	-	3.910	3.139	2.960	2.486	1.937	1.738
145	-	-	-	-	4.001	3.191	3.009	2.546	1.988	1.780
150	-	-	-	-	4.091	3.244	3.059	2.594	2.038	1.821
155	-	-	-	-	4.181	3.296	3.108	2.643	2.088	1.863
160	-	-	-	-	4.272	3.349	3.157	2.692	2.138	1.904
165	-	-	-	-	4.362	3.401	3.206	2.740	2.188	1.946
170	-	-	-	-	-	3.454	3.255	2.789	2.239	1.987
175	-	-	-	-	-	3.506	3.305	2.837	2.289	2.029
180	-	-	-	-	-	3.559	3.354	2.886	2.339	2.070
185	-	-	-	-	-	3.611	3.403	2.934	2.389	2.112
190	-	-	-	-	-	3.664	3.452	2.983	2.439	2.154
195	-	-	-	-	-	3.716	3.501	3.031	2.490	2.195
200	-	-	-	-	-	3.769	3.550	3.080	2.543	2.237

Thickness is intumescent only.
Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 15: I/H-Section Beams 150 Minutes (continued)										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
205	-	-	-	-	-	3.821	3.600	3.128	2.602	2.278
210	-	-	-	-	-	3.874	3.649	3.177	2.660	2.320
215	-	-	-	-	-	3.926	3.698	3.225	2.718	2.361
220	-	-	-	-	-	3.979	3.747	3.274	2.776	2.403
225	-	-	-	-	-	4.031	3.796	3.322	2.835	2.444
230	-	-	-	-	-	4.084	3.846	3.371	2.893	2.486
235	-	-	-	-	-	4.136	3.895	3.419	2.951	2.533
240	-	-	-	-	-	4.189	3.944	3.468	3.009	2.599
245	-	-	-	-	-	4.241	3.993	3.516	3.067	2.664
250	-	-	-	-	-	4.294	4.042	3.565	3.126	2.729
255	-	-	-	-	-	4.347	4.092	3.614	3.184	2.795
260	-	-	-	-	-	4.399	4.141	3.662	3.242	2.860
265	-	-	-	-	-	-	4.190	3.711	3.300	2.926
270	-	-	-	-	-	-	4.239	3.759	3.359	2.991
275	-	-	-	-	-	-	4.288	3.808	3.417	3.056
280	-	-	-	-	-	-	4.338	3.856	3.475	3.122
285	-	-	-	-	-	-	-	3.905	3.533	3.187
290	-	-	-	-	-	-	-	3.953	3.592	3.252
295	-	-	-	-	-	-	-	4.002	3.650	3.318
300	-	-	-	-	-	-	-	4.050	3.708	3.383
305	-	-	-	-	-	-	-	4.099	3.766	3.449
310	-	-	-	-	-	-	-	4.147	3.825	3.514
315	-	-	-	-	-	-	-	4.196	3.883	3.579
320	-	-	-	-	-	-	-	4.244	3.941	3.645
325	-	-	-	-	-	-	-	4.293	3.999	3.710
330	-	-	-	-	-	-	-	4.341	4.058	3.775

Thickness is intumescent only.
Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

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Table 16: I/H-Section Beams 180 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	-	-	3.233	2.581	1.423	1.110	0.844	0.710	0.710	0.710
35	-	-	3.233	2.947	2.068	1.846	1.696	1.368	0.960	0.864
40	-	-	-	3.312	2.713	2.582	2.548	2.395	1.308	1.019
45	-	-	-	3.678	2.989	2.744	2.680	2.600	2.190	1.249
50	-	-	-	4.043	3.265	2.906	2.813	2.693	2.555	1.550
55	-	-	-	4.408	3.542	3.068	2.946	2.787	2.616	1.851
60	-	-	-	-	3.818	3.230	3.079	2.880	2.676	2.152
65	-	-	-	-	4.094	3.392	3.212	2.974	2.737	2.453
70	-	-	-	-	4.370	3.554	3.345	3.068	2.797	2.557
75	-	-	-	-	-	3.715	3.478	3.161	2.858	2.607
80	-	-	-	-	-	3.877	3.610	3.255	2.918	2.658
85	-	-	-	-	-	4.039	3.743	3.349	2.979	2.708
90	-	-	-	-	-	4.201	3.876	3.442	3.040	2.759
95	-	-	-	-	-	4.363	4.009	3.536	3.100	2.809
100	-	-	-	-	-	-	4.142	3.630	3.161	2.859
105	-	-	-	-	-	-	4.275	3.723	3.221	2.910
110	-	-	-	-	-	-	4.408	3.817	3.282	2.960
115	-	-	-	-	-	-	-	3.911	3.342	3.011
120	-	-	-	-	-	-	-	4.004	3.403	3.061
125	-	-	-	-	-	-	-	4.098	3.463	3.112
130	-	-	-	-	-	-	-	4.191	3.524	3.162
135	-	-	-	-	-	-	-	4.285	3.585	3.213
140	-	-	-	-	-	-	-	4.379	3.645	3.263
145	-	-	-	-	-	-	-	-	3.706	3.314
150	-	-	-	-	-	-	-	-	3.766	3.364
155	-	-	-	-	-	-	-	-	3.827	3.414
160	-	-	-	-	-	-	-	-	3.887	3.465
165	-	-	-	-	-	-	-	-	3.948	3.515
170	-	-	-	-	-	-	-	-	4.008	3.566
175	-	-	-	-	-	-	-	-	4.069	3.616
180	-	-	-	-	-	-	-	-	4.130	3.667
185	-	-	-	-	-	-	-	-	4.190	3.717
190	-	-	-	-	-	-	-	-	4.251	3.768
195	-	-	-	-	-	-	-	-	4.311	3.818
200	-	-	-	-	-	-	-	-	4.372	3.869

Thickness is intumescent only.
Results apply to I/H section beams with 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 16: I/H-Section Beams 180 Minutes (continued)										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
205	-	-	-	-	-	-	-	-	-	3.919
210	-	-	-	-	-	-	-	-	-	3.969
215	-	-	-	-	-	-	-	-	-	4.020
220	-	-	-	-	-	-	-	-	-	4.070
225	-	-	-	-	-	-	-	-	-	4.121
230	-	-	-	-	-	-	-	-	-	4.171
235	-	-	-	-	-	-	-	-	-	4.222
240	-	-	-	-	-	-	-	-	-	4.272
245	-	-	-	-	-	-	-	-	-	4.323
250	-	-	-	-	-	-	-	-	-	4.373
255	-	-	-	-	-	-	-	-	-	4.424
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 3 sides fire exposure.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 17: Rectangular Hollow Columns 30 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	620°C	650°C	700°C	750°C
50	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
55	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
60	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
65	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
70	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
75	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
80	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
85	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
90	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
95	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
100	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
105	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
110	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
115	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
120	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
125	0.730	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
130	0.762	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
135	0.793	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
140	0.825	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
145	0.856	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
150	0.887	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
155	0.919	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
160	0.950	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
165	0.982	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
170	1.013	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
175	1.044	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
180	1.076	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
185	1.107	0.747	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
190	1.138	0.777	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
195	1.170	0.808	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
200	1.201	0.839	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
205	1.233	0.870	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
210	1.264	0.901	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
215	1.295	0.932	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
220	1.327	0.963	0.740	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
225	1.358	0.994	0.767	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
230	1.390	1.025	0.794	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
235	1.421	1.056	0.821	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
240	1.452	1.086	0.848	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
245	1.484	1.117	0.875	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728

Thickness is intumescent only.

Results also apply to rectangular hollow beams subject to a maximum DFT of 3.286mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 18: Rectangular Hollow Columns 45 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	620°C	650°C	700°C	750°C
50	0.744	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
55	0.783	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
60	0.823	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
65	0.863	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
70	0.903	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
75	0.943	0.754	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
80	0.983	0.789	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
85	1.023	0.824	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
90	1.063	0.859	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
95	1.103	0.894	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
100	1.143	0.929	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
105	1.183	0.964	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
110	1.223	0.999	0.736	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
115	1.263	1.034	0.770	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
120	1.303	1.069	0.805	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
125	1.342	1.104	0.839	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
130	1.382	1.139	0.873	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
135	1.422	1.174	0.908	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
140	1.462	1.209	0.942	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
145	1.502	1.243	0.976	0.734	0.728	0.728	0.728	0.728	0.728	0.728	0.728
150	1.542	1.278	1.011	0.766	0.728	0.728	0.728	0.728	0.728	0.728	0.728
155	1.582	1.313	1.045	0.799	0.728	0.728	0.728	0.728	0.728	0.728	0.728
160	1.622	1.348	1.079	0.832	0.744	0.728	0.728	0.728	0.728	0.728	0.728
165	1.662	1.383	1.114	0.865	0.776	0.728	0.728	0.728	0.728	0.728	0.728
170	1.702	1.418	1.148	0.898	0.808	0.728	0.728	0.728	0.728	0.728	0.728
175	1.742	1.453	1.182	0.931	0.840	0.728	0.728	0.728	0.728	0.728	0.728
180	1.782	1.488	1.217	0.964	0.872	0.747	0.728	0.728	0.728	0.728	0.728
185	1.822	1.523	1.251	0.997	0.905	0.777	0.728	0.728	0.728	0.728	0.728
190	1.862	1.558	1.285	1.030	0.937	0.808	0.728	0.728	0.728	0.728	0.728
195	1.901	1.593	1.320	1.063	0.969	0.838	0.728	0.728	0.728	0.728	0.728
200	1.941	1.628	1.354	1.096	1.001	0.868	0.728	0.728	0.728	0.728	0.728
205	1.981	1.663	1.388	1.129	1.033	0.898	0.748	0.728	0.728	0.728	0.728
210	2.021	1.698	1.423	1.162	1.065	0.929	0.775	0.728	0.728	0.728	0.728
215	2.073	1.733	1.457	1.195	1.097	0.959	0.802	0.753	0.728	0.728	0.728
220	2.129	1.768	1.491	1.228	1.129	0.989	0.829	0.778	0.728	0.728	0.728
225	2.185	1.802	1.526	1.261	1.162	1.019	0.855	0.803	0.741	0.728	0.728
230	2.240	1.837	1.560	1.294	1.194	1.050	0.882	0.829	0.761	0.728	0.728
235	2.296	1.872	1.595	1.327	1.226	1.080	0.909	0.854	0.781	0.728	0.728
240	2.351	1.907	1.629	1.360	1.258	1.110	0.936	0.879	0.801	0.728	0.728
245	2.407	1.942	1.663	1.393	1.290	1.140	0.962	0.904	0.821	0.728	0.728

Thickness is intumescent only.

Results also apply to rectangular hollow beams subject to a maximum DFT of 3.286mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 19: Rectangular Hollow Columns 60 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	620°C	650°C	700°C	750°C
50	1.239	0.831	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
55	1.302	0.884	0.748	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
60	1.365	0.937	0.788	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
65	1.428	0.991	0.828	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
70	1.491	1.044	0.867	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
75	1.554	1.098	0.907	0.749	0.728	0.728	0.728	0.728	0.728	0.728	0.728
80	1.617	1.151	0.947	0.785	0.728	0.728	0.728	0.728	0.728	0.728	0.728
85	1.680	1.204	0.987	0.821	0.740	0.728	0.728	0.728	0.728	0.728	0.728
90	1.743	1.258	1.026	0.858	0.775	0.728	0.728	0.728	0.728	0.728	0.728
95	1.806	1.311	1.066	0.894	0.811	0.728	0.728	0.728	0.728	0.728	0.728
100	1.869	1.365	1.106	0.930	0.847	0.728	0.728	0.728	0.728	0.728	0.728
105	1.932	1.418	1.146	0.966	0.883	0.731	0.728	0.728	0.728	0.728	0.728
110	1.995	1.471	1.185	1.002	0.919	0.767	0.728	0.728	0.728	0.728	0.728
115	2.052	1.525	1.225	1.039	0.955	0.803	0.728	0.728	0.728	0.728	0.728
120	2.100	1.578	1.265	1.075	0.991	0.839	0.728	0.728	0.728	0.728	0.728
125	2.147	1.632	1.305	1.111	1.027	0.874	0.728	0.728	0.728	0.728	0.728
130	2.195	1.685	1.345	1.147	1.062	0.910	0.728	0.728	0.728	0.728	0.728
135	2.243	1.738	1.384	1.183	1.098	0.946	0.732	0.728	0.728	0.728	0.728
140	2.291	1.792	1.424	1.220	1.134	0.981	0.767	0.728	0.728	0.728	0.728
145	2.339	1.845	1.464	1.256	1.170	1.017	0.802	0.740	0.728	0.728	0.728
150	2.387	1.899	1.504	1.292	1.206	1.053	0.837	0.774	0.728	0.728	0.728
155	2.435	1.952	1.543	1.328	1.242	1.089	0.871	0.807	0.728	0.728	0.728
160	2.483	2.005	1.583	1.364	1.278	1.124	0.906	0.841	0.746	0.728	0.728
165	2.530	2.059	1.623	1.401	1.314	1.160	0.941	0.875	0.777	0.728	0.728
170	2.578	2.112	1.663	1.437	1.349	1.196	0.976	0.909	0.809	0.728	0.728
175	2.626	2.166	1.702	1.473	1.385	1.231	1.011	0.942	0.841	0.728	0.728
180	2.674	2.219	1.742	1.509	1.421	1.267	1.045	0.976	0.873	0.744	0.728
185	2.722	2.272	1.782	1.545	1.457	1.303	1.080	1.010	0.905	0.772	0.728
190	2.770	2.326	1.822	1.581	1.493	1.339	1.115	1.043	0.937	0.799	0.728
195	2.818	2.379	1.861	1.618	1.529	1.374	1.150	1.077	0.968	0.827	0.728
200	2.866	2.433	1.901	1.654	1.565	1.410	1.184	1.111	1.000	0.855	0.728
205	2.914	2.486	1.941	1.690	1.600	1.446	1.219	1.145	1.032	0.883	0.742
210	2.961	2.539	1.981	1.726	1.636	1.481	1.254	1.178	1.064	0.910	0.765
215	3.009	2.593	2.020	1.762	1.672	1.517	1.289	1.212	1.096	0.938	0.787
220	3.057	2.646	2.077	1.799	1.708	1.553	1.323	1.246	1.127	0.966	0.809
225	3.105	2.700	2.139	1.835	1.744	1.588	1.358	1.279	1.159	0.994	0.831
230	3.153	2.753	2.201	1.871	1.780	1.624	1.393	1.313	1.191	1.022	0.854
235	3.201	2.807	2.262	1.907	1.816	1.660	1.428	1.347	1.223	1.049	0.876
240	3.295	2.860	2.324	1.943	1.852	1.696	1.463	1.380	1.255	1.077	0.898
245	3.444	2.913	2.386	1.980	1.887	1.731	1.497	1.414	1.287	1.105	0.920

Thickness is intumescent only.

Results also apply to rectangular hollow beams subject to a maximum DFT of 3.286mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 20: Rectangular Hollow Columns 75 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	620°C	650°C	700°C	750°C
50	1.787	1.384	1.051	0.778	0.732	0.728	0.728	0.728	0.728	0.728	0.728
55	1.903	1.463	1.106	0.828	0.778	0.728	0.728	0.728	0.728	0.728	0.728
60	2.020	1.542	1.161	0.878	0.823	0.751	0.728	0.728	0.728	0.728	0.728
65	2.096	1.620	1.217	0.928	0.869	0.790	0.728	0.728	0.728	0.728	0.728
70	2.167	1.699	1.272	0.979	0.914	0.828	0.728	0.728	0.728	0.728	0.728
75	2.239	1.778	1.328	1.029	0.960	0.867	0.728	0.728	0.728	0.728	0.728
80	2.311	1.857	1.383	1.079	1.006	0.905	0.744	0.728	0.728	0.728	0.728
85	2.382	1.935	1.438	1.130	1.051	0.944	0.782	0.728	0.728	0.728	0.728
90	2.454	2.014	1.494	1.180	1.097	0.982	0.819	0.731	0.728	0.728	0.728
95	2.526	2.072	1.549	1.230	1.143	1.021	0.857	0.769	0.728	0.728	0.728
100	2.597	2.124	1.604	1.280	1.188	1.059	0.894	0.806	0.728	0.728	0.728
105	2.669	2.176	1.660	1.331	1.234	1.098	0.931	0.844	0.728	0.728	0.728
110	2.740	2.228	1.715	1.381	1.280	1.136	0.969	0.882	0.728	0.728	0.728
115	2.812	2.280	1.771	1.431	1.325	1.175	1.006	0.919	0.728	0.728	0.728
120	2.884	2.332	1.826	1.481	1.371	1.213	1.044	0.957	0.732	0.728	0.728
125	2.955	2.385	1.881	1.532	1.417	1.252	1.081	0.995	0.773	0.728	0.728
130	3.027	2.437	1.937	1.582	1.462	1.290	1.118	1.032	0.813	0.728	0.728
135	3.099	2.489	1.992	1.632	1.508	1.329	1.156	1.070	0.853	0.728	0.728
140	3.170	2.541	2.047	1.682	1.554	1.367	1.193	1.108	0.894	0.762	0.728
145	3.245	2.593	2.101	1.733	1.599	1.406	1.231	1.145	0.934	0.798	0.728
150	3.329	2.645	2.156	1.783	1.645	1.444	1.268	1.183	0.975	0.835	0.728
155	3.414	2.698	2.210	1.833	1.691	1.483	1.305	1.221	1.015	0.871	0.742
160	3.498	2.750	2.264	1.884	1.736	1.521	1.343	1.258	1.056	0.908	0.772
165	3.583	2.802	2.319	1.934	1.782	1.559	1.380	1.296	1.096	0.944	0.802
170	3.667	2.854	2.373	1.984	1.828	1.598	1.418	1.334	1.136	0.980	0.832
175	3.752	2.906	2.427	2.035	1.873	1.636	1.455	1.371	1.177	1.017	0.863
180	3.837	2.958	2.481	2.091	1.919	1.675	1.492	1.409	1.217	1.053	0.893
185	3.921	3.011	2.536	2.148	1.965	1.713	1.530	1.447	1.258	1.089	0.923
190	4.006	3.063	2.590	2.204	2.010	1.752	1.567	1.484	1.298	1.126	0.953
195	4.090	3.115	2.644	2.261	2.063	1.790	1.604	1.522	1.339	1.162	0.983
200	4.175	3.167	2.699	2.317	2.122	1.829	1.642	1.559	1.379	1.199	1.013
205	4.259	3.219	2.753	2.374	2.181	1.867	1.679	1.597	1.419	1.235	1.043
210	4.344	3.345	2.807	2.430	2.239	1.906	1.717	1.635	1.460	1.271	1.074
215	4.428	3.484	2.861	2.487	2.298	1.944	1.754	1.672	1.500	1.308	1.104
220	4.513	3.623	2.916	2.543	2.357	1.983	1.791	1.710	1.541	1.344	1.134
225	4.764	3.762	2.970	2.600	2.416	2.021	1.829	1.748	1.581	1.380	1.164
230	5.023	3.901	3.024	2.656	2.474	2.083	1.866	1.785	1.622	1.417	1.194
235	5.283	4.040	3.079	2.713	2.533	2.151	1.904	1.823	1.662	1.453	1.224
240	5.542	4.179	3.133	2.769	2.592	2.219	1.941	1.861	1.702	1.490	1.254
245	5.760	4.318	3.187	2.826	2.651	2.287	1.978	1.898	1.743	1.526	1.284

Thickness is intumescent only.

Results also apply to rectangular hollow beams subject to a maximum DFT of 3.286mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 21: Rectangular Hollow Columns 90 Minutes											
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of										
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	620°C	650°C	700°C	750°C
50	2.447	1.804	1.506	1.191	1.070	0.897	0.728	0.728	0.728	0.728	0.728
55	2.580	1.949	1.598	1.254	1.127	0.953	0.771	0.728	0.728	0.728	0.728
60	2.712	2.094	1.690	1.317	1.184	1.009	0.819	0.768	0.728	0.728	0.728
65	2.845	2.173	1.782	1.381	1.241	1.066	0.867	0.813	0.728	0.728	0.728
70	2.978	2.253	1.874	1.444	1.299	1.122	0.915	0.857	0.760	0.728	0.728
75	3.110	2.333	1.966	1.507	1.356	1.178	0.964	0.902	0.800	0.728	0.728
80	3.242	2.413	2.049	1.570	1.413	1.234	1.012	0.946	0.840	0.728	0.728
85	3.371	2.493	2.111	1.634	1.470	1.291	1.060	0.990	0.880	0.728	0.728
90	3.499	2.573	2.172	1.697	1.527	1.347	1.108	1.035	0.920	0.728	0.728
95	3.628	2.653	2.234	1.760	1.585	1.403	1.157	1.079	0.960	0.757	0.728
100	3.756	2.733	2.296	1.823	1.642	1.459	1.205	1.124	1.000	0.797	0.728
105	3.884	2.813	2.358	1.887	1.699	1.516	1.253	1.168	1.040	0.837	0.728
110	4.013	2.892	2.419	1.950	1.756	1.572	1.301	1.212	1.080	0.877	0.728
115	4.141	2.972	2.481	2.013	1.813	1.628	1.350	1.257	1.119	0.917	0.728
120	4.270	3.052	2.543	2.068	1.871	1.685	1.398	1.301	1.159	0.957	0.728
125	4.398	3.132	2.604	2.119	1.928	1.741	1.446	1.346	1.199	0.997	0.740
130	4.525	3.212	2.666	2.171	1.985	1.797	1.494	1.390	1.239	1.037	0.778
135	4.629	3.336	2.728	2.223	2.042	1.853	1.543	1.435	1.279	1.077	0.817
140	4.733	3.471	2.790	2.274	2.096	1.910	1.591	1.479	1.319	1.117	0.855
145	4.837	3.606	2.851	2.326	2.151	1.966	1.639	1.523	1.359	1.157	0.893
150	4.941	3.741	2.913	2.378	2.206	2.022	1.687	1.568	1.399	1.197	0.931
155	5.045	3.876	2.975	2.429	2.261	2.078	1.736	1.612	1.439	1.237	0.969
160	5.149	4.011	3.037	2.481	2.316	2.133	1.784	1.657	1.479	1.277	1.008
165	5.253	4.146	3.098	2.533	2.370	2.188	1.832	1.701	1.519	1.317	1.046
170	5.357	4.281	3.160	2.584	2.425	2.243	1.880	1.746	1.558	1.357	1.084
175	5.461	4.416	3.222	2.636	2.480	2.298	1.929	1.790	1.598	1.397	1.122
180	5.565	4.549	3.330	2.688	2.535	2.354	1.977	1.834	1.638	1.437	1.160
185	5.669	4.676	3.442	2.739	2.589	2.409	2.025	1.879	1.678	1.477	1.199
190	5.776	4.804	3.554	2.791	2.644	2.464	2.083	1.923	1.718	1.517	1.237
195	5.886	4.932	3.666	2.842	2.699	2.519	2.142	1.968	1.758	1.557	1.275
200	5.997	5.059	3.778	2.894	2.754	2.574	2.201	2.012	1.798	1.597	1.313
205	6.107	5.187	3.890	2.946	2.809	2.630	2.260	2.067	1.838	1.637	1.351
210	6.218	5.314	4.003	2.997	2.863	2.685	2.319	2.129	1.878	1.676	1.390
215	6.328	5.442	4.115	3.049	2.918	2.740	2.378	2.190	1.918	1.716	1.428
220	6.438	5.570	4.227	3.101	2.973	2.795	2.437	2.252	1.957	1.756	1.466
225	6.549	5.697	4.339	3.152	3.028	2.850	2.495	2.313	1.997	1.796	1.504
230	6.659	5.835	4.451	3.204	3.083	2.906	2.554	2.375	2.042	1.836	1.542
235	6.770	5.975	4.672	3.369	3.137	2.961	2.613	2.437	2.109	1.876	1.580
240	6.880	6.116	5.045	3.626	3.192	3.016	2.672	2.498	2.176	1.916	1.619
245	6.991	6.256	5.419	3.883	3.322	3.071	2.731	2.560	2.243	1.956	1.657

Thickness is intumescent only.

Results also apply to rectangular hollow beams subject to a maximum DFT of 3.286mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 22: Rectangular Hollow Columns 120 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	620°C	650°C	700°C	750°C
50	3.635	3.130	2.558	2.064	1.807	1.690	1.382	1.264	1.086	0.788	0.728
55	3.852	3.308	2.715	2.178	1.963	1.807	1.476	1.349	1.159	0.854	0.728
60	4.070	3.486	2.872	2.292	2.119	1.924	1.569	1.435	1.232	0.919	0.766
65	4.288	3.664	3.030	2.406	2.215	2.037	1.662	1.521	1.306	0.984	0.816
70	4.506	3.842	3.187	2.521	2.311	2.115	1.756	1.606	1.379	1.049	0.866
75	4.658	4.020	3.343	2.635	2.407	2.193	1.849	1.692	1.452	1.114	0.916
80	4.807	4.197	3.500	2.749	2.502	2.271	1.942	1.777	1.526	1.179	0.965
85	4.956	4.375	3.656	2.863	2.598	2.349	2.034	1.863	1.599	1.245	1.015
90	5.105	4.541	3.812	2.978	2.694	2.427	2.095	1.949	1.672	1.310	1.065
95	5.255	4.656	3.969	3.092	2.790	2.505	2.155	2.033	1.745	1.375	1.115
100	5.404	4.772	4.125	3.206	2.886	2.583	2.216	2.086	1.819	1.440	1.164
105	5.553	4.888	4.281	3.354	2.982	2.661	2.277	2.140	1.892	1.505	1.214
110	5.702	5.003	4.438	3.509	3.077	2.739	2.338	2.193	1.965	1.570	1.264
115	5.852	5.119	4.576	3.664	3.173	2.817	2.399	2.246	2.036	1.636	1.314
120	6.003	5.235	4.694	3.820	3.300	2.895	2.460	2.300	2.086	1.701	1.363
125	6.154	5.350	4.813	3.975	3.465	2.973	2.520	2.353	2.137	1.766	1.413
130	6.305	5.466	4.932	4.130	3.630	3.051	2.581	2.407	2.187	1.831	1.463
135	6.456	5.582	5.051	4.286	3.795	3.129	2.642	2.460	2.238	1.896	1.513
140	6.607	5.697	5.170	4.441	3.960	3.207	2.703	2.514	2.288	1.961	1.562
145	6.757	5.844	5.289	4.583	4.125	3.343	2.764	2.567	2.339	2.027	1.612
150	6.908	5.999	5.407	4.711	4.290	3.500	2.824	2.621	2.389	2.079	1.662
155	7.059	6.154	5.526	4.839	4.456	3.656	2.885	2.674	2.440	2.131	1.712
160	7.210	6.310	5.645	4.968	4.603	3.813	2.946	2.728	2.490	2.183	1.762
165	7.361	6.465	5.765	5.096	4.740	3.969	3.007	2.781	2.541	2.235	1.811
170	-	6.620	5.888	5.224	4.877	4.126	3.068	2.835	2.591	2.287	1.861
175	-	6.775	6.010	5.353	5.014	4.282	3.129	2.888	2.642	2.339	1.911
180	-	6.930	6.133	5.481	5.151	4.439	3.189	2.942	2.692	2.391	1.961
185	-	7.086	6.256	5.609	5.288	4.596	3.278	2.995	2.743	2.443	2.010
190	-	7.241	6.378	5.738	5.424	4.754	3.411	3.049	2.793	2.495	2.065
195	-	7.396	6.501	5.867	5.561	4.913	3.544	3.102	2.844	2.547	2.122
200	-	7.551	6.624	5.997	5.698	5.071	3.676	3.155	2.894	2.599	2.179
205	-	-	6.746	6.126	5.837	5.230	3.809	3.209	2.945	2.651	2.237
210	-	-	6.869	6.255	5.976	5.388	3.942	3.354	2.995	2.703	2.294
215	-	-	6.991	6.385	6.115	5.546	4.075	3.545	3.046	2.755	2.352
220	-	-	7.114	6.514	6.254	5.705	4.208	3.736	3.096	2.807	2.409
225	-	-	7.237	6.643	6.393	5.869	4.341	3.927	3.147	2.859	2.466
230	-	-	7.359	6.773	6.532	6.034	4.474	4.118	3.197	2.911	2.524
235	-	-	7.482	6.902	6.671	6.200	4.879	4.309	3.349	2.963	2.581
240	-	-	7.605	7.031	6.810	6.365	5.415	4.501	3.648	3.015	2.639
245	-	-	7.727	7.161	6.949	6.530	5.794	5.012	3.946	3.067	2.696

Thickness is intumescent only.

Results also apply to rectangular hollow beams subject to a maximum DFT of 3.286mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 23: Rectangular Hollow Columns 150 Minutes											
Section Factor up to m^{-1}	**Thickness (mm) Required for a Design Temperature of**										
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	620°C	650°C	700°C	750°C
50	4.764	3.812	3.566	3.160	2.800	2.653	2.185	2.003	1.644	1.420	1.130
55	5.117	4.191	3.792	3.352	3.076	2.834	2.328	2.133	1.842	1.537	1.220
60	5.471	4.570	4.018	3.544	3.352	3.015	2.472	2.262	2.040	1.653	1.310
65	5.792	4.828	4.244	3.736	3.534	3.196	2.615	2.392	2.142	1.769	1.401
70	6.031	5.087	4.470	3.928	3.716	3.371	2.759	2.522	2.244	1.885	1.491
75	6.269	5.345	4.656	4.120	3.898	3.545	2.903	2.652	2.346	2.001	1.581
80	6.508	5.603	4.833	4.312	4.080	3.719	3.046	2.781	2.448	2.085	1.672
85	6.747	5.821	5.009	4.505	4.263	3.892	3.190	2.911	2.549	2.159	1.762
90	6.986	6.004	5.185	4.636	4.445	4.066	3.352	3.041	2.651	2.232	1.853
95	7.225	6.188	5.361	4.764	4.594	4.240	3.520	3.171	2.753	2.306	1.943
100	7.464	6.371	5.537	4.891	4.721	4.414	3.688	3.323	2.855	2.379	2.032
105	7.703	6.555	5.713	5.019	4.849	4.569	3.857	3.493	2.957	2.453	2.079
110	-	6.738	5.898	5.146	4.976	4.696	4.025	3.663	3.059	2.527	2.127
115	-	6.922	6.082	5.274	5.104	4.823	4.193	3.833	3.161	2.600	2.174
120	-	7.105	6.267	5.402	5.231	4.951	4.362	4.004	3.288	2.674	2.221
125	-	7.289	6.452	5.529	5.358	5.078	4.527	4.174	3.465	2.747	2.269
130	-	7.472	6.637	5.657	5.486	5.206	4.657	4.344	3.641	2.821	2.316
135	-	7.656	6.822	5.834	5.613	5.333	4.787	4.514	3.818	2.895	2.364
140	-	-	7.007	6.066	5.752	5.461	4.917	4.647	3.994	2.968	2.411
145	-	-	7.191	6.297	5.962	5.588	5.047	4.780	4.171	3.042	2.459
150	-	-	7.376	6.529	6.171	5.715	5.177	4.912	4.347	3.115	2.506
155	-	-	7.561	6.760	6.381	5.893	5.307	5.045	4.522	3.189	2.553
160	-	-	-	6.992	6.590	6.074	5.436	5.177	4.668	3.292	2.601
165	-	-	-	7.223	6.800	6.254	5.566	5.310	4.813	3.427	2.648
170	-	-	-	7.455	7.009	6.435	5.696	5.443	4.959	3.562	2.696
175	-	-	-	7.687	7.219	6.616	5.828	5.575	5.104	3.697	2.743
180	-	-	-	-	7.428	6.797	5.960	5.708	5.250	3.832	2.791
185	-	-	-	-	7.638	6.977	6.093	5.840	5.395	3.966	2.838
190	-	-	-	-	-	7.158	6.225	5.971	5.541	4.101	2.885
195	-	-	-	-	-	7.339	6.357	6.103	5.686	4.236	2.933
200	-	-	-	-	-	7.520	6.490	6.234	5.832	4.371	2.980
205	-	-	-	-	-	7.700	6.622	6.366	5.978	4.506	3.028
210	-	-	-	-	-	-	6.755	6.498	6.123	4.772	3.075
215	-	-	-	-	-	-	6.887	6.629	6.269	5.049	3.123
220	-	-	-	-	-	-	7.019	6.761	6.415	5.327	3.170
225	-	-	-	-	-	-	7.152	6.893	6.561	5.605	3.217
230	-	-	-	-	-	-	7.284	7.024	6.707	5.832	3.441
235	-	-	-	-	-	-	7.416	7.156	6.853	6.022	3.709
240	-	-	-	-	-	-	7.549	7.287	6.998	6.213	3.977
245	-	-	-	-	-	-	7.681	7.419	7.144	6.403	4.244

Thickness is intumescent only.

Results also apply to rectangular hollow beams subject to a maximum DFT of 3.286mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 24: Rectangular Hollow Columns 180 Minutes											
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of										
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	620°C	650°C	700°C	750°C
50	6.477	4.941	4.403	3.939	3.773	3.529	3.162	2.803	2.649	2.092	1.732
55	6.477	5.472	4.757	4.210	4.028	3.763	3.366	3.098	2.854	2.268	1.881
60	-	6.003	5.110	4.480	4.283	3.998	3.570	3.393	3.060	2.443	2.030
65	-	6.340	5.464	4.750	4.536	4.232	3.773	3.588	3.263	2.619	2.139
70	-	6.677	5.801	5.021	4.775	4.466	3.977	3.783	3.452	2.794	2.247
75	-	7.013	6.092	5.292	5.014	4.672	4.181	3.978	3.641	2.970	2.356
80	-	7.350	6.382	5.562	5.253	4.871	4.385	4.174	3.831	3.145	2.465
85	-	7.687	6.673	5.822	5.492	5.069	4.568	4.369	4.020	3.325	2.574
90	-	-	6.964	6.066	5.730	5.268	4.712	4.550	4.209	3.507	2.682
95	-	-	7.255	6.311	5.962	5.466	4.856	4.685	4.398	3.689	2.791
100	-	-	7.546	6.555	6.193	5.665	4.999	4.820	4.567	3.872	2.900
105	-	-	-	6.799	6.425	5.881	5.143	4.955	4.701	4.054	3.009
110	-	-	-	7.044	6.657	6.104	5.287	5.090	4.834	4.237	3.117
115	-	-	-	7.288	6.888	6.326	5.431	5.226	4.968	4.419	3.226
120	-	-	-	7.532	7.120	6.549	5.575	5.361	5.102	4.579	3.388
125	-	-	-	-	7.351	6.772	5.719	5.496	5.235	4.713	3.550
130	-	-	-	-	7.583	6.995	5.994	5.631	5.369	4.846	3.712
135	-	-	-	-	-	7.218	6.274	5.812	5.503	4.980	3.874
140	-	-	-	-	-	7.441	6.554	6.088	5.637	5.114	4.036
145	-	-	-	-	-	7.664	6.833	6.364	5.805	5.247	4.198
150	-	-	-	-	-	-	7.113	6.641	6.035	5.381	4.360
155	-	-	-	-	-	-	7.393	6.917	6.266	5.515	4.521
160	-	-	-	-	-	-	7.672	7.194	6.497	5.648	4.671
165	-	-	-	-	-	-	-	7.470	6.727	5.796	4.820
170	-	-	-	-	-	-	-	-	6.958	5.960	4.970
175	-	-	-	-	-	-	-	-	7.189	6.124	5.119
180	-	-	-	-	-	-	-	-	7.419	6.288	5.268
185	-	-	-	-	-	-	-	-	7.650	6.452	5.418
190	-	-	-	-	-	-	-	-	-	6.616	5.567
195	-	-	-	-	-	-	-	-	-	6.780	5.717
200	-	-	-	-	-	-	-	-	-	6.944	5.864
205	-	-	-	-	-	-	-	-	-	7.108	6.011
210	-	-	-	-	-	-	-	-	-	7.272	6.158
215	-	-	-	-	-	-	-	-	-	7.436	6.305
220	-	-	-	-	-	-	-	-	-	7.600	6.452
225	-	-	-	-	-	-	-	-	-	-	6.599
230	-	-	-	-	-	-	-	-	-	-	6.746
235	-	-	-	-	-	-	-	-	-	-	6.893
240	-	-	-	-	-	-	-	-	-	-	7.040
245	-	-	-	-	-	-	-	-	-	-	7.187

Thickness is intumescent only.
Results also apply to rectangular hollow beams subject to a maximum DFT of 3.286mm.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 25: Circular Hollow Columns 30 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	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
60	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
70	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
75	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
80	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
85	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
90	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
95	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
100	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
105	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
110	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
115	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
120	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
125	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
130	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
135	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
140	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
145	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
150	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
155	0.754	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
160	0.794	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
165	0.835	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
170	0.875	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
175	0.916	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
180	0.956	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
185	0.997	0.734	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
190	1.037	0.769	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
195	1.078	0.803	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
200	1.119	0.838	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
205	1.159	0.873	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
210	1.200	0.908	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
215	1.240	0.943	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
220	1.281	0.978	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
225	1.321	1.013	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726

Thickness is intumescent only.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 26: Circular Hollow Columns 45 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	0.918	0.770	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
55	0.954	0.803	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
60	0.990	0.835	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
65	1.027	0.868	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
70	1.063	0.901	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
75	1.099	0.933	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
80	1.135	0.966	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
85	1.171	0.998	0.726	0.726	0.726	0.726	0.726	0.726	0.726	0.726
90	1.207	1.031	0.727	0.726	0.726	0.726	0.726	0.726	0.726	0.726
95	1.243	1.063	0.761	0.726	0.726	0.726	0.726	0.726	0.726	0.726
100	1.279	1.096	0.795	0.726	0.726	0.726	0.726	0.726	0.726	0.726
105	1.315	1.129	0.829	0.726	0.726	0.726	0.726	0.726	0.726	0.726
110	1.351	1.161	0.863	0.726	0.726	0.726	0.726	0.726	0.726	0.726
115	1.387	1.194	0.897	0.726	0.726	0.726	0.726	0.726	0.726	0.726
120	1.423	1.226	0.931	0.726	0.726	0.726	0.726	0.726	0.726	0.726
125	1.459	1.259	0.965	0.726	0.726	0.726	0.726	0.726	0.726	0.726
130	1.495	1.292	0.999	0.726	0.726	0.726	0.726	0.726	0.726	0.726
135	1.531	1.324	1.033	0.726	0.726	0.726	0.726	0.726	0.726	0.726
140	1.567	1.357	1.067	0.726	0.726	0.726	0.726	0.726	0.726	0.726
145	1.603	1.389	1.101	0.726	0.726	0.726	0.726	0.726	0.726	0.726
150	1.639	1.422	1.135	0.726	0.726	0.726	0.726	0.726	0.726	0.726
155	1.675	1.454	1.169	0.726	0.726	0.726	0.726	0.726	0.726	0.726
160	1.711	1.487	1.203	0.748	0.726	0.726	0.726	0.726	0.726	0.726
165	1.748	1.520	1.237	0.787	0.733	0.726	0.726	0.726	0.726	0.726
170	1.784	1.552	1.271	0.825	0.769	0.726	0.726	0.726	0.726	0.726
175	1.820	1.585	1.305	0.864	0.806	0.726	0.726	0.726	0.726	0.726
180	1.856	1.617	1.339	0.903	0.842	0.757	0.726	0.726	0.726	0.726
185	1.892	1.650	1.373	0.942	0.879	0.791	0.726	0.726	0.726	0.726
190	1.928	1.683	1.407	0.981	0.915	0.824	0.726	0.726	0.726	0.726
195	1.964	1.715	1.441	1.020	0.952	0.858	0.726	0.726	0.726	0.726
200	2.000	1.748	1.475	1.059	0.988	0.891	0.754	0.726	0.726	0.726
205	2.044	1.780	1.509	1.098	1.025	0.925	0.782	0.726	0.726	0.726
210	2.122	1.813	1.543	1.137	1.062	0.958	0.811	0.726	0.726	0.726
215	2.200	1.845	1.577	1.176	1.098	0.992	0.840	0.726	0.726	0.726
220	2.278	1.878	1.611	1.214	1.135	1.025	0.869	0.726	0.726	0.726
225	2.356	1.911	1.645	1.253	1.171	1.059	0.898	0.726	0.726	0.726

Thickness is intumescent only.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 27: Circular Hollow Columns 60 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	1.211	1.035	0.903	0.791	0.734	0.726	0.726	0.726	0.726	0.726
55	1.262	1.078	0.938	0.824	0.766	0.726	0.726	0.726	0.726	0.726
60	1.312	1.121	0.974	0.857	0.798	0.726	0.726	0.726	0.726	0.726
65	1.363	1.164	1.009	0.889	0.830	0.726	0.726	0.726	0.726	0.726
70	1.414	1.207	1.045	0.922	0.862	0.752	0.726	0.726	0.726	0.726
75	1.464	1.249	1.080	0.955	0.894	0.784	0.726	0.726	0.726	0.726
80	1.515	1.292	1.116	0.987	0.926	0.816	0.726	0.726	0.726	0.726
85	1.565	1.335	1.151	1.020	0.958	0.848	0.726	0.726	0.726	0.726
90	1.616	1.378	1.187	1.053	0.991	0.879	0.726	0.726	0.726	0.726
95	1.667	1.421	1.222	1.085	1.023	0.911	0.726	0.726	0.726	0.726
100	1.717	1.464	1.258	1.118	1.055	0.943	0.726	0.726	0.726	0.726
105	1.768	1.507	1.293	1.151	1.087	0.975	0.726	0.726	0.726	0.726
110	1.818	1.550	1.329	1.183	1.119	1.007	0.726	0.726	0.726	0.726
115	1.869	1.593	1.364	1.216	1.151	1.038	0.756	0.726	0.726	0.726
120	1.920	1.636	1.400	1.249	1.183	1.070	0.789	0.726	0.726	0.726
125	1.970	1.678	1.435	1.281	1.215	1.102	0.823	0.726	0.726	0.726
130	2.021	1.721	1.471	1.314	1.247	1.134	0.857	0.726	0.726	0.726
135	2.093	1.764	1.506	1.347	1.279	1.166	0.891	0.726	0.726	0.726
140	2.169	1.807	1.542	1.379	1.312	1.198	0.924	0.726	0.726	0.726
145	2.246	1.850	1.577	1.412	1.344	1.229	0.958	0.726	0.726	0.726
150	2.322	1.893	1.612	1.445	1.376	1.261	0.992	0.726	0.726	0.726
155	2.398	1.936	1.648	1.477	1.408	1.293	1.025	0.726	0.726	0.726
160	2.475	1.979	1.683	1.510	1.440	1.325	1.059	0.749	0.726	0.726
165	2.551	2.022	1.719	1.543	1.472	1.357	1.093	0.785	0.726	0.726
170	2.627	2.096	1.754	1.575	1.504	1.388	1.127	0.821	0.726	0.726
175	2.704	2.178	1.790	1.608	1.536	1.420	1.160	0.856	0.726	0.726
180	2.780	2.259	1.825	1.641	1.568	1.452	1.194	0.892	0.743	0.726
185	2.856	2.340	1.861	1.673	1.600	1.484	1.228	0.927	0.775	0.726
190	2.933	2.421	1.896	1.706	1.633	1.516	1.261	0.963	0.806	0.726
195	3.009	2.502	1.932	1.739	1.665	1.548	1.295	0.998	0.837	0.726
200	3.086	2.584	1.967	1.772	1.697	1.579	1.329	1.034	0.869	0.726
205	3.162	2.665	2.003	1.804	1.729	1.611	1.363	1.069	0.900	0.726
210	3.238	2.746	2.053	1.837	1.761	1.643	1.396	1.105	0.931	0.726
215	3.360	2.827	2.146	1.870	1.793	1.675	1.430	1.140	0.963	0.726
220	3.483	2.909	2.239	1.902	1.825	1.707	1.464	1.176	0.994	0.726
225	3.606	2.990	2.332	1.935	1.857	1.738	1.497	1.211	1.025	0.726

Thickness is intumescent only.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 28: Circular Hollow Columns 75 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	1.493	1.288	1.130	0.999	0.952	0.885	0.784	0.726	0.726	0.726
55	1.571	1.346	1.178	1.039	0.990	0.920	0.818	0.726	0.726	0.726
60	1.649	1.405	1.225	1.080	1.028	0.955	0.851	0.726	0.726	0.726
65	1.727	1.464	1.273	1.121	1.066	0.990	0.884	0.748	0.726	0.726
70	1.806	1.522	1.320	1.162	1.104	1.025	0.917	0.780	0.726	0.726
75	1.884	1.581	1.368	1.202	1.142	1.060	0.950	0.813	0.726	0.726
80	1.962	1.640	1.415	1.243	1.180	1.095	0.983	0.845	0.726	0.726
85	2.046	1.699	1.463	1.284	1.218	1.130	1.016	0.877	0.726	0.726
90	2.167	1.757	1.511	1.325	1.256	1.165	1.049	0.909	0.726	0.726
95	2.288	1.816	1.558	1.365	1.294	1.200	1.082	0.942	0.726	0.726
100	2.408	1.875	1.606	1.406	1.332	1.235	1.116	0.974	0.741	0.726
105	2.529	1.933	1.653	1.447	1.370	1.270	1.149	1.006	0.774	0.726
110	2.649	1.992	1.701	1.488	1.408	1.305	1.182	1.038	0.807	0.726
115	2.770	2.066	1.748	1.528	1.446	1.340	1.215	1.070	0.840	0.727
120	2.890	2.164	1.796	1.569	1.484	1.375	1.248	1.103	0.873	0.756
125	3.011	2.262	1.844	1.610	1.522	1.410	1.281	1.135	0.907	0.785
130	3.132	2.360	1.891	1.650	1.560	1.445	1.314	1.167	0.940	0.815
135	3.249	2.458	1.939	1.691	1.598	1.480	1.347	1.199	0.973	0.844
140	3.335	2.556	1.986	1.732	1.636	1.515	1.380	1.232	1.006	0.873
145	3.420	2.654	2.037	1.773	1.675	1.550	1.413	1.264	1.039	0.903
150	3.506	2.752	2.120	1.813	1.713	1.585	1.447	1.296	1.072	0.932
155	3.592	2.850	2.203	1.854	1.751	1.620	1.480	1.328	1.106	0.962
160	3.678	2.948	2.286	1.895	1.789	1.655	1.513	1.361	1.139	0.991
165	3.764	3.046	2.369	1.936	1.827	1.690	1.546	1.393	1.172	1.020
170	3.850	3.144	2.452	1.976	1.865	1.725	1.579	1.425	1.205	1.050
175	3.936	3.242	2.535	2.017	1.903	1.760	1.612	1.457	1.238	1.079
180	4.022	3.348	2.617	2.091	1.941	1.795	1.645	1.489	1.272	1.109
185	4.108	3.454	2.700	2.179	1.979	1.830	1.678	1.522	1.305	1.138
190	4.194	3.560	2.783	2.267	2.017	1.865	1.711	1.554	1.338	1.167
195	4.280	3.666	2.866	2.354	2.092	1.900	1.745	1.586	1.371	1.197
200	4.366	3.772	2.949	2.442	2.184	1.935	1.778	1.618	1.404	1.226
205	4.452	3.877	3.032	2.530	2.276	1.970	1.811	1.651	1.437	1.255
210	4.572	3.983	3.115	2.618	2.368	2.005	1.844	1.683	1.471	1.285
215	4.830	4.089	3.198	2.705	2.460	2.060	1.877	1.715	1.504	1.314
220	5.087	4.195	3.309	2.793	2.552	2.159	1.910	1.747	1.537	1.344
225	5.345	4.301	3.449	2.881	2.645	2.258	1.943	1.780	1.570	1.373

Thickness is intumescent only.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 29: Circular Hollow Columns 90 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	1.622	1.534	1.352	1.205	1.149	1.070	0.954	0.845	0.739	0.726
55	1.878	1.616	1.417	1.256	1.198	1.115	0.993	0.881	0.774	0.726
60	1.983	1.699	1.483	1.307	1.247	1.161	1.033	0.917	0.808	0.726
65	2.197	1.782	1.548	1.359	1.296	1.207	1.073	0.952	0.842	0.726
70	2.494	1.864	1.613	1.410	1.345	1.252	1.113	0.988	0.877	0.756
75	2.791	1.947	1.678	1.461	1.394	1.298	1.152	1.024	0.911	0.788
80	3.088	2.030	1.743	1.513	1.443	1.343	1.192	1.060	0.945	0.820
85	3.351	2.180	1.809	1.564	1.493	1.389	1.232	1.096	0.980	0.853
90	3.577	2.330	1.874	1.615	1.542	1.435	1.271	1.131	1.014	0.885
95	3.804	2.479	1.939	1.667	1.591	1.480	1.311	1.167	1.048	0.917
100	4.030	2.629	2.004	1.718	1.640	1.526	1.351	1.203	1.083	0.949
105	4.257	2.778	2.098	1.769	1.689	1.571	1.391	1.239	1.117	0.981
110	4.484	2.928	2.209	1.821	1.738	1.617	1.430	1.275	1.151	1.013
115	4.646	3.078	2.321	1.872	1.787	1.663	1.470	1.310	1.185	1.045
120	4.797	3.227	2.432	1.923	1.836	1.708	1.510	1.346	1.220	1.077
125	4.948	3.406	2.544	1.975	1.885	1.754	1.550	1.382	1.254	1.109
130	5.098	3.587	2.655	2.026	1.935	1.799	1.589	1.418	1.288	1.141
135	5.249	3.769	2.766	2.114	1.984	1.845	1.629	1.454	1.323	1.173
140	5.400	3.950	2.878	2.205	2.035	1.891	1.669	1.489	1.357	1.206
145	5.550	4.132	2.989	2.296	2.118	1.936	1.708	1.525	1.391	1.238
150	5.701	4.313	3.101	2.387	2.201	1.982	1.748	1.561	1.426	1.270
155	5.804	4.494	3.212	2.478	2.284	2.027	1.788	1.597	1.460	1.302
160	5.890	4.607	3.317	2.568	2.366	2.111	1.828	1.633	1.494	1.334
165	5.977	4.709	3.421	2.659	2.449	2.195	1.867	1.669	1.529	1.366
170	6.063	4.810	3.524	2.750	2.532	2.280	1.907	1.704	1.563	1.398
175	6.150	4.912	3.627	2.841	2.615	2.365	1.947	1.740	1.597	1.430
180	6.236	5.013	3.731	2.932	2.697	2.449	1.986	1.776	1.631	1.462
185	6.322	5.115	3.834	3.022	2.780	2.534	2.026	1.812	1.666	1.494
190	6.409	5.217	3.937	3.113	2.863	2.619	2.114	1.848	1.700	1.527
195	6.495	5.318	4.041	3.204	2.946	2.703	2.205	1.883	1.734	1.559
200	6.582	5.420	4.144	3.325	3.028	2.788	2.296	1.919	1.769	1.591
205	6.668	5.521	4.247	3.467	3.111	2.873	2.387	1.955	1.803	1.623
210	6.754	5.623	4.351	3.608	3.194	2.958	2.478	1.991	1.837	1.655
215	6.841	5.724	4.454	3.749	3.311	3.042	2.569	2.027	1.872	1.687
220	6.927	5.897	4.626	3.891	3.472	3.127	2.660	2.116	1.906	1.719
225	7.014	6.083	4.918	4.032	3.633	3.212	2.751	2.209	1.940	1.751

Thickness is intumescent only.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 30: Circular Hollow Columns 120 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	2.663	2.325	1.788	1.599	1.530	1.432	1.282	1.126	1.010	0.887
55	3.299	2.668	1.896	1.689	1.614	1.508	1.346	1.181	1.059	0.931
60	3.866	3.198	2.003	1.779	1.698	1.584	1.410	1.236	1.108	0.975
65	4.646	3.548	2.291	1.869	1.782	1.660	1.474	1.291	1.157	1.019
70	5.268	3.883	2.635	1.960	1.867	1.735	1.537	1.346	1.206	1.063
75	5.779	4.217	2.980	2.077	1.951	1.811	1.601	1.401	1.255	1.108
80	5.942	4.559	3.321	2.284	2.041	1.887	1.665	1.456	1.304	1.152
85	6.104	4.972	3.654	2.491	2.211	1.962	1.729	1.511	1.353	1.196
90	6.267	5.386	3.986	2.698	2.380	2.045	1.793	1.566	1.402	1.240
95	6.429	5.758	4.319	2.904	2.549	2.177	1.857	1.621	1.450	1.284
100	6.592	5.883	4.624	3.111	2.718	2.308	1.921	1.676	1.499	1.328
105	6.754	6.008	4.888	3.374	2.887	2.440	1.985	1.732	1.548	1.372
110	6.917	6.133	5.151	3.728	3.056	2.572	2.064	1.787	1.597	1.416
115	7.079	6.258	5.415	4.082	3.225	2.703	2.175	1.842	1.646	1.460
120	7.242	6.384	5.678	4.436	3.582	2.835	2.287	1.897	1.695	1.505
125	7.404	6.509	5.810	4.629	3.956	2.967	2.399	1.952	1.744	1.549
130	7.566	6.634	5.902	4.772	4.331	3.098	2.511	2.007	1.793	1.593
135	7.729	6.759	5.994	4.914	4.573	3.230	2.623	2.082	1.842	1.637
140	7.891	6.884	6.085	5.057	4.681	3.432	2.735	2.170	1.891	1.681
145	8.054	7.009	6.177	5.200	4.788	3.640	2.846	2.258	1.940	1.725
150	-	7.134	6.269	5.342	4.896	3.848	2.958	2.346	1.989	1.769
155	-	7.259	6.360	5.485	5.004	4.056	3.070	2.435	2.044	1.813
160	-	7.385	6.452	5.627	5.111	4.264	3.182	2.523	2.124	1.857
165	-	7.510	6.544	5.765	5.219	4.472	3.294	2.611	2.204	1.901
170	-	7.635	6.635	5.883	5.326	4.615	3.407	2.699	2.285	1.946
175	-	7.760	6.727	6.001	5.434	4.739	3.520	2.788	2.365	1.990
180	-	7.885	6.819	6.119	5.541	4.862	3.633	2.876	2.445	2.037
185	-	8.010	6.910	6.237	5.649	4.986	3.746	2.964	2.526	2.114
190	-	-	7.002	6.355	5.766	5.109	3.859	3.052	2.606	2.191
195	-	-	7.094	6.473	5.935	5.233	3.971	3.140	2.686	2.268
200	-	-	7.185	6.591	6.105	5.356	4.084	3.229	2.767	2.344
205	-	-	7.277	6.709	6.274	5.480	4.197	3.376	2.847	2.421
210	-	-	7.369	6.827	6.444	5.603	4.310	3.531	2.927	2.498
215	-	-	7.461	6.945	6.613	5.727	4.423	3.687	3.007	2.575
220	-	-	7.552	7.063	6.783	5.979	4.571	3.843	3.088	2.652
225	-	-	7.644	7.181	6.952	6.248	4.934	3.999	3.168	2.728

Thickness is intumescent only.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 31: Circular Hollow Columns 150 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	5.461	4.002	2.884	2.100	1.788	1.788	1.602	1.398	1.264	1.136
55	6.007	4.531	3.411	2.522	2.007	1.898	1.697	1.480	1.335	1.200
60	6.553	4.618	4.067	3.079	2.531	2.008	1.792	1.562	1.405	1.264
65	7.099	6.030	4.503	3.524	3.042	2.355	1.887	1.643	1.475	1.327
70	7.645	6.338	4.520	3.923	3.485	2.754	1.983	1.725	1.545	1.391
75	-	6.646	5.816	4.322	3.884	3.154	2.167	1.807	1.616	1.455
80	-	6.954	6.001	4.800	4.284	3.553	2.435	1.889	1.686	1.518
85	-	7.262	6.186	5.356	4.722	3.951	2.704	1.970	1.756	1.582
90	-	7.570	6.371	5.793	5.216	4.350	2.972	2.081	1.827	1.646
95	-	7.878	6.556	5.964	5.710	4.750	3.242	2.265	1.897	1.709
100	-	-	6.740	6.135	5.890	5.152	3.672	2.449	1.967	1.773
105	-	-	6.925	6.306	6.050	5.553	4.103	2.634	2.045	1.837
110	-	-	7.110	6.477	6.210	5.813	4.528	2.818	2.179	1.900
115	-	-	7.295	6.648	6.369	5.950	4.793	3.002	2.312	1.964
120	-	-	7.480	6.820	6.529	6.087	5.058	3.186	2.445	2.027
125	-	-	7.665	6.991	6.689	6.224	5.322	3.682	2.578	2.115
130	-	-	7.850	7.162	6.849	6.361	5.587	4.308	2.712	2.203
135	-	-	8.035	7.333	7.008	6.498	5.782	4.594	2.845	2.291
140	-	-	-	7.504	7.168	6.634	5.881	4.707	2.978	2.379
145	-	-	-	7.675	7.328	6.771	5.981	4.819	3.111	2.467
150	-	-	-	7.846	7.487	6.908	6.080	4.931	3.244	2.555
155	-	-	-	8.017	7.647	7.045	6.180	5.044	3.350	2.643
160	-	-	-	-	7.807	7.182	6.279	5.156	3.457	2.731
165	-	-	-	-	7.967	7.319	6.379	5.269	3.563	2.819
170	-	-	-	-	-	7.456	6.478	5.381	3.670	2.907
175	-	-	-	-	-	7.592	6.578	5.493	3.776	2.995
180	-	-	-	-	-	7.729	6.677	5.606	3.883	3.083
185	-	-	-	-	-	7.866	6.776	5.718	3.989	3.171
190	-	-	-	-	-	8.003	6.876	5.890	4.096	3.271
195	-	-	-	-	-	-	6.975	6.076	4.202	3.412
200	-	-	-	-	-	-	7.075	6.262	4.309	3.552
205	-	-	-	-	-	-	7.174	6.448	4.415	3.693
210	-	-	-	-	-	-	7.274	6.634	4.529	3.833
215	-	-	-	-	-	-	7.373	6.820	4.994	3.974
220	-	-	-	-	-	-	7.473	7.006	5.459	4.115
225	-	-	-	-	-	-	7.572	7.192	5.884	4.255

Thickness is intumescent only.

Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024

CERTIFICATE No CF 5276
JOTUN U.A.E. LTD (L.L.C.)

SteelMaster 1200WF

Table 32: Circular Hollow Columns 180 Minutes										
Section Factor up to m^{-1}	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	-	-	5.152	3.418	3.379	2.988	1.669	1.669	1.514	1.382
55	-	-	5.667	4.318	3.678	3.455	2.115	1.778	1.609	1.469
60	-	-	6.182	4.520	3.968	3.922	2.812	1.886	1.704	1.557
65	-	-	6.697	5.990	4.520	4.388	3.410	1.994	1.799	1.644
70	-	-	7.212	6.319	5.999	4.520	3.850	2.396	1.894	1.732
75	-	-	7.728	6.648	6.261	5.870	4.291	2.937	1.989	1.820
80	-	-	-	6.978	6.523	6.063	4.797	3.455	2.197	1.907
85	-	-	-	7.307	6.785	6.257	5.376	3.945	2.490	1.995
90	-	-	-	7.637	7.047	6.450	5.817	4.436	2.783	2.138
95	-	-	-	7.966	7.309	6.643	6.026	4.520	3.076	2.317
100	-	-	-	-	7.571	6.837	6.234	5.781	3.506	2.496
105	-	-	-	-	7.832	7.030	6.442	5.950	4.109	2.676
110	-	-	-	-	8.094	7.223	6.651	6.118	4.639	2.855
115	-	-	-	-	-	7.417	6.859	6.287	5.010	3.034
120	-	-	-	-	-	7.610	7.067	6.455	5.382	3.213
125	-	-	-	-	-	7.803	7.276	6.623	5.745	3.670
130	-	-	-	-	-	7.997	7.484	6.792	5.881	4.176
135	-	-	-	-	-	-	7.693	6.960	6.016	4.558
140	-	-	-	-	-	-	7.901	7.128	6.151	4.676
145	-	-	-	-	-	-	8.109	7.297	6.286	4.794
150	-	-	-	-	-	-	-	7.465	6.422	4.912
155	-	-	-	-	-	-	-	7.633	6.557	5.030
160	-	-	-	-	-	-	-	7.802	6.692	5.148
165	-	-	-	-	-	-	-	7.970	6.828	5.266
170	-	-	-	-	-	-	-	-	6.963	5.384
175	-	-	-	-	-	-	-	-	7.098	5.502
180	-	-	-	-	-	-	-	-	7.234	5.619
185	-	-	-	-	-	-	-	-	7.369	5.737
190	-	-	-	-	-	-	-	-	7.504	5.939
195	-	-	-	-	-	-	-	-	7.640	6.142
200	-	-	-	-	-	-	-	-	7.775	6.345
205	-	-	-	-	-	-	-	-	7.910	6.548
210	-	-	-	-	-	-	-	-	8.046	6.751
215	-	-	-	-	-	-	-	-	-	6.954
220	-	-	-	-	-	-	-	-	-	7.158
225	-	-	-	-	-	-	-	-	-	-

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Issued: 13th May 2014
Reissued: 03rd May 2019
Valid to: 07th March 2024