
CERTIFICATE OF APPROVAL

No CF 5594

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

MULTIFIRE INTERNATIONAL BV

PO Box 87116, 1080 JC Amsterdam, The Netherlands
Tel: +31 (0)20 3459020

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

Multifire FSX 4120-S and
FSX 4120-R

TECHNICAL SCHEDULE

TS15 Intumescent Coatings for
Steelwork

Signed and sealed for and on behalf of Exova (UK) Limited trading as
Warrington Certification



Paul Duggan
Certification Manager



Issued:
Valid to:
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18th October 2017
25th February 2018



CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

1. This approval relates to the use of Multifire FSX 4120-S and FSX 4120-R for the fire protection of I-shaped steel sections. The precise scope is given in Tables 1 to 29 which show the total dry film thickness of Multifire FSX 4120-S and FSX 4120-R (excluding primer and top sealer) required to provide fire resistance periods in accordance with BS476: Part 21: 1987. The scope includes periods of fire resistance of up to 120 minutes for I-sections beams and column, circular hollow column (with and without mesh reinforcement) and rectangular hollow columns.
2. This certification is designed to demonstrate compliance of the product or system specifically with Approved Document B (England and Wales), Section D of the Technical Standards (Scotland), Technical Booklet E (N. Ireland). If compliance is required to other regulatory or guidance documents there may be additional considerations or conflict to be taken into account.'
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: 2008.
 - 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 1/2 or equivalent and overcoated with the reactive coating. It is also acceptable to apply a solvent based epoxy primer to the blasted steel sections prior to the application of the reactive coating.

Specifications of other surface preparations, primers and top sealers is available from MULTIFIRE INTERNATIONAL BV whose responsibility is to ensure that Multifire FSX 4120-S and FSX 4120-R are compatible for use in respect of both ambient and fire conditions. If applied the total dry film thickness of primer should not exceed that 0.1mm.
6. The data shown is applicable to Multifire FSX 4120-S and FSX 4120-R applied by spray to horizontal, vertical, flexural and compression members supporting loads up to the maximum design loads specified in BS449: Part 2. The data shown in the tables is based on an assessment that complies with the criteria for acceptability now incorporated within the CERTIFIRE scheme.
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.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 1: I-Section Beams 15 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
50	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
55	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
60	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
65	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
70	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
75	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
80	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
85	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
90	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
95	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
100	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
105	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
110	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
115	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
120	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
125	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
130	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
135	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
140	0.464	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
145	0.478	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
150	0.492	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
155	0.506	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
160	0.520	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
165	0.534	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
170	0.548	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
175	0.562	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
180	0.576	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
185	0.591	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
190	0.605	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
195	0.619	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
200	0.633	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
205	0.647	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
210	0.661	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
215	0.675	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
220	0.689	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
225	0.704	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
230	0.718	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
235	0.732	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
240	0.746	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
245	0.760	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
250	0.774	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
255	0.788	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
260	0.802	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
265	0.816	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
270	0.831	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
275	0.845	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
280	0.859	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
285	0.873	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
290	0.887	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
295	0.901	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
300	0.915	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
305	0.929	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
310	0.944	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
315	0.958	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
320	0.972	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
325	0.986	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
330	1.000	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
335	1.014	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
340	1.028	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
345	1.042	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
350	1.056	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
355	1.071	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460

Thickness is intumescent only. Table applies to beams with 3 sided protection and a concrete slab.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 2: I-Section Beams 30 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
50	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
55	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
60	0.465	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
65	0.520	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
70	0.575	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
75	0.631	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
80	0.686	0.471	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
85	0.742	0.488	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
90	0.797	0.506	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
95	0.852	0.524	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
100	0.908	0.541	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
105	0.963	0.559	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
110	1.018	0.576	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
115	1.074	0.594	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
120	1.129	0.611	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
125	1.185	0.629	0.474	0.460	0.460	0.460	0.460	0.460	0.460	0.460
130	1.240	0.646	0.490	0.460	0.460	0.460	0.460	0.460	0.460	0.460
135	1.272	0.664	0.505	0.460	0.460	0.460	0.460	0.460	0.460	0.460
140	1.303	0.682	0.520	0.460	0.460	0.460	0.460	0.460	0.460	0.460
145	1.335	0.699	0.535	0.460	0.460	0.460	0.460	0.460	0.460	0.460
150	1.367	0.717	0.550	0.460	0.460	0.460	0.460	0.460	0.460	0.460
155	1.398	0.734	0.566	0.460	0.460	0.460	0.460	0.460	0.460	0.460
160	1.430	0.752	0.581	0.460	0.460	0.460	0.460	0.460	0.460	0.460
165	1.462	0.769	0.596	0.460	0.460	0.460	0.460	0.460	0.460	0.460
170	1.493	0.787	0.611	0.460	0.460	0.460	0.460	0.460	0.460	0.460
175	1.525	0.804	0.626	0.460	0.460	0.460	0.460	0.460	0.460	0.460
180	1.557	0.822	0.642	0.460	0.460	0.460	0.460	0.460	0.460	0.460
185	1.588	0.840	0.657	0.460	0.460	0.460	0.460	0.460	0.460	0.460
190	1.620	0.857	0.672	0.460	0.460	0.460	0.460	0.460	0.460	0.460
195	1.652	0.875	0.687	0.460	0.460	0.460	0.460	0.460	0.460	0.460
200	1.683	0.892	0.702	0.471	0.460	0.460	0.460	0.460	0.460	0.460
205	1.715	0.910	0.717	0.487	0.460	0.460	0.460	0.460	0.460	0.460
210	1.747	0.927	0.733	0.502	0.460	0.460	0.460	0.460	0.460	0.460
215	1.778	0.945	0.748	0.517	0.460	0.460	0.460	0.460	0.460	0.460
220	1.810	0.963	0.763	0.532	0.460	0.460	0.460	0.460	0.460	0.460
225	1.842	0.980	0.778	0.547	0.460	0.460	0.460	0.460	0.460	0.460
230	1.873	0.998	0.793	0.563	0.460	0.460	0.460	0.460	0.460	0.460
235	1.905	1.015	0.809	0.578	0.460	0.460	0.460	0.460	0.460	0.460
240	1.937	1.033	0.824	0.593	0.460	0.460	0.460	0.460	0.460	0.460
245	1.968	1.050	0.839	0.608	0.460	0.460	0.460	0.460	0.460	0.460
250	2.000	1.068	0.854	0.623	0.460	0.460	0.460	0.460	0.460	0.460
255	2.038	1.085	0.869	0.638	0.460	0.460	0.460	0.460	0.460	0.460
260	2.076	1.103	0.885	0.654	0.460	0.460	0.460	0.460	0.460	0.460
265	2.114	1.121	0.900	0.669	0.462	0.460	0.460	0.460	0.460	0.460
270	2.152	1.138	0.915	0.684	0.477	0.460	0.460	0.460	0.460	0.460
275	2.190	1.156	0.930	0.699	0.491	0.460	0.460	0.460	0.460	0.460
280	2.228	1.173	0.945	0.714	0.506	0.460	0.460	0.460	0.460	0.460
285	2.265	1.191	0.961	0.730	0.520	0.460	0.460	0.460	0.460	0.460
290	2.303	1.208	0.976	0.745	0.534	0.460	0.460	0.460	0.460	0.460
295	2.341	1.226	0.991	0.760	0.549	0.460	0.460	0.460	0.460	0.460
300	2.379	1.248	1.006	0.775	0.563	0.460	0.460	0.460	0.460	0.460
305	2.417	1.287	1.021	0.790	0.578	0.460	0.460	0.460	0.460	0.460
310	2.455	1.325	1.036	0.806	0.592	0.460	0.460	0.460	0.460	0.460
315	2.493	1.364	1.052	0.821	0.606	0.460	0.460	0.460	0.460	0.460
320	2.531	1.403	1.067	0.836	0.621	0.467	0.460	0.460	0.460	0.460
325	2.569	1.442	1.082	0.851	0.635	0.479	0.460	0.460	0.460	0.460
330	2.607	1.480	1.097	0.866	0.650	0.491	0.460	0.460	0.460	0.460
335	2.645	1.519	1.112	0.882	0.664	0.503	0.460	0.460	0.460	0.460
340	2.683	1.558	1.128	0.897	0.678	0.515	0.460	0.460	0.460	0.460
345	2.721	1.597	1.143	0.912	0.693	0.527	0.460	0.460	0.460	0.460
350	2.759	1.636	1.158	0.927	0.707	0.539	0.460	0.460	0.460	0.460
355	2.796	1.674	1.173	0.942	0.722	0.551	0.460	0.460	0.460	0.460

Thickness is intumescent only. Table applies to beams with 3 sided protection and a concrete slab.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 3: I-Section Beams 45 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
50	0.836	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
55	0.867	0.520	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
60	1.022	0.588	0.469	0.460	0.460	0.460	0.460	0.460	0.460	0.460
65	1.178	0.656	0.494	0.460	0.460	0.460	0.460	0.460	0.460	0.460
70	1.278	0.724	0.520	0.460	0.460	0.460	0.460	0.460	0.460	0.460
75	1.341	0.792	0.546	0.466	0.460	0.460	0.460	0.460	0.460	0.460
80	1.405	0.860	0.571	0.484	0.460	0.460	0.460	0.460	0.460	0.460
85	1.468	0.928	0.597	0.502	0.460	0.460	0.460	0.460	0.460	0.460
90	1.531	0.995	0.623	0.520	0.460	0.460	0.460	0.460	0.460	0.460
95	1.595	1.063	0.649	0.538	0.460	0.460	0.460	0.460	0.460	0.460
100	1.658	1.131	0.674	0.556	0.465	0.460	0.460	0.460	0.460	0.460
105	1.721	1.199	0.700	0.574	0.481	0.460	0.460	0.460	0.460	0.460
110	1.785	1.250	0.726	0.592	0.497	0.460	0.460	0.460	0.460	0.460
115	1.848	1.275	0.751	0.610	0.513	0.460	0.460	0.460	0.460	0.460
120	1.911	1.300	0.777	0.627	0.530	0.460	0.460	0.460	0.460	0.460
125	1.975	1.325	0.803	0.645	0.546	0.460	0.460	0.460	0.460	0.460
130	2.047	1.350	0.829	0.663	0.562	0.460	0.460	0.460	0.460	0.460
135	2.126	1.375	0.854	0.681	0.579	0.460	0.460	0.460	0.460	0.460
140	2.204	1.400	0.880	0.699	0.595	0.472	0.460	0.460	0.460	0.460
145	2.283	1.425	0.906	0.717	0.611	0.487	0.460	0.460	0.460	0.460
150	2.361	1.450	0.931	0.735	0.628	0.502	0.460	0.460	0.460	0.460
155	2.440	1.475	0.957	0.753	0.644	0.517	0.460	0.460	0.460	0.460
160	2.518	1.500	0.983	0.771	0.660	0.532	0.468	0.460	0.460	0.460
165	2.597	1.525	1.009	0.789	0.676	0.547	0.482	0.460	0.460	0.460
170	2.675	1.550	1.034	0.807	0.693	0.562	0.497	0.460	0.460	0.460
175	2.754	1.575	1.060	0.824	0.709	0.577	0.511	0.460	0.460	0.460
180	2.832	1.600	1.086	0.842	0.725	0.592	0.526	0.460	0.460	0.460
185	2.911	1.625	1.111	0.860	0.742	0.607	0.540	0.460	0.460	0.460
190	2.990	1.650	1.137	0.878	0.758	0.622	0.555	0.460	0.460	0.460
195	3.068	1.675	1.163	0.896	0.774	0.637	0.569	0.460	0.460	0.460
200	3.147	1.700	1.189	0.914	0.790	0.653	0.584	0.460	0.460	0.460
205	3.225	1.725	1.214	0.932	0.807	0.668	0.598	0.460	0.460	0.460
210	3.304	1.750	1.240	0.950	0.823	0.683	0.613	0.475	0.460	0.460
215	3.382	1.775	1.277	0.968	0.839	0.698	0.627	0.490	0.460	0.460
220	3.461	1.800	1.313	0.986	0.856	0.713	0.642	0.505	0.460	0.460
225	3.539	1.825	1.350	1.004	0.872	0.728	0.656	0.520	0.460	0.460
230	3.582	1.850	1.386	1.021	0.888	0.743	0.671	0.535	0.460	0.460
235	3.615	1.875	1.423	1.039	0.904	0.758	0.685	0.550	0.460	0.460
240	3.648	1.900	1.459	1.057	0.921	0.773	0.700	0.565	0.460	0.460
245	3.681	1.925	1.496	1.075	0.937	0.788	0.715	0.580	0.460	0.460
250	3.714	1.950	1.532	1.093	0.953	0.803	0.729	0.594	0.460	0.460
255	3.748	1.975	1.569	1.111	0.970	0.818	0.744	0.609	0.460	0.460
260	3.781	2.000	1.605	1.129	0.986	0.833	0.758	0.624	0.460	0.460
265	3.814	2.045	1.642	1.147	1.002	0.848	0.773	0.639	0.460	0.460
270	3.847	2.091	1.678	1.165	1.018	0.863	0.787	0.654	0.462	0.460
275	3.880	2.136	1.715	1.183	1.035	0.878	0.802	0.669	0.475	0.460
280	3.914	2.182	1.752	1.201	1.051	0.894	0.816	0.684	0.488	0.460
285	3.947	2.227	1.788	1.219	1.067	0.909	0.831	0.699	0.502	0.460
290	3.980	2.273	1.825	1.236	1.084	0.924	0.845	0.713	0.515	0.460
295	4.013	2.318	1.861	1.278	1.100	0.939	0.860	0.728	0.528	0.460
300	4.046	2.364	1.898	1.324	1.116	0.954	0.874	0.743	0.541	0.460
305	4.080	2.409	1.934	1.371	1.132	0.969	0.889	0.758	0.554	0.460
310	4.113	2.455	1.971	1.418	1.149	0.984	0.903	0.773	0.567	0.460
315	4.146	2.500	2.008	1.465	1.165	0.999	0.918	0.788	0.581	0.460
320	4.179	2.546	2.048	1.512	1.181	1.014	0.932	0.803	0.594	0.460
325	4.212	2.591	2.087	1.559	1.198	1.029	0.947	0.818	0.607	0.460
330	4.246	2.637	2.127	1.606	1.214	1.044	0.961	0.832	0.620	0.466
335	4.279	2.682	2.167	1.653	1.230	1.059	0.976	0.847	0.633	0.476
340	4.312	2.727	2.206	1.700	1.257	1.074	0.990	0.862	0.647	0.486
345	4.345	2.773	2.246	1.747	1.298	1.089	1.005	0.877	0.660	0.496
350	4.378	2.818	2.286	1.794	1.340	1.104	1.019	0.892	0.673	0.506
355	4.412	2.864	2.325	1.840	1.382	1.119	1.034	0.907	0.686	0.516

Thickness is intumescent only. Table applies to beams with 3 sided protection and a concrete slab.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 4: I-Section Beams 60 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
50	1.181	0.853	0.634	0.481	0.460	0.460	0.460	0.460	0.460	0.460
55	1.329	0.895	0.668	0.513	0.465	0.460	0.460	0.460	0.460	0.460
60	1.478	1.028	0.758	0.546	0.486	0.460	0.460	0.460	0.460	0.460
65	1.626	1.160	0.847	0.579	0.507	0.460	0.460	0.460	0.460	0.460
70	1.775	1.261	0.936	0.612	0.528	0.478	0.460	0.460	0.460	0.460
75	1.924	1.313	1.026	0.644	0.550	0.495	0.470	0.460	0.460	0.460
80	2.072	1.365	1.115	0.677	0.571	0.513	0.487	0.460	0.460	0.460
85	2.221	1.417	1.204	0.710	0.592	0.531	0.503	0.467	0.460	0.460
90	2.369	1.469	1.260	0.743	0.613	0.548	0.520	0.482	0.460	0.460
95	2.518	1.521	1.292	0.775	0.634	0.566	0.537	0.498	0.460	0.460
100	2.646	1.573	1.325	0.808	0.656	0.583	0.553	0.514	0.460	0.460
105	2.745	1.625	1.358	0.841	0.677	0.601	0.570	0.529	0.460	0.460
110	2.843	1.677	1.391	0.873	0.698	0.618	0.587	0.545	0.460	0.460
115	2.941	1.729	1.423	0.906	0.719	0.636	0.603	0.561	0.466	0.460
120	3.039	1.781	1.456	0.939	0.740	0.653	0.620	0.576	0.480	0.460
125	3.137	1.833	1.489	0.972	0.761	0.671	0.637	0.592	0.495	0.460
130	3.236	1.885	1.522	1.004	0.783	0.689	0.653	0.608	0.509	0.460
135	3.334	1.938	1.554	1.037	0.804	0.706	0.670	0.623	0.523	0.460
140	3.432	1.990	1.587	1.070	0.825	0.724	0.687	0.639	0.537	0.460
145	3.530	2.034	1.620	1.103	0.846	0.741	0.703	0.655	0.551	0.460
150	3.580	2.077	1.653	1.135	0.867	0.759	0.720	0.670	0.565	0.460
155	3.617	2.120	1.686	1.168	0.888	0.776	0.737	0.686	0.579	0.460
160	3.654	2.162	1.718	1.201	0.910	0.794	0.753	0.702	0.593	0.460
165	3.691	2.205	1.751	1.233	0.931	0.812	0.770	0.717	0.608	0.460
170	3.729	2.248	1.784	1.268	0.952	0.829	0.787	0.733	0.622	0.460
175	3.766	2.290	1.817	1.303	0.973	0.847	0.803	0.749	0.636	0.460
180	3.803	2.333	1.849	1.339	0.994	0.864	0.820	0.764	0.650	0.460
185	3.840	2.376	1.882	1.374	1.016	0.882	0.837	0.780	0.664	0.460
190	3.877	2.419	1.915	1.409	1.037	0.899	0.853	0.795	0.678	0.460
195	3.915	2.461	1.948	1.444	1.058	0.917	0.870	0.811	0.692	0.460
200	3.952	2.504	1.980	1.479	1.079	0.934	0.887	0.827	0.706	0.474
205	3.989	2.547	2.018	1.514	1.100	0.952	0.903	0.842	0.720	0.489
210	4.026	2.590	2.063	1.550	1.121	0.970	0.920	0.858	0.735	0.503
215	4.063	2.632	2.107	1.585	1.143	0.987	0.937	0.874	0.749	0.517
220	4.101	2.675	2.152	1.620	1.164	1.005	0.953	0.889	0.763	0.531
225	4.138	2.718	2.197	1.655	1.185	1.022	0.970	0.905	0.777	0.546
230	4.175	2.760	2.241	1.690	1.206	1.040	0.987	0.921	0.791	0.560
235	4.212	2.803	2.286	1.726	1.227	1.057	1.003	0.936	0.805	0.574
240	4.250	2.846	2.331	1.761	1.260	1.075	1.020	0.952	0.819	0.588
245	4.287	2.889	2.375	1.796	1.311	1.092	1.037	0.968	0.833	0.603
250	4.324	2.931	2.420	1.831	1.362	1.110	1.053	0.983	0.848	0.617
255	4.361	2.974	2.465	1.866	1.412	1.128	1.070	0.999	0.862	0.631
260	4.398	3.017	2.509	1.901	1.463	1.145	1.087	1.015	0.876	0.645
265	4.436	3.059	2.554	1.937	1.514	1.163	1.103	1.030	0.890	0.659
270	4.473	3.102	2.599	1.972	1.564	1.180	1.120	1.046	0.904	0.674
275	4.510	3.145	2.643	2.011	1.615	1.198	1.137	1.062	0.918	0.688
280	4.547	3.188	2.688	2.064	1.666	1.215	1.153	1.077	0.932	0.702
285	4.584	3.230	2.733	2.117	1.716	1.233	1.170	1.093	0.946	0.716
290	4.622	3.273	2.778	2.170	1.767	1.271	1.187	1.109	0.960	0.731
295	4.659	3.316	2.822	2.224	1.818	1.322	1.203	1.124	0.975	0.745
300	4.696	3.358	2.867	2.277	1.868	1.374	1.220	1.140	0.989	0.759
305	4.733	3.401	2.912	2.330	1.919	1.425	1.237	1.155	1.003	0.773
310	4.770	3.444	2.956	2.383	1.970	1.476	1.281	1.171	1.017	0.788
315	4.808	3.487	3.001	2.437	2.020	1.528	1.332	1.187	1.031	0.802
320	4.845	3.529	3.046	2.490	2.068	1.579	1.384	1.202	1.045	0.816
325	4.882	3.586	3.090	2.543	2.117	1.630	1.435	1.218	1.059	0.830
330	4.919	3.664	3.135	2.596	2.166	1.682	1.486	1.234	1.073	0.844
335	4.957	3.742	3.180	2.650	2.215	1.733	1.538	1.269	1.088	0.859
340	4.994	3.819	3.224	2.703	2.264	1.784	1.589	1.316	1.102	0.873
345	5.031	3.897	3.269	2.756	2.313	1.836	1.641	1.364	1.116	0.887
350	5.068	3.975	3.314	2.809	2.362	1.887	1.692	1.411	1.130	0.901
355	5.105	4.053	3.358	2.863	2.411	1.938	1.743	1.459	1.144	0.916

Thickness is intumescent only. Table applies to beams with 3 sided protection and a concrete slab.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 5: I-Section Beams 75 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
50	3.335	1.168	0.915	0.729	0.597	0.486	0.472	0.460	0.460	0.460
55	3.365	1.258	0.967	0.774	0.642	0.514	0.496	0.475	0.460	0.460
60	3.396	1.349	1.091	0.864	0.694	0.543	0.520	0.494	0.460	0.460
65	3.427	1.439	1.215	0.953	0.745	0.571	0.544	0.512	0.460	0.460
70	3.458	1.530	1.283	1.043	0.797	0.599	0.568	0.531	0.476	0.460
75	3.488	1.620	1.336	1.133	0.848	0.628	0.592	0.550	0.493	0.460
80	3.519	1.710	1.390	1.222	0.900	0.656	0.617	0.569	0.510	0.460
85	3.550	1.801	1.443	1.268	0.952	0.684	0.641	0.588	0.527	0.460
90	3.581	1.891	1.497	1.303	1.003	0.713	0.665	0.607	0.543	0.460
95	3.612	1.982	1.550	1.338	1.055	0.741	0.689	0.626	0.560	0.472
100	3.642	2.127	1.604	1.372	1.106	0.769	0.713	0.644	0.577	0.487
105	3.673	2.285	1.657	1.407	1.158	0.798	0.737	0.663	0.594	0.502
110	3.704	2.443	1.711	1.442	1.209	0.826	0.762	0.682	0.610	0.517
115	3.735	2.601	1.765	1.477	1.252	0.854	0.786	0.701	0.627	0.532
120	3.765	2.759	1.818	1.512	1.282	0.883	0.810	0.720	0.644	0.547
125	3.796	2.917	1.872	1.547	1.312	0.911	0.834	0.739	0.661	0.562
130	3.827	3.076	1.925	1.582	1.342	0.940	0.858	0.757	0.677	0.577
135	3.858	3.234	1.979	1.617	1.372	0.968	0.882	0.776	0.694	0.592
140	3.888	3.392	2.038	1.651	1.402	0.996	0.907	0.795	0.711	0.607
145	3.919	3.550	2.101	1.686	1.431	1.025	0.931	0.814	0.728	0.622
150	3.950	3.586	2.164	1.721	1.461	1.053	0.955	0.833	0.744	0.637
155	3.981	3.622	2.228	1.756	1.491	1.081	0.979	0.852	0.761	0.653
160	4.012	3.658	2.291	1.791	1.521	1.110	1.003	0.871	0.778	0.668
165	4.042	3.695	2.354	1.826	1.551	1.138	1.027	0.889	0.795	0.683
170	4.073	3.731	2.417	1.861	1.581	1.166	1.052	0.908	0.811	0.698
175	4.104	3.767	2.480	1.895	1.611	1.195	1.076	0.927	0.828	0.713
180	4.135	3.803	2.544	1.930	1.641	1.223	1.100	0.946	0.845	0.728
185	4.165	3.839	2.607	1.965	1.671	1.255	1.124	0.965	0.862	0.743
190	4.196	3.875	2.670	2.000	1.701	1.294	1.148	0.984	0.878	0.758
195	4.227	3.912	2.733	2.054	1.731	1.332	1.172	1.003	0.895	0.773
200	4.258	3.948	2.796	2.109	1.761	1.371	1.197	1.021	0.912	0.788
205	4.288	3.984	2.860	2.163	1.791	1.409	1.221	1.040	0.929	0.803
210	4.319	4.020	2.923	2.217	1.820	1.447	1.249	1.059	0.945	0.818
215	4.350	4.056	2.986	2.272	1.850	1.486	1.292	1.078	0.962	0.833
220	4.381	4.092	3.049	2.326	1.880	1.524	1.335	1.097	0.979	0.848
225	4.412	4.129	3.113	2.381	1.910	1.562	1.378	1.116	0.996	0.863
230	4.442	4.165	3.176	2.435	1.940	1.601	1.421	1.134	1.012	0.878
235	4.473	4.201	3.239	2.489	1.970	1.639	1.465	1.153	1.029	0.894
240	4.504	4.237	3.302	2.544	2.000	1.678	1.508	1.172	1.046	0.909
245	4.535	4.273	3.365	2.598	2.059	1.716	1.551	1.191	1.063	0.924
250	4.565	4.309	3.429	2.652	2.118	1.754	1.594	1.210	1.079	0.939
255	4.596	4.345	3.492	2.707	2.177	1.793	1.637	1.229	1.096	0.954
260	4.627	4.382	3.555	2.761	2.236	1.831	1.680	1.265	1.113	0.969
265	4.658	4.418	3.618	2.816	2.295	1.869	1.724	1.327	1.129	0.984
270	4.688	4.454	3.681	2.870	2.353	1.908	1.767	1.390	1.146	0.999
275	4.719	4.490	3.744	2.924	2.412	1.946	1.810	1.452	1.163	1.014
280	4.750	4.526	3.807	2.979	2.471	1.985	1.853	1.514	1.180	1.029
285	4.781	4.562	3.871	3.033	2.530	2.036	1.896	1.576	1.196	1.044
290	4.812	4.599	3.934	3.087	2.589	2.095	1.940	1.639	1.213	1.059
295	4.842	4.635	3.997	3.142	2.648	2.154	1.983	1.701	1.230	1.074
300	4.873	4.671	4.060	3.196	2.707	2.214	2.035	1.763	1.263	1.089
305	4.904	4.707	4.123	3.251	2.766	2.273	2.094	1.826	1.319	1.104
310	4.935	4.743	4.186	3.305	2.825	2.332	2.153	1.888	1.376	1.119
315	4.965	4.779	4.249	3.359	2.884	2.392	2.212	1.950	1.433	1.135
320	4.996	4.816	4.312	3.414	2.942	2.451	2.271	2.011	1.490	1.150
325	5.027	4.852	4.376	3.468	3.001	2.510	2.330	2.066	1.546	1.165
330	5.058	4.888	4.439	3.522	3.060	2.570	2.389	2.120	1.603	1.180
335	5.088	4.924	4.502	3.599	3.119	2.629	2.448	2.175	1.660	1.195
340	5.119	4.960	4.565	3.709	3.178	2.688	2.507	2.230	1.716	1.210
345	5.150	4.996	4.628	3.819	3.237	2.748	2.565	2.285	1.773	1.225
350	5.181	5.032	4.691	3.929	3.296	2.807	2.624	2.339	1.830	1.240
355	5.212	5.069	4.754	4.039	3.355	2.867	2.683	2.394	1.887	1.286

Thickness is intumescent only. Table applies to beams with 3 sided protection and a concrete slab.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 6: I-Section Beams 90 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
50	-	3.227	1.171	0.968	0.807	0.683	0.635	0.581	0.472	0.460
55	-	3.259	1.257	1.028	0.861	0.729	0.683	0.618	0.496	0.460
60	-	3.291	1.344	1.146	0.951	0.804	0.738	0.654	0.520	0.471
65	-	3.324	1.430	1.252	1.041	0.879	0.794	0.690	0.544	0.488
70	-	3.356	1.516	1.309	1.132	0.954	0.850	0.726	0.568	0.506
75	-	3.388	1.603	1.367	1.222	1.030	0.906	0.762	0.592	0.524
80	-	3.421	1.689	1.424	1.272	1.105	0.961	0.798	0.617	0.541
85	-	3.453	1.775	1.482	1.313	1.180	1.017	0.835	0.641	0.559
90	-	3.485	1.862	1.539	1.353	1.246	1.073	0.871	0.665	0.576
95	-	3.518	1.948	1.597	1.394	1.276	1.129	0.907	0.689	0.594
100	-	3.550	2.043	1.655	1.434	1.306	1.184	0.943	0.713	0.611
105	-	3.582	2.149	1.712	1.474	1.337	1.240	0.979	0.737	0.629
110	-	3.615	2.256	1.770	1.515	1.367	1.269	1.016	0.762	0.646
115	-	3.647	2.362	1.827	1.555	1.397	1.299	1.052	0.786	0.664
120	-	3.679	2.469	1.885	1.596	1.427	1.328	1.088	0.810	0.682
125	-	3.712	2.575	1.942	1.636	1.457	1.358	1.124	0.834	0.699
130	-	3.744	2.682	2.000	1.677	1.487	1.387	1.160	0.858	0.717
135	-	3.776	2.788	2.078	1.717	1.517	1.417	1.197	0.882	0.734
140	-	3.809	2.895	2.156	1.757	1.548	1.446	1.233	0.907	0.752
145	-	3.841	3.001	2.233	1.798	1.578	1.476	1.265	0.931	0.769
150	-	3.873	3.108	2.311	1.838	1.608	1.505	1.297	0.955	0.787
155	-	3.906	3.214	2.389	1.879	1.638	1.535	1.329	0.979	0.804
160	-	3.938	3.321	2.467	1.919	1.668	1.564	1.360	1.003	0.822
165	-	3.970	3.427	2.544	1.960	1.698	1.593	1.392	1.027	0.840
170	-	4.003	3.534	2.622	2.000	1.729	1.623	1.424	1.052	0.857
175	-	4.035	3.591	2.700	2.063	1.759	1.652	1.455	1.076	0.875
180	-	4.067	3.636	2.778	2.126	1.789	1.682	1.487	1.100	0.892
185	-	4.099	3.681	2.855	2.190	1.819	1.711	1.519	1.124	0.910
190	-	4.132	3.726	2.933	2.253	1.849	1.741	1.550	1.148	0.927
195	-	4.164	3.770	3.011	2.316	1.879	1.770	1.582	1.172	0.945
200	-	4.196	3.815	3.089	2.379	1.910	1.800	1.614	1.197	0.963
205	-	4.229	3.860	3.166	2.442	1.940	1.829	1.645	1.221	0.980
210	-	4.261	3.905	3.244	2.506	1.970	1.859	1.677	1.249	0.998
215	-	4.293	3.950	3.322	2.569	2.000	1.888	1.709	1.292	1.015
220	-	4.326	3.995	3.400	2.632	2.062	1.918	1.740	1.336	1.033
225	-	4.358	4.040	3.477	2.695	2.124	1.947	1.772	1.380	1.050
230	-	4.390	4.085	3.555	2.759	2.187	1.976	1.804	1.423	1.068
235	-	4.423	4.130	3.623	2.822	2.249	2.013	1.835	1.467	1.085
240	-	4.455	4.175	3.691	2.885	2.311	2.079	1.867	1.511	1.103
245	-	4.487	4.219	3.758	2.948	2.373	2.145	1.899	1.554	1.121
250	-	4.520	4.264	3.826	3.011	2.435	2.211	1.930	1.598	1.138
255	-	4.552	4.309	3.894	3.075	2.498	2.277	1.962	1.642	1.156
260	-	4.584	4.354	3.962	3.138	2.560	2.343	1.994	1.686	1.173
265	-	4.617	4.399	4.030	3.201	2.622	2.409	2.054	1.729	1.191
270	-	4.649	4.444	4.098	3.264	2.684	2.474	2.122	1.773	1.208
275	-	4.681	4.489	4.165	3.327	2.746	2.540	2.189	1.817	1.226
280	-	4.714	4.534	4.233	3.391	2.809	2.606	2.257	1.860	1.252
285	-	4.746	4.579	4.301	3.454	2.871	2.672	2.325	1.904	1.309
290	-	4.778	4.623	4.369	3.517	2.933	2.738	2.392	1.948	1.367
295	-	4.811	4.668	4.437	3.601	2.995	2.804	2.460	1.991	1.424
300	-	4.843	4.713	4.504	3.717	3.057	2.870	2.527	2.052	1.482
305	-	4.875	4.758	4.572	3.833	3.120	2.936	2.595	2.118	1.539
310	-	4.908	4.803	4.640	3.949	3.182	3.002	2.663	2.183	1.597
315	-	4.940	4.848	4.708	4.065	3.244	3.067	2.730	2.248	1.655
320	-	4.972	4.893	4.776	4.181	3.306	3.133	2.798	2.314	1.712
325	-	5.005	4.938	4.844	4.297	3.368	3.199	2.865	2.379	1.770
330	-	5.037	4.983	4.911	4.413	3.431	3.265	2.933	2.444	1.827
335	-	5.069	5.028	4.979	4.529	3.493	3.331	3.001	2.510	1.885
340	-	5.102	5.072	5.047	4.645	3.555	3.397	3.068	2.575	1.942
345	-	5.134	5.117	5.115	4.760	3.748	3.463	3.136	2.640	2.000
350	-	5.166	5.162	5.183	4.876	3.941	3.529	3.203	2.706	2.063
355	-	5.198	5.198	5.198	4.992	4.135	3.595	3.271	2.771	2.125

Thickness is intumescent only. Table applies to beams with 3 sided protection and a concrete slab.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 7: I-Section Beams 105 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
50	-	-	3.023	1.800	1.116	1.116	0.818	0.743	0.612	0.506
55	-	-	3.042	1.800	1.154	1.116	0.874	0.794	0.660	0.533
60	-	-	3.080	1.800	1.215	1.144	0.961	0.874	0.708	0.559
65	-	-	3.118	1.800	1.277	1.188	1.048	0.953	0.755	0.585
70	-	-	3.155	1.800	1.338	1.231	1.135	1.033	0.803	0.611
75	-	-	3.193	1.800	1.399	1.275	1.223	1.113	0.850	0.637
80	-	-	3.231	1.800	1.461	1.319	1.271	1.192	0.898	0.664
85	-	-	3.268	1.800	1.522	1.362	1.309	1.253	0.945	0.690
90	-	-	3.306	1.800	1.583	1.406	1.347	1.287	0.993	0.716
95	-	-	3.344	1.893	1.645	1.450	1.386	1.320	1.040	0.742
100	-	-	3.382	2.027	1.706	1.493	1.424	1.353	1.088	0.768
105	-	-	3.419	2.161	1.767	1.537	1.463	1.387	1.135	0.795
110	-	-	3.457	2.295	1.828	1.581	1.501	1.420	1.183	0.821
115	-	-	3.495	2.429	1.890	1.624	1.539	1.453	1.230	0.847
120	-	-	3.533	2.563	1.951	1.668	1.578	1.487	1.264	0.873
125	-	-	3.570	2.697	2.019	1.712	1.616	1.520	1.295	0.899
130	-	-	3.608	2.831	2.112	1.755	1.655	1.553	1.325	0.926
135	-	-	3.646	2.965	2.205	1.799	1.693	1.587	1.356	0.952
140	-	-	3.683	3.099	2.299	1.843	1.731	1.620	1.386	0.978
145	-	-	3.721	3.233	2.392	1.886	1.770	1.653	1.416	1.004
150	-	-	3.759	3.367	2.486	1.930	1.808	1.687	1.447	1.030
155	-	-	3.797	3.501	2.579	1.974	1.846	1.720	1.477	1.057
160	-	-	3.834	3.581	2.672	2.029	1.885	1.753	1.508	1.083
165	-	-	3.872	3.624	2.766	2.102	1.923	1.787	1.538	1.109
170	-	-	3.910	3.667	2.859	2.174	1.962	1.820	1.568	1.135
175	-	-	3.947	3.710	2.952	2.247	2.000	1.853	1.599	1.161
180	-	-	3.985	3.753	3.046	2.320	2.073	1.887	1.629	1.188
185	-	-	4.023	3.796	3.139	2.392	2.145	1.920	1.660	1.214
190	-	-	4.061	3.839	3.233	2.465	2.218	1.953	1.690	1.240
195	-	-	4.098	3.882	3.326	2.538	2.291	1.987	1.720	1.279
200	-	-	4.136	3.925	3.419	2.610	2.363	2.041	1.751	1.318
205	-	-	4.174	3.969	3.513	2.683	2.436	2.109	1.781	1.358
210	-	-	4.211	4.012	3.586	2.756	2.509	2.177	1.812	1.397
215	-	-	4.249	4.055	3.647	2.828	2.581	2.246	1.842	1.436
220	-	-	4.287	4.098	3.707	2.901	2.654	2.314	1.872	1.475
225	-	-	4.325	4.141	3.767	2.974	2.727	2.382	1.903	1.514
230	-	-	4.362	4.184	3.828	3.046	2.799	2.450	1.933	1.553
235	-	-	4.400	4.227	3.888	3.119	2.872	2.518	1.964	1.593
240	-	-	4.438	4.270	3.948	3.192	2.945	2.587	1.994	1.632
245	-	-	4.475	4.313	4.009	3.264	3.017	2.655	2.050	1.671
250	-	-	4.513	4.356	4.069	3.337	3.090	2.723	2.113	1.710
255	-	-	4.551	4.399	4.130	3.410	3.163	2.791	2.176	1.749
260	-	-	4.589	4.442	4.190	3.482	3.235	2.859	2.238	1.788
265	-	-	4.626	4.485	4.250	3.555	3.308	2.928	2.301	1.828
270	-	-	4.664	4.528	4.311	3.629	3.381	2.996	2.364	1.867
275	-	-	4.702	4.572	4.371	3.703	3.453	3.064	2.426	1.906
280	-	-	4.739	4.615	4.432	3.776	3.526	3.132	2.489	1.945
285	-	-	4.777	4.658	4.492	3.849	3.599	3.200	2.552	1.984
290	-	-	4.815	4.701	4.552	3.922	3.672	3.269	2.614	2.023
295	-	-	4.853	4.744	4.613	3.995	3.745	3.337	2.677	2.062
300	-	-	4.890	4.787	4.673	4.068	3.818	3.405	2.740	2.101
305	-	-	4.928	4.830	4.733	4.141	3.891	3.473	2.803	2.140
310	-	-	4.966	4.873	4.794	4.214	3.964	3.541	2.865	2.179
315	-	-	5.004	4.916	4.854	4.287	4.037	3.609	2.928	2.218
320	-	-	5.041	4.959	4.915	4.360	4.110	3.677	2.991	2.257
325	-	-	5.079	5.002	4.975	4.433	4.183	3.745	3.054	2.296
330	-	-	5.117	5.045	5.035	4.506	4.256	3.813	3.117	2.335
335	-	-	5.154	5.088	5.096	4.579	4.329	3.881	3.179	2.374
340	-	-	5.192	5.132	5.157	4.652	4.402	3.949	3.242	2.413
345	-	-	5.230	5.175	5.218	4.725	4.475	4.017	3.304	2.452
350	-	-	5.268	5.218	5.279	4.798	4.548	4.085	3.367	2.491
355	-	-	5.305	5.261	5.340	4.871	4.621	4.153	3.430	2.530

Thickness is intumescent only. Table applies to beams with 3 sided protection and a concrete slab.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 8: I-Section Beams 120 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
50	-	-	3.255	3.195	1.202	1.128	1.002	0.917	0.871	0.633
55	-	-	3.330	3.219	1.297	1.190	1.071	0.979	0.930	0.681
60	-	-	3.405	3.257	1.392	1.252	1.177	1.079	0.990	0.737
65	-	-	3.480	3.294	1.487	1.315	1.262	1.180	1.049	0.793
70	-	-	3.555	3.331	1.582	1.377	1.318	1.259	1.109	0.848
75	-	-	3.630	3.369	1.677	1.439	1.374	1.306	1.169	0.904
80	-	-	3.705	3.406	1.772	1.502	1.430	1.353	1.228	0.960
85	-	-	3.780	3.443	1.867	1.564	1.486	1.400	1.269	1.016
90	-	-	3.855	3.480	1.962	1.626	1.542	1.446	1.305	1.072
95	-	-	3.930	3.518	2.058	1.689	1.598	1.493	1.340	1.128
100	-	-	4.005	3.555	2.235	1.751	1.654	1.540	1.376	1.184
105	-	-	4.080	3.592	2.381	1.813	1.709	1.587	1.412	1.240
110	-	-	4.155	3.630	2.528	1.875	1.765	1.634	1.448	1.270
115	-	-	4.230	3.667	2.675	1.938	1.821	1.681	1.484	1.301
120	-	-	4.305	3.704	2.822	2.000	1.877	1.728	1.520	1.331
125	-	-	4.380	3.741	2.968	2.107	1.933	1.775	1.555	1.362
130	-	-	4.455	3.779	3.115	2.213	1.989	1.822	1.591	1.392
135	-	-	4.530	3.816	3.262	2.320	2.077	1.869	1.627	1.422
140	-	-	4.605	3.853	3.408	2.426	2.173	1.916	1.663	1.453
145	-	-	4.680	3.891	3.555	2.533	2.269	1.962	1.699	1.483
150	-	-	4.755	3.928	3.596	2.639	2.365	2.016	1.735	1.514
155	-	-	4.830	3.965	3.638	2.746	2.461	2.098	1.771	1.544
160	-	-	4.905	4.002	3.679	2.852	2.557	2.180	1.806	1.574
165	-	-	4.980	4.040	3.721	2.959	2.653	2.262	1.842	1.605
170	-	-	5.055	4.077	3.762	3.065	2.749	2.344	1.878	1.635
175	-	-	5.130	4.114	3.803	3.172	2.845	2.426	1.914	1.666
180	-	-	5.205	4.151	3.845	3.278	2.941	2.507	1.950	1.696
185	-	-	5.280	4.189	3.886	3.385	3.037	2.589	1.986	1.726
190	-	-	5.355	4.226	3.928	3.491	3.133	2.671	2.045	1.757
195	-	-	5.430	4.263	3.969	3.577	3.229	2.753	2.119	1.787
200	-	-	-	4.301	4.010	3.632	3.325	2.835	2.194	1.818
205	-	-	-	4.338	4.052	3.687	3.421	2.917	2.268	1.848
210	-	-	-	4.375	4.093	3.742	3.517	2.998	2.343	1.878
215	-	-	-	4.412	4.135	3.797	3.593	3.080	2.417	1.909
220	-	-	-	4.450	4.176	3.852	3.657	3.162	2.492	1.939
225	-	-	-	4.487	4.217	3.907	3.721	3.244	2.566	1.970
230	-	-	-	4.524	4.259	3.962	3.785	3.326	2.641	2.000
235	-	-	-	4.562	4.300	4.017	3.848	3.408	2.715	2.075
240	-	-	-	4.599	4.342	4.072	3.912	3.490	2.790	2.150
245	-	-	-	4.636	4.383	4.127	3.976	3.573	2.864	2.224
250	-	-	-	4.673	4.424	4.182	4.040	3.663	2.939	2.299
255	-	-	-	4.711	4.466	4.236	4.103	3.753	3.013	2.374
260	-	-	-	4.748	4.507	4.291	4.167	3.842	3.088	2.449
265	-	-	-	4.785	4.549	4.346	4.231	3.932	3.163	2.523
270	-	-	-	4.823	4.590	4.401	4.295	4.022	3.237	2.598
275	-	-	-	4.860	4.631	4.456	4.358	4.112	3.312	2.673
280	-	-	-	4.897	4.673	4.511	4.422	4.201	3.386	2.748
285	-	-	-	4.934	4.714	4.566	4.486	4.291	3.461	2.822
290	-	-	-	4.972	4.755	4.621	4.550	4.381	3.535	2.897
295	-	-	-	5.009	4.797	4.676	4.613	4.471	3.721	2.972
300	-	-	-	5.046	4.838	4.731	4.677	4.561	3.934	3.047
305	-	-	-	5.084	4.880	4.786	4.741	4.650	4.147	3.121
310	-	-	-	5.121	4.921	4.841	4.805	4.740	4.361	3.196
315	-	-	-	5.158	4.962	4.896	4.868	4.830	4.574	3.271
320	-	-	-	5.195	5.004	4.951	4.932	4.920	4.787	3.346
325	-	-	-	5.233	5.045	5.006	4.996	4.996	4.996	3.420
330	-	-	-	5.270	5.087	5.087	5.060	5.060	5.060	3.495
335	-	-	-	5.307	5.128	5.128	5.128	5.128	5.128	3.653
340	-	-	-	5.344	5.171	5.171	5.171	5.171	5.171	4.143
345	-	-	-	5.382	5.226	5.226	5.226	5.226	5.226	4.634
350	-	-	-	5.419	5.281	5.281	5.281	5.281	5.281	5.124
355	-	-	-	5.456	5.336	5.336	5.336	5.336	5.336	5.336

Thickness is intumescent only. Table applies to beams with 3 sided protection and a concrete slab.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 9: I-Section Columns 15 Minutes Thickness (mm) Required for a Design Temperature of								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
40	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
45	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
50	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
55	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
60	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
65	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
70	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
75	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
80	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
85	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
90	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
95	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
100	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
105	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
110	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
115	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
120	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
125	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
130	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
135	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
140	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
145	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
150	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
155	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
160	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
165	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
170	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
175	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
180	0.473	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
185	0.490	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
190	0.507	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
195	0.523	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
200	0.540	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
205	0.557	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
210	0.574	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
215	0.590	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
220	0.607	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
225	0.624	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
230	0.641	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
235	0.657	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
240	0.674	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
245	0.691	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
250	0.708	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
255	0.724	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
260	0.741	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
265	0.758	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
270	0.775	0.471	0.460	0.460	0.460	0.460	0.460	0.460	0.460
275	0.791	0.482	0.460	0.460	0.460	0.460	0.460	0.460	0.460
280	0.808	0.492	0.460	0.460	0.460	0.460	0.460	0.460	0.460
285	0.825	0.503	0.460	0.460	0.460	0.460	0.460	0.460	0.460
290	0.841	0.514	0.460	0.460	0.460	0.460	0.460	0.460	0.460
295	0.858	0.524	0.460	0.460	0.460	0.460	0.460	0.460	0.460
300	0.875	0.535	0.460	0.460	0.460	0.460	0.460	0.460	0.460
305	0.892	0.546	0.460	0.460	0.460	0.460	0.460	0.460	0.460
310	0.908	0.556	0.460	0.460	0.460	0.460	0.460	0.460	0.460
315	0.925	0.567	0.460	0.460	0.460	0.460	0.460	0.460	0.460
320	0.942	0.578	0.460	0.460	0.460	0.460	0.460	0.460	0.460
325	0.959	0.588	0.460	0.460	0.460	0.460	0.460	0.460	0.460
330	0.975	0.599	0.460	0.460	0.460	0.460	0.460	0.460	0.460
335	0.992	0.609	0.460	0.460	0.460	0.460	0.460	0.460	0.460
340	1.009	0.620	0.460	0.460	0.460	0.460	0.460	0.460	0.460
345	1.026	0.631	0.460	0.460	0.460	0.460	0.460	0.460	0.460
350	1.042	0.641	0.463	0.460	0.460	0.460	0.460	0.460	0.460
355	1.059	0.652	0.472	0.460	0.460	0.460	0.460	0.460	0.460

Thickness is intumescent only. Table also applies to beams with 4 side protection.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 10: I-Section Columns 30 Minutes								
	Thickness (mm) Required for a Design Temperature of								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
40	0.811	0.564	0.460	0.460	0.460	0.460	0.460	0.460	0.460
45	0.811	0.564	0.460	0.460	0.460	0.460	0.460	0.460	0.460
50	0.811	0.564	0.460	0.460	0.460	0.460	0.460	0.460	0.460
55	0.811	0.564	0.460	0.460	0.460	0.460	0.460	0.460	0.460
60	0.811	0.566	0.460	0.460	0.460	0.460	0.460	0.460	0.460
65	0.811	0.575	0.460	0.460	0.460	0.460	0.460	0.460	0.460
70	0.811	0.583	0.460	0.460	0.460	0.460	0.460	0.460	0.460
75	0.811	0.592	0.460	0.460	0.460	0.460	0.460	0.460	0.460
80	0.811	0.600	0.460	0.460	0.460	0.460	0.460	0.460	0.460
85	0.837	0.608	0.460	0.460	0.460	0.460	0.460	0.460	0.460
90	0.866	0.617	0.460	0.460	0.460	0.460	0.460	0.460	0.460
95	0.895	0.625	0.460	0.460	0.460	0.460	0.460	0.460	0.460
100	0.924	0.634	0.460	0.460	0.460	0.460	0.460	0.460	0.460
105	0.954	0.642	0.460	0.460	0.460	0.460	0.460	0.460	0.460
110	0.983	0.651	0.460	0.460	0.460	0.460	0.460	0.460	0.460
115	1.012	0.659	0.460	0.460	0.460	0.460	0.460	0.460	0.460
120	1.041	0.667	0.460	0.460	0.460	0.460	0.460	0.460	0.460
125	1.071	0.676	0.460	0.460	0.460	0.460	0.460	0.460	0.460
130	1.100	0.684	0.460	0.460	0.460	0.460	0.460	0.460	0.460
135	1.129	0.693	0.460	0.460	0.460	0.460	0.460	0.460	0.460
140	1.158	0.701	0.460	0.460	0.460	0.460	0.460	0.460	0.460
145	1.187	0.710	0.460	0.460	0.460	0.460	0.460	0.460	0.460
150	1.217	0.718	0.460	0.460	0.460	0.460	0.460	0.460	0.460
155	1.245	0.727	0.464	0.460	0.460	0.460	0.460	0.460	0.460
160	1.271	0.735	0.482	0.460	0.460	0.460	0.460	0.460	0.460
165	1.302	0.747	0.499	0.460	0.460	0.460	0.460	0.460	0.460
170	1.343	0.766	0.517	0.460	0.460	0.460	0.460	0.460	0.460
175	1.383	0.784	0.534	0.460	0.460	0.460	0.460	0.460	0.460
180	1.424	0.803	0.551	0.460	0.460	0.460	0.460	0.460	0.460
185	1.465	0.821	0.569	0.460	0.460	0.460	0.460	0.460	0.460
190	1.505	0.839	0.586	0.460	0.460	0.460	0.460	0.460	0.460
195	1.546	0.858	0.603	0.460	0.460	0.460	0.460	0.460	0.460
200	1.586	0.876	0.621	0.474	0.460	0.460	0.460	0.460	0.460
205	1.627	0.894	0.638	0.490	0.460	0.460	0.460	0.460	0.460
210	1.667	0.913	0.656	0.505	0.460	0.460	0.460	0.460	0.460
215	1.708	0.931	0.673	0.520	0.460	0.460	0.460	0.460	0.460
220	1.748	0.950	0.690	0.535	0.460	0.460	0.460	0.460	0.460
225	1.789	0.968	0.708	0.550	0.460	0.460	0.460	0.460	0.460
230	1.830	0.986	0.725	0.566	0.460	0.460	0.460	0.460	0.460
235	1.870	1.005	0.743	0.581	0.460	0.460	0.460	0.460	0.460
240	1.911	1.023	0.760	0.596	0.469	0.460	0.460	0.460	0.460
245	1.951	1.041	0.777	0.611	0.481	0.460	0.460	0.460	0.460
250	1.992	1.060	0.795	0.626	0.494	0.460	0.460	0.460	0.460
255	2.030	1.078	0.812	0.642	0.507	0.460	0.460	0.460	0.460
260	2.068	1.097	0.830	0.657	0.520	0.460	0.460	0.460	0.460
265	2.106	1.115	0.847	0.672	0.533	0.460	0.460	0.460	0.460
270	2.144	1.133	0.864	0.687	0.546	0.460	0.460	0.460	0.460
275	2.182	1.152	0.882	0.702	0.559	0.460	0.460	0.460	0.460
280	2.220	1.170	0.899	0.717	0.571	0.460	0.460	0.460	0.460
285	2.258	1.189	0.917	0.733	0.584	0.460	0.460	0.460	0.460
290	2.296	1.207	0.934	0.748	0.597	0.469	0.460	0.460	0.460
295	2.334	1.225	0.951	0.763	0.610	0.479	0.460	0.460	0.460
300	2.372	1.248	0.969	0.778	0.623	0.490	0.460	0.460	0.460
305	2.410	1.287	0.986	0.793	0.636	0.501	0.460	0.460	0.460
310	2.448	1.325	1.003	0.809	0.649	0.511	0.460	0.460	0.460
315	2.486	1.364	1.021	0.824	0.661	0.522	0.460	0.460	0.460
320	2.524	1.403	1.038	0.839	0.674	0.533	0.460	0.460	0.460
325	2.562	1.442	1.056	0.854	0.687	0.544	0.460	0.460	0.460
330	2.600	1.480	1.073	0.869	0.700	0.554	0.460	0.460	0.460
335	2.638	1.519	1.090	0.885	0.713	0.565	0.460	0.460	0.460
340	2.676	1.558	1.108	0.900	0.726	0.576	0.460	0.460	0.460
345	2.714	1.597	1.125	0.915	0.739	0.586	0.460	0.460	0.460
350	2.752	1.636	1.143	0.930	0.751	0.597	0.460	0.460	0.460
355	2.790	1.674	1.160	0.945	0.764	0.608	0.468	0.460	0.460

Thickness is intumescent only. Table also applies to beams with 4 side protection.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 11: I-Section Columns 45 Minutes								
	Thickness (mm) Required for a Design Temperature of								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
40	1.415	0.883	0.692	0.549	0.460	0.460	0.460	0.460	0.460
45	1.415	0.883	0.692	0.549	0.460	0.460	0.460	0.460	0.460
50	1.415	0.883	0.692	0.549	0.460	0.460	0.460	0.460	0.460
55	1.415	0.883	0.692	0.549	0.460	0.460	0.460	0.460	0.460
60	1.415	0.883	0.692	0.549	0.460	0.460	0.460	0.460	0.460
65	1.415	0.883	0.692	0.549	0.460	0.460	0.460	0.460	0.460
70	1.415	0.883	0.692	0.559	0.460	0.460	0.460	0.460	0.460
75	1.415	0.883	0.694	0.569	0.460	0.460	0.460	0.460	0.460
80	1.435	0.889	0.712	0.578	0.460	0.460	0.460	0.460	0.460
85	1.478	0.918	0.730	0.588	0.460	0.460	0.460	0.460	0.460
90	1.521	0.946	0.748	0.598	0.460	0.460	0.460	0.460	0.460
95	1.563	0.975	0.765	0.608	0.460	0.460	0.460	0.460	0.460
100	1.606	1.004	0.783	0.618	0.460	0.460	0.460	0.460	0.460
105	1.649	1.033	0.801	0.628	0.460	0.460	0.460	0.460	0.460
110	1.692	1.062	0.819	0.638	0.460	0.460	0.460	0.460	0.460
115	1.735	1.090	0.836	0.647	0.460	0.460	0.460	0.460	0.460
120	1.777	1.119	0.854	0.657	0.460	0.460	0.460	0.460	0.460
125	1.820	1.148	0.872	0.667	0.460	0.460	0.460	0.460	0.460
130	1.863	1.177	0.890	0.677	0.460	0.460	0.460	0.460	0.460
135	1.906	1.205	0.908	0.687	0.460	0.460	0.460	0.460	0.460
140	1.949	1.234	0.925	0.697	0.460	0.460	0.460	0.460	0.460
145	1.991	1.259	0.943	0.707	0.460	0.460	0.460	0.460	0.460
150	2.016	1.284	0.961	0.716	0.468	0.460	0.460	0.460	0.460
155	2.037	1.308	0.979	0.726	0.488	0.460	0.460	0.460	0.460
160	2.058	1.332	0.996	0.736	0.508	0.460	0.460	0.460	0.460
165	2.095	1.360	1.014	0.750	0.528	0.460	0.460	0.460	0.460
170	2.156	1.394	1.032	0.769	0.548	0.460	0.460	0.460	0.460
175	2.218	1.428	1.051	0.789	0.568	0.460	0.460	0.460	0.460
180	2.280	1.461	1.069	0.808	0.588	0.475	0.460	0.460	0.460
185	2.341	1.495	1.087	0.828	0.608	0.492	0.460	0.460	0.460
190	2.403	1.529	1.105	0.847	0.629	0.510	0.460	0.460	0.460
195	2.465	1.562	1.124	0.867	0.649	0.527	0.460	0.460	0.460
200	2.526	1.596	1.142	0.886	0.669	0.544	0.460	0.460	0.460
205	2.588	1.630	1.160	0.905	0.689	0.562	0.460	0.460	0.460
210	2.650	1.663	1.178	0.925	0.709	0.579	0.469	0.460	0.460
215	2.711	1.697	1.196	0.944	0.729	0.596	0.484	0.460	0.460
220	2.773	1.731	1.215	0.964	0.749	0.613	0.499	0.460	0.460
225	2.835	1.764	1.233	0.983	0.769	0.631	0.514	0.460	0.460
230	2.896	1.798	1.266	1.003	0.789	0.648	0.529	0.460	0.460
235	2.958	1.832	1.309	1.022	0.810	0.665	0.544	0.460	0.460
240	3.020	1.865	1.352	1.042	0.830	0.683	0.559	0.460	0.460
245	3.081	1.899	1.395	1.061	0.850	0.700	0.574	0.460	0.460
250	3.143	1.933	1.439	1.080	0.870	0.717	0.589	0.460	0.460
255	3.205	1.966	1.482	1.100	0.890	0.735	0.604	0.473	0.460
260	3.266	2.000	1.525	1.119	0.910	0.752	0.619	0.485	0.460
265	3.328	2.045	1.568	1.139	0.930	0.769	0.634	0.498	0.460
270	3.390	2.091	1.611	1.158	0.950	0.787	0.649	0.510	0.460
275	3.451	2.136	1.655	1.178	0.971	0.804	0.664	0.522	0.460
280	3.513	2.181	1.698	1.197	0.991	0.821	0.679	0.535	0.460
285	3.569	2.227	1.741	1.217	1.011	0.838	0.694	0.547	0.460
290	3.618	2.272	1.784	1.236	1.031	0.856	0.709	0.560	0.460
295	3.667	2.317	1.827	1.278	1.051	0.873	0.724	0.572	0.460
300	3.715	2.363	1.870	1.324	1.071	0.890	0.739	0.585	0.460
305	3.764	2.408	1.914	1.371	1.091	0.908	0.754	0.597	0.460
310	3.813	2.453	1.957	1.418	1.111	0.925	0.769	0.609	0.460
315	3.861	2.499	2.000	1.465	1.131	0.942	0.784	0.622	0.460
320	3.910	2.544	2.040	1.512	1.152	0.960	0.799	0.634	0.465
325	3.958	2.589	2.079	1.559	1.172	0.977	0.814	0.647	0.475
330	4.007	2.635	2.119	1.606	1.192	0.994	0.829	0.659	0.485
335	4.056	2.680	2.159	1.653	1.212	1.012	0.844	0.671	0.494
340	4.104	2.725	2.199	1.700	1.232	1.029	0.859	0.684	0.504
345	4.153	2.770	2.238	1.747	1.252	1.046	0.874	0.696	0.514
350	4.201	2.816	2.278	1.794	1.272	1.063	0.889	0.709	0.524
355	4.250	2.861	2.318	1.840	1.292	1.081	0.904	0.721	0.534

Thickness is intumescent only. Table also applies to beams with 4 side protection.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 12: I-Section Columns 60 Minutes Thickness (mm) Required for a Design Temperature of							
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C
40	2.463	1.116	0.959	0.785	0.648	0.474	0.460	0.460
45	2.463	1.116	0.959	0.785	0.648	0.485	0.460	0.460
50	2.463	1.116	0.959	0.785	0.648	0.496	0.460	0.460
55	2.463	1.116	0.959	0.785	0.648	0.507	0.460	0.460
60	2.463	1.116	0.959	0.785	0.648	0.518	0.460	0.460
65	2.463	1.116	0.959	0.785	0.648	0.529	0.460	0.460
70	2.463	1.116	0.959	0.785	0.648	0.540	0.460	0.460
75	2.463	1.116	0.959	0.785	0.648	0.551	0.460	0.460
80	2.477	1.137	0.959	0.789	0.663	0.562	0.460	0.460
85	2.558	1.266	0.986	0.815	0.681	0.573	0.460	0.460
90	2.639	1.394	1.023	0.841	0.699	0.584	0.460	0.460
95	2.721	1.522	1.059	0.867	0.716	0.595	0.460	0.460
100	2.802	1.569	1.095	0.893	0.734	0.605	0.460	0.460
105	2.883	1.596	1.131	0.919	0.752	0.616	0.460	0.460
110	2.965	1.623	1.168	0.945	0.770	0.627	0.460	0.460
115	3.046	1.649	1.204	0.970	0.788	0.637	0.460	0.460
120	3.127	1.676	1.240	0.996	0.806	0.648	0.460	0.460
125	3.209	1.703	1.272	1.022	0.824	0.658	0.460	0.460
130	3.290	1.729	1.304	1.048	0.842	0.669	0.460	0.460
135	3.371	1.756	1.336	1.074	0.860	0.680	0.460	0.460
140	3.452	1.782	1.368	1.100	0.878	0.690	0.460	0.460
145	3.534	1.809	1.400	1.126	0.896	0.701	0.460	0.460
150	3.575	1.836	1.433	1.152	0.913	0.711	0.474	0.460
155	3.606	1.862	1.465	1.178	0.931	0.722	0.495	0.460
160	3.636	1.889	1.497	1.203	0.949	0.733	0.516	0.460
165	3.672	1.926	1.532	1.233	0.967	0.747	0.537	0.460
170	3.714	1.979	1.572	1.268	0.986	0.767	0.558	0.460
175	3.756	2.032	1.613	1.303	1.005	0.787	0.579	0.466
180	3.798	2.084	1.653	1.339	1.023	0.807	0.600	0.484
185	3.840	2.137	1.693	1.374	1.042	0.826	0.621	0.502
190	3.882	2.190	1.734	1.409	1.061	0.846	0.642	0.520
195	3.924	2.243	1.774	1.444	1.079	0.866	0.663	0.538
200	3.966	2.295	1.814	1.479	1.098	0.886	0.684	0.556
205	4.008	2.348	1.855	1.514	1.117	0.906	0.705	0.574
210	4.050	2.401	1.895	1.550	1.135	0.926	0.726	0.592
215	4.092	2.453	1.935	1.585	1.154	0.946	0.747	0.610
220	4.134	2.506	1.976	1.620	1.173	0.966	0.768	0.629
225	4.176	2.559	2.020	1.655	1.191	0.986	0.789	0.647
230	4.218	2.612	2.070	1.690	1.210	1.005	0.811	0.665
235	4.260	2.664	2.120	1.726	1.229	1.025	0.832	0.683
240	4.303	2.717	2.170	1.761	1.260	1.045	0.853	0.701
245	4.345	2.770	2.220	1.796	1.310	1.065	0.874	0.719
250	4.387	2.822	2.270	1.831	1.360	1.085	0.895	0.737
255	4.429	2.875	2.320	1.866	1.410	1.105	0.916	0.755
260	4.471	2.928	2.370	1.901	1.460	1.125	0.937	0.773
265	4.513	2.981	2.420	1.937	1.510	1.145	0.958	0.791
270	4.555	3.033	2.470	1.972	1.560	1.164	0.979	0.809
275	4.597	3.086	2.520	2.011	1.610	1.184	1.000	0.828
280	4.639	3.139	2.570	2.063	1.660	1.204	1.021	0.846
285	4.681	3.191	2.620	2.116	1.710	1.224	1.042	0.864
290	4.723	3.244	2.670	2.169	1.760	1.251	1.063	0.882
295	4.765	3.297	2.720	2.221	1.810	1.303	1.084	0.900
300	4.807	3.350	2.770	2.274	1.860	1.356	1.105	0.918
305	4.849	3.402	2.820	2.327	1.910	1.409	1.126	0.936
310	4.891	3.455	2.870	2.380	1.960	1.462	1.147	0.954
315	4.933	3.508	2.920	2.432	2.010	1.514	1.168	0.972
320	4.975	3.561	2.970	2.485	2.059	1.567	1.189	0.990
325	5.017	3.613	3.020	2.538	2.109	1.620	1.211	1.008
330	5.059	3.666	3.070	2.590	2.158	1.673	1.232	1.027
335	5.101	3.719	3.120	2.643	2.207	1.726	1.269	1.045
340	5.143	3.771	3.170	2.696	2.257	1.778	1.316	1.063
345	5.185	3.824	3.220	2.749	2.306	1.831	1.364	1.081
350	5.227	3.877	3.270	2.801	2.355	1.884	1.411	1.099
355	5.270	3.930	3.320	2.854	2.405	1.937	1.459	1.117

Thickness is intumescent only. Table also applies to beams with 4 side protection.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 13: I-Section Columns 75 Minutes								
	Thickness (mm) Required for a Design Temperature of								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
40	3.195	2.309	1.501	1.021	0.862	0.732	0.621	0.460	0.460
45	3.195	2.309	1.501	1.021	0.862	0.732	0.621	0.470	0.460
50	3.195	2.309	1.501	1.021	0.862	0.732	0.621	0.481	0.460
55	3.195	2.309	1.501	1.021	0.862	0.732	0.621	0.491	0.460
60	3.243	2.309	1.501	1.021	0.862	0.732	0.621	0.501	0.460
65	3.302	2.309	1.501	1.021	0.862	0.732	0.621	0.512	0.460
70	3.361	2.323	1.501	1.021	0.862	0.732	0.621	0.522	0.460
75	3.420	2.370	1.523	1.021	0.862	0.732	0.621	0.532	0.460
80	3.479	2.417	1.557	1.021	0.862	0.735	0.637	0.543	0.460
85	3.538	2.463	1.592	1.037	0.886	0.759	0.653	0.553	0.460
90	3.597	2.510	1.627	1.081	0.919	0.784	0.670	0.564	0.460
95	3.656	2.557	1.661	1.125	0.951	0.808	0.687	0.574	0.460
100	3.715	2.603	1.696	1.169	0.984	0.833	0.703	0.583	0.460
105	3.774	2.650	1.730	1.214	1.017	0.857	0.720	0.592	0.460
110	3.833	2.697	1.765	1.255	1.050	0.882	0.737	0.601	0.460
115	3.892	2.744	1.799	1.293	1.083	0.906	0.754	0.610	0.460
120	3.951	2.790	1.834	1.331	1.115	0.930	0.770	0.619	0.460
125	4.010	2.837	1.869	1.369	1.148	0.955	0.787	0.628	0.460
130	4.069	2.884	1.903	1.407	1.181	0.979	0.804	0.636	0.460
135	4.128	2.930	1.938	1.445	1.214	1.004	0.820	0.645	0.460
140	4.187	2.977	1.972	1.483	1.246	1.028	0.837	0.654	0.460
145	4.247	3.024	2.002	1.521	1.275	1.053	0.854	0.663	0.460
150	4.306	3.071	2.010	1.559	1.303	1.077	0.871	0.672	0.460
155	4.365	3.117	2.018	1.597	1.332	1.102	0.887	0.681	0.460
160	4.424	3.164	2.026	1.635	1.361	1.126	0.904	0.690	0.476
165	4.482	3.228	2.058	1.676	1.394	1.151	0.921	0.703	0.496
170	4.541	3.317	2.124	1.723	1.432	1.176	0.938	0.723	0.516
175	4.599	3.407	2.191	1.769	1.471	1.200	0.955	0.744	0.536
180	4.658	3.496	2.258	1.815	1.510	1.225	0.972	0.764	0.556
185	4.716	3.569	2.324	1.861	1.549	1.255	0.989	0.784	0.576
190	4.775	3.617	2.391	1.908	1.588	1.293	1.007	0.805	0.596
195	4.833	3.664	2.457	1.954	1.627	1.331	1.024	0.825	0.617
200	4.892	3.712	2.524	2.000	1.666	1.369	1.041	0.845	0.637
205	4.950	3.760	2.591	2.058	1.705	1.407	1.058	0.866	0.657
210	5.008	3.807	2.657	2.117	1.743	1.445	1.075	0.886	0.677
215	5.067	3.855	2.724	2.175	1.782	1.483	1.092	0.906	0.697
220	5.125	3.902	2.791	2.233	1.821	1.521	1.110	0.927	0.717
225	5.184	3.950	2.857	2.291	1.860	1.559	1.127	0.947	0.737
230	5.242	3.998	2.924	2.350	1.899	1.597	1.144	0.968	0.757
235	5.301	4.045	2.990	2.408	1.938	1.635	1.161	0.988	0.777
240	5.359	4.093	3.057	2.466	1.977	1.673	1.178	1.008	0.798
245	5.418	4.140	3.124	2.524	2.024	1.711	1.195	1.029	0.818
250	5.476	4.188	3.190	2.583	2.084	1.749	1.213	1.049	0.838
255	5.535	4.236	3.257	2.641	2.144	1.787	1.230	1.069	0.858
260	-	4.283	3.323	2.699	2.204	1.825	1.265	1.090	0.878
265	-	4.331	3.390	2.758	2.264	1.863	1.326	1.110	0.898
270	-	4.379	3.457	2.816	2.324	1.901	1.387	1.130	0.918
275	-	4.426	3.523	2.874	2.384	1.939	1.448	1.151	0.938
280	-	4.474	3.595	2.932	2.445	1.977	1.510	1.171	0.958
285	-	4.521	3.670	2.991	2.505	2.024	1.571	1.191	0.979
290	-	4.569	3.746	3.049	2.565	2.083	1.632	1.212	0.999
295	-	4.617	3.821	3.107	2.625	2.143	1.694	1.232	1.019
300	-	4.664	3.896	3.165	2.685	2.203	1.755	1.274	1.039
305	-	4.712	3.972	3.224	2.745	2.262	1.816	1.329	1.059
310	-	4.760	4.047	3.282	2.805	2.322	1.877	1.385	1.079
315	-	4.807	4.122	3.340	2.865	2.382	1.939	1.441	1.099
320	-	4.855	4.197	3.398	2.925	2.441	2.000	1.497	1.119
325	-	4.902	4.273	3.457	2.985	2.501	2.057	1.553	1.139
330	-	4.950	4.348	3.515	3.045	2.560	2.114	1.609	1.160
335	-	4.998	4.423	3.571	3.105	2.620	2.171	1.665	1.180
340	-	5.045	4.498	3.629	3.166	2.680	2.228	1.721	1.200
345	-	5.093	4.574	3.797	3.226	2.739	2.285	1.776	1.220
350	-	5.140	4.649	3.900	3.286	2.799	2.342	1.832	1.240
355	-	5.188	4.724	4.003	3.346	2.858	2.399	1.888	1.260

Thickness is intumescent only. Table also applies to beams with 4 side protection.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 14: I-Section Columns 90 Minutes								
	Thickness (mm) Required for a Design Temperature of								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
40	4.950	3.155	2.334	1.662	1.071	0.926	0.799	0.681	0.490
45	4.950	3.155	2.334	1.662	1.071	0.926	0.799	0.681	0.501
50	4.950	3.155	2.334	1.662	1.071	0.926	0.799	0.681	0.513
55	4.950	3.155	2.334	1.662	1.071	0.926	0.799	0.681	0.525
60	4.950	3.155	2.334	1.662	1.071	0.926	0.799	0.681	0.536
65	4.950	3.155	2.334	1.662	1.071	0.926	0.799	0.681	0.548
70	4.950	3.155	2.334	1.662	1.071	0.926	0.799	0.681	0.560
75	4.950	3.198	2.358	1.662	1.071	0.926	0.799	0.681	0.571
80	4.950	3.271	2.414	1.662	1.071	0.926	0.799	0.687	0.583
85	4.950	3.345	2.470	1.662	1.071	0.943	0.821	0.709	0.594
90	4.950	3.418	2.526	1.694	1.115	0.982	0.852	0.731	0.606
95	4.950	3.491	2.582	1.822	1.178	1.021	0.882	0.753	0.618
100	4.950	3.559	2.638	1.949	1.240	1.060	0.912	0.775	0.630
105	4.950	3.602	2.694	2.014	1.282	1.099	0.943	0.796	0.643
110	4.950	3.645	2.750	2.037	1.324	1.138	0.973	0.818	0.656
115	4.950	3.688	2.805	2.061	1.366	1.177	1.003	0.840	0.668
120	4.950	3.731	2.861	2.084	1.408	1.217	1.034	0.862	0.681
125	4.950	3.775	2.917	2.107	1.450	1.253	1.064	0.884	0.694
130	4.950	3.818	2.973	2.130	1.492	1.287	1.094	0.906	0.706
135	4.950	3.861	3.029	2.154	1.534	1.320	1.125	0.928	0.719
140	4.950	3.904	3.085	2.177	1.577	1.353	1.155	0.950	0.732
145	-	3.947	3.141	2.200	1.619	1.387	1.185	0.972	0.744
150	-	3.991	3.197	2.223	1.661	1.420	1.216	0.994	0.757
155	-	4.034	3.253	2.247	1.703	1.454	1.245	1.016	0.770
160	-	4.077	3.308	2.270	1.745	1.487	1.267	1.038	0.782
165	-	4.126	3.388	2.322	1.791	1.524	1.296	1.059	0.798
170	-	4.183	3.504	2.416	1.843	1.567	1.332	1.080	0.817
175	-	4.240	3.585	2.511	1.895	1.609	1.369	1.100	0.837
180	-	4.298	3.643	2.605	1.948	1.652	1.406	1.121	0.856
185	-	4.355	3.700	2.700	2.000	1.694	1.442	1.141	0.875
190	-	4.412	3.758	2.794	2.072	1.737	1.479	1.162	0.895
195	-	4.469	3.816	2.889	2.145	1.779	1.516	1.182	0.914
200	-	4.527	3.874	2.983	2.217	1.822	1.552	1.203	0.934
205	-	4.584	3.932	3.078	2.290	1.864	1.589	1.224	0.953
210	-	4.641	3.990	3.172	2.362	1.907	1.626	1.249	0.972
215	-	4.698	4.048	3.267	2.435	1.949	1.663	1.293	0.992
220	-	4.755	4.105	3.361	2.507	1.992	1.699	1.337	1.011
225	-	4.813	4.163	3.456	2.579	2.052	1.736	1.381	1.031
230	-	4.870	4.221	3.550	2.652	2.117	1.773	1.426	1.050
235	-	4.927	4.279	3.619	2.724	2.182	1.809	1.470	1.069
240	-	4.984	4.337	3.687	2.797	2.247	1.846	1.514	1.089
245	-	5.042	4.395	3.756	2.869	2.313	1.883	1.558	1.108
250	-	5.099	4.452	3.825	2.942	2.378	1.919	1.602	1.128
255	-	5.156	4.510	3.893	3.014	2.443	1.956	1.647	1.147
260	-	5.213	4.568	3.962	3.086	2.508	1.993	1.691	1.166
265	-	5.270	4.626	4.030	3.159	2.573	2.056	1.735	1.186
270	-	5.328	4.684	4.099	3.231	2.638	2.126	1.779	1.205
275	-	5.385	4.742	4.168	3.304	2.703	2.195	1.823	1.224
280	-	-	4.800	4.236	3.376	2.768	2.265	1.867	1.252
285	-	-	4.857	4.305	3.449	2.834	2.335	1.912	1.309
290	-	-	4.915	4.374	3.521	2.899	2.405	1.956	1.367
295	-	-	4.973	4.442	3.614	2.964	2.475	2.000	1.424
300	-	-	5.031	4.511	3.720	3.029	2.545	2.065	1.482
305	-	-	5.089	4.579	3.826	3.094	2.614	2.129	1.539
310	-	-	5.147	4.648	3.932	3.159	2.684	2.194	1.597
315	-	-	5.205	4.717	4.038	3.224	2.754	2.258	1.655
320	-	-	5.262	4.785	4.144	3.289	2.824	2.323	1.712
325	-	-	5.320	4.854	4.250	3.355	2.894	2.388	1.770
330	-	-	5.378	4.923	4.356	3.420	2.964	2.452	1.827
335	-	-	-	4.991	4.462	3.485	3.033	2.517	1.885
340	-	-	-	5.060	4.568	3.550	3.103	2.581	1.942
345	-	-	-	5.128	4.674	3.615	3.173	2.646	2.000
350	-	-	-	5.197	4.780	3.680	3.243	2.710	2.058
355	-	-	-	5.266	4.886	3.745	3.313	2.775	2.115

Thickness is intumescent only. Table also applies to beams with 4 side protection.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 15: I-Section Columns 105 Minutes								
	Thickness (mm) Required for a Design Temperature of								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
40	-	4.356	3.120	2.417	1.954	1.116	0.977	0.844	0.708
45	-	4.356	3.120	2.417	1.959	1.116	0.977	0.844	0.708
50	-	4.356	3.120	2.417	1.965	1.116	0.977	0.844	0.708
55	-	4.356	3.120	2.417	1.971	1.116	0.977	0.844	0.708
60	-	4.356	3.120	2.417	1.976	1.116	0.977	0.844	0.708
65	-	4.356	3.120	2.417	1.982	1.116	0.977	0.844	0.708
70	-	4.356	3.120	2.417	1.988	1.116	0.977	0.844	0.708
75	-	4.356	3.120	2.417	1.993	1.116	0.977	0.844	0.708
80	-	4.356	3.201	2.458	1.999	1.116	0.977	0.844	0.709
85	-	4.356	3.284	2.529	2.005	1.146	0.990	0.863	0.733
90	-	4.356	3.367	2.600	2.010	1.198	1.033	0.897	0.758
95	-	4.356	3.450	2.671	2.016	1.251	1.076	0.931	0.782
100	-	4.356	3.533	2.742	2.048	1.297	1.119	0.965	0.806
105	-	4.356	3.588	2.813	2.087	1.342	1.163	1.000	0.831
110	-	4.356	3.635	2.884	2.125	1.386	1.206	1.034	0.855
115	-	4.356	3.682	2.954	2.164	1.431	1.247	1.068	0.879
120	-	4.356	3.729	3.025	2.203	1.476	1.284	1.103	0.904
125	-	4.356	3.776	3.096	2.242	1.521	1.321	1.137	0.928
130	-	4.356	3.823	3.167	2.280	1.565	1.358	1.171	0.952
135	-	4.356	3.870	3.238	2.319	1.610	1.395	1.206	0.977
140	-	4.356	3.917	3.309	2.358	1.655	1.432	1.240	1.001
145	-	4.444	3.964	3.380	2.397	1.700	1.469	1.269	1.025
150	-	4.554	4.012	3.451	2.435	1.745	1.506	1.298	1.050
155	-	4.664	4.059	3.522	2.474	1.789	1.543	1.327	1.074
160	-	4.774	4.106	3.562	2.513	1.834	1.580	1.356	1.098
165	-	4.884	4.165	3.603	2.585	1.882	1.621	1.388	1.122
170	-	4.994	4.244	3.678	2.709	1.936	1.667	1.427	1.146
175	-	5.104	4.322	3.753	2.833	1.989	1.713	1.466	1.169
180	-	5.214	4.401	3.827	2.956	2.073	1.759	1.505	1.193
185	-	5.324	4.479	3.902	3.080	2.164	1.806	1.543	1.216
190	-	5.434	4.558	3.977	3.204	2.255	1.852	1.582	1.240
195	-	5.544	4.636	4.052	3.327	2.346	1.898	1.621	1.280
200	-	-	4.715	4.127	3.451	2.438	1.944	1.659	1.319
205	-	-	4.793	4.202	3.566	2.529	1.991	1.698	1.359
210	-	-	4.872	4.276	3.648	2.620	2.060	1.737	1.398
215	-	-	4.950	4.351	3.729	2.711	2.135	1.776	1.438
220	-	-	5.028	4.426	3.810	2.802	2.211	1.814	1.478
225	-	-	5.107	4.501	3.892	2.894	2.286	1.853	1.517
230	-	-	5.185	4.576	3.973	2.985	2.361	1.892	1.557
235	-	-	5.264	4.651	4.055	3.076	2.436	1.930	1.596
240	-	-	5.342	4.725	4.136	3.167	2.512	1.969	1.636
245	-	-	5.421	4.800	4.217	3.258	2.587	2.015	1.675
250	-	-	5.499	4.875	4.299	3.349	2.662	2.089	1.715
255	-	-	-	4.950	4.380	3.441	2.737	2.162	1.755
260	-	-	-	5.025	4.462	3.532	2.813	2.236	1.794
265	-	-	-	5.100	4.543	3.638	2.888	2.310	1.834
270	-	-	-	5.175	4.624	3.747	2.963	2.384	1.873
275	-	-	-	5.249	4.706	3.856	3.038	2.458	1.913
280	-	-	-	5.324	4.787	3.966	3.114	2.531	1.953
285	-	-	-	5.399	4.869	4.075	3.189	2.605	1.992
290	-	-	-	5.474	4.950	4.184	3.264	2.679	2.059
295	-	-	-	5.549	5.031	4.294	3.339	2.753	2.133
300	-	-	-	-	5.113	4.403	3.415	2.827	2.207
305	-	-	-	-	5.194	4.513	3.490	2.900	2.280
310	-	-	-	-	5.276	4.622	3.587	2.974	2.354
315	-	-	-	-	5.357	4.731	3.771	3.048	2.428
320	-	-	-	-	5.438	4.841	3.955	3.122	2.502
325	-	-	-	-	5.520	4.950	4.139	3.196	2.576
330	-	-	-	-	-	5.059	4.324	3.270	2.650
335	-	-	-	-	-	5.169	4.508	3.343	2.723
340	-	-	-	-	-	5.278	4.692	3.417	2.797
345	-	-	-	-	-	5.388	4.876	3.491	2.871
350	-	-	-	-	-	5.497	5.061	3.565	2.945
355	-	-	-	-	-	-	5.245	3.639	3.019

Thickness is intumescent only. Table also applies to beams with 4 side protection.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 16: I-Section Columns 120 Minutes								
	Thickness (mm) Required for a Design Temperature of								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
40	-	-	4.345	3.141	2.457	1.877	1.116	1.007	0.858
45	-	-	4.345	3.141	2.457	1.900	1.116	1.007	0.858
50	-	-	4.345	3.141	2.457	1.923	1.116	1.007	0.858
55	-	-	4.345	3.141	2.457	1.945	1.116	1.007	0.858
60	-	-	4.345	3.141	2.457	1.968	1.116	1.007	0.858
65	-	-	4.345	3.141	2.457	1.991	1.116	1.007	0.858
70	-	-	4.345	3.141	2.457	2.014	1.116	1.007	0.858
75	-	-	4.345	3.175	2.457	2.036	1.116	1.007	0.858
80	-	-	4.345	3.250	2.462	2.059	1.116	1.007	0.858
85	-	-	4.345	3.325	2.546	2.082	1.116	1.017	0.874
90	-	-	4.345	3.400	2.630	2.105	1.240	1.063	0.910
95	-	-	4.345	3.475	2.713	2.127	1.401	1.110	0.946
100	-	-	4.345	3.550	2.797	2.169	1.462	1.156	0.982
105	-	-	4.345	3.606	2.881	2.216	1.499	1.203	1.018
110	-	-	4.345	3.661	2.964	2.263	1.535	1.248	1.053
115	-	-	4.345	3.717	3.048	2.310	1.572	1.287	1.089
120	-	-	4.345	3.773	3.132	2.357	1.609	1.325	1.125
125	-	-	4.345	3.828	3.215	2.403	1.645	1.364	1.161
130	-	-	4.345	3.884	3.299	2.450	1.682	1.403	1.197
135	-	-	4.345	3.939	3.383	2.497	1.718	1.442	1.233
140	-	-	4.345	3.995	3.466	2.544	1.755	1.481	1.263
145	-	-	4.389	4.051	3.550	2.591	1.791	1.519	1.292
150	-	-	4.511	4.106	3.592	2.637	1.828	1.558	1.321
155	-	-	4.633	4.162	3.633	2.684	1.864	1.597	1.350
160	-	-	4.755	4.218	3.675	2.731	1.901	1.636	1.379
165	-	-	4.877	4.290	3.738	2.818	1.945	1.678	1.412
170	-	-	4.999	4.387	3.833	2.964	2.000	1.725	1.451
175	-	-	5.121	4.484	3.927	3.111	2.121	1.773	1.490
180	-	-	5.243	4.581	4.022	3.257	2.242	1.820	1.529
185	-	-	5.365	4.678	4.117	3.404	2.363	1.867	1.569
190	-	-	5.487	4.775	4.211	3.550	2.484	1.915	1.608
195	-	-	-	4.872	4.306	3.650	2.605	1.962	1.647
200	-	-	-	4.969	4.401	3.750	2.727	2.018	1.686
205	-	-	-	5.066	4.495	3.850	2.848	2.107	1.725
210	-	-	-	5.164	4.590	3.950	2.969	2.196	1.765
215	-	-	-	5.261	4.685	4.050	3.090	2.285	1.804
220	-	-	-	5.358	4.780	4.150	3.211	2.374	1.843
225	-	-	-	5.455	4.874	4.250	3.332	2.463	1.882
230	-	-	-	-	4.969	4.350	3.453	2.552	1.922
235	-	-	-	-	5.064	4.450	3.575	2.641	1.961
240	-	-	-	-	5.158	4.550	3.700	2.730	2.000
245	-	-	-	-	5.253	4.650	3.825	2.820	2.082
250	-	-	-	-	5.348	4.750	3.950	2.909	2.165
255	-	-	-	-	5.442	4.850	4.075	2.998	2.247
260	-	-	-	-	5.455	4.950	4.200	3.087	2.330
265	-	-	-	-	-	5.050	4.325	3.176	2.412
270	-	-	-	-	-	5.150	4.450	3.265	2.495
275	-	-	-	-	-	5.250	4.575	3.354	2.577
280	-	-	-	-	-	5.350	4.700	3.443	2.660
285	-	-	-	-	-	5.450	4.825	3.532	2.742
290	-	-	-	-	-	5.550	4.950	3.697	2.824
295	-	-	-	-	-	-	5.075	3.882	2.907
300	-	-	-	-	-	-	5.200	4.066	2.989
305	-	-	-	-	-	-	5.325	4.250	3.072
310	-	-	-	-	-	-	5.450	4.434	3.154
315	-	-	-	-	-	-	-	4.618	3.237
320	-	-	-	-	-	-	-	4.803	3.319
325	-	-	-	-	-	-	-	4.987	3.402
330	-	-	-	-	-	-	-	5.171	3.484
335	-	-	-	-	-	-	-	5.355	3.611
340	-	-	-	-	-	-	-	5.539	3.915
345	-	-	-	-	-	-	-	-	4.220
350	-	-	-	-	-	-	-	-	4.524
355	-	-	-	-	-	-	-	-	4.828

Thickness is intumescent only. Table also applies to beams with 4 side protection.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 17: Circular Hollow Columns 30 Minutes 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
40	0.437	0.462	0.437	0.437	0.437	0.437	0.437	0.437	0.437	0.437
45	0.454	0.437	0.437	0.437	0.437	0.437	0.437	0.437	0.437	0.437
50	0.538	0.437	0.437	0.437	0.437	0.437	0.437	0.437	0.437	0.437
55	0.622	0.482	0.437	0.437	0.437	0.437	0.437	0.437	0.437	0.437
60	0.707	0.534	0.437	0.437	0.437	0.437	0.437	0.437	0.437	0.437
65	0.791	0.585	0.443	0.437	0.437	0.437	0.437	0.437	0.437	0.437
70	0.875	0.637	0.483	0.437	0.437	0.437	0.437	0.437	0.437	0.437
75	0.960	0.689	0.523	0.437	0.437	0.437	0.437	0.437	0.437	0.437
80	1.044	0.740	0.563	0.437	0.437	0.437	0.437	0.437	0.437	0.437
85	1.128	0.792	0.604	0.437	0.437	0.437	0.437	0.437	0.437	0.437
90	1.213	0.861	0.654	0.437	0.437	0.437	0.437	0.437	0.437	0.437
95	1.315	0.930	0.704	0.437	0.437	0.437	0.437	0.437	0.437	0.437
100	1.431	0.999	0.754	0.452	0.437	0.437	0.437	0.437	0.437	0.437
105	1.548	1.067	0.804	0.481	0.437	0.437	0.437	0.437	0.437	0.437
110	1.664	1.136	0.854	0.510	0.437	0.437	0.437	0.437	0.437	0.437
115	1.781	1.205	0.904	0.540	0.437	0.437	0.437	0.437	0.437	0.437
120	1.897	1.282	0.954	0.569	0.437	0.437	0.437	0.437	0.437	0.437
125	2.013	1.374	1.004	0.599	0.438	0.437	0.437	0.437	0.437	0.437
130	2.130	1.466	1.054	0.628	0.467	0.437	0.437	0.437	0.437	0.437
135	2.244	1.558	1.104	0.658	0.495	0.437	0.437	0.437	0.437	0.437
140	2.288	1.650	1.153	0.687	0.523	0.437	0.437	0.437	0.437	0.437
145	2.331	1.742	1.203	0.716	0.552	0.437	0.437	0.437	0.437	0.437
150	2.375	1.834	1.255	0.746	0.580	0.437	0.437	0.437	0.437	0.437
155	2.419	1.927	1.319	0.775	0.608	0.443	0.437	0.437	0.437	0.437
160	2.462	2.007	1.384	0.805	0.637	0.473	0.437	0.437	0.437	0.437
165	2.506	2.044	1.449	0.834	0.665	0.504	0.437	0.437	0.437	0.437
170	2.549	2.080	1.514	0.864	0.693	0.534	0.437	0.437	0.437	0.437
175	2.593	2.116	1.579	0.893	0.722	0.564	0.437	0.437	0.437	0.437
180	2.637	2.153	1.644	0.922	0.750	0.594	0.437	0.437	0.437	0.437
185	2.680	2.189	1.709	0.952	0.778	0.624	0.437	0.437	0.437	0.437
190	2.724	2.225	1.774	0.981	0.807	0.655	0.437	0.437	0.437	0.437
195	2.768	2.262	1.839	1.011	0.835	0.685	0.437	0.437	0.437	0.437
200	2.811	2.298	1.904	1.040	0.864	0.715	0.437	0.437	0.437	0.437
205	2.855	2.335	1.969	1.070	0.892	0.745	0.437	0.437	0.437	0.437
210	2.899	2.371	2.018	1.099	0.920	0.776	0.437	0.437	0.437	0.437
215	2.942	2.407	2.054	1.128	0.949	0.806	0.437	0.437	0.437	0.437
220	2.986	2.444	2.089	1.158	0.977	0.836	0.437	0.437	0.437	0.437
225	3.030	2.480	2.124	1.187	1.005	0.866	0.437	0.437	0.437	0.437
230	3.073	2.516	2.159	1.217	1.034	0.896	0.467	0.437	0.437	0.437
235	3.117	2.553	2.194	1.246	1.062	0.927	0.500	0.437	0.437	0.437
240	3.161	2.589	2.229	1.298	1.090	0.957	0.533	0.437	0.437	0.437
245	3.204	2.625	2.265	1.354	1.119	0.987	0.566	0.437	0.437	0.437
250	3.248	2.662	2.300	1.409	1.147	1.017	0.599	0.437	0.437	0.437
255	3.291	2.698	2.335	1.465	1.175	1.047	0.632	0.437	0.437	0.437
260	3.335	2.734	2.370	1.520	1.204	1.078	0.665	0.437	0.437	0.437
265	3.379	2.771	2.405	1.576	1.232	1.108	0.698	0.437	0.437	0.437
270	3.422	2.807	2.441	1.631	1.279	1.138	0.731	0.437	0.437	0.437
275	3.466	2.843	2.476	1.687	1.357	1.168	0.764	0.450	0.437	0.437
280	3.510	2.880	2.511	1.743	1.434	1.198	0.797	0.479	0.437	0.437
285	3.553	2.916	2.546	1.798	1.512	1.229	0.830	0.507	0.437	0.437
290	3.597	2.952	2.581	1.854	1.590	1.273	0.863	0.536	0.437	0.437
295	3.641	2.989	2.616	1.909	1.668	1.349	0.896	0.564	0.437	0.437
300	3.684	3.025	2.652	1.965	1.746	1.426	0.929	0.593	0.437	0.437
305	3.728	3.061	2.687	2.015	1.824	1.503	0.962	0.621	0.437	0.437
310	3.772	3.098	2.722	2.058	1.902	1.580	0.995	0.650	0.437	0.437
315	3.815	3.134	2.757	2.100	1.980	1.657	1.028	0.678	0.437	0.437
320	3.859	3.170	2.792	2.142	2.029	1.734	1.061	0.707	0.437	0.437
325	3.903	3.207	2.828	2.184	2.068	1.811	1.094	0.736	0.437	0.437
330	3.946	3.243	2.863	2.227	2.108	1.888	1.127	0.764	0.437	0.437
335	3.990	3.280	2.898	2.269	2.147	1.965	1.160	0.793	0.437	0.437
340	-	3.316	2.933	2.311	2.186	2.019	1.194	0.821	0.437	0.437
345	-	3.352	2.968	2.353	2.225	2.055	1.227	0.850	0.437	0.437
350	-	3.389	3.003	2.396	2.265	2.090	1.284	0.878	0.437	0.437
355	-	3.425	3.039	2.438	2.304	2.126	1.399	0.907	0.437	0.437
360	-	3.461	3.074	2.480	2.343	2.161	1.515	0.935	0.437	0.437
365	-	3.498	3.109	2.522	2.382	2.197	1.630	0.964	0.437	0.437
370	-	3.534	3.144	2.565	2.422	2.233	1.746	0.992	0.437	0.437
375	-	3.570	3.179	2.607	2.461	2.268	1.861	1.021	0.437	0.437
380	-	3.607	3.215	2.649	2.500	2.304	1.977	1.049	0.437	0.437
385	-	3.643	3.250	2.691	2.540	2.339	2.023	1.078	0.437	0.437
390	-	3.679	3.285	2.734	2.579	2.375	2.052	1.106	0.437	0.437
395	-	3.716	3.320	2.776	2.618	2.410	2.081	1.135	0.437	0.437
400	-	3.752	3.355	2.818	2.657	2.446	2.110	1.163	0.437	0.437
405	-	3.788	3.390	2.860	2.697	2.481	2.139	1.192	0.437	0.437

Thickness is intumescent only.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 18: Circular Hollow Columns 45 Minutes 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
40	0.831	1.802	0.502	0.437	0.437	0.437	0.437	0.437	0.437	0.437
45	0.918	1.833	0.557	0.437	0.437	0.437	0.437	0.437	0.437	0.437
50	1.031	1.872	0.627	0.483	0.437	0.437	0.437	0.437	0.437	0.437
55	1.143	1.912	0.698	0.539	0.445	0.437	0.437	0.437	0.437	0.437
60	1.256	1.952	0.768	0.596	0.515	0.466	0.437	0.437	0.437	0.437
65	1.369	1.991	0.839	0.652	0.584	0.510	0.437	0.437	0.437	0.437
70	1.481	2.031	0.909	0.708	0.654	0.554	0.437	0.437	0.437	0.437
75	1.594	2.070	0.980	0.765	0.723	0.598	0.437	0.437	0.437	0.437
80	1.706	2.110	1.050	0.821	0.793	0.641	0.460	0.437	0.437	0.437
85	1.819	2.149	1.122	0.878	0.862	0.686	0.511	0.437	0.437	0.437
90	1.932	2.189	1.208	0.959	0.932	0.756	0.562	0.437	0.437	0.437
95	2.044	2.229	1.310	1.039	1.001	0.827	0.614	0.437	0.437	0.437
100	2.157	2.268	1.426	1.120	1.071	0.897	0.665	0.437	0.437	0.437
105	2.270	2.308	1.542	1.201	1.140	0.967	0.716	0.437	0.437	0.437
110	2.382	2.347	1.658	1.295	1.210	1.037	0.767	0.439	0.437	0.437
115	2.495	2.387	1.774	1.413	1.293	1.107	0.819	0.509	0.437	0.437
120	2.608	2.426	1.890	1.530	1.397	1.177	0.870	0.579	0.437	0.437
125	2.720	2.466	2.006	1.647	1.501	1.247	0.921	0.650	0.437	0.437
130	2.833	2.506	2.122	1.765	1.604	1.345	0.973	0.720	0.437	0.437
135	2.945	2.545	2.236	1.882	1.708	1.443	1.024	0.791	0.437	0.437
140	3.058	2.585	2.274	1.999	1.812	1.541	1.075	0.861	0.437	0.437
145	3.171	2.624	2.312	2.040	1.916	1.639	1.126	0.931	0.437	0.437
150	3.283	2.664	2.350	2.080	2.008	1.737	1.178	1.002	0.437	0.437
155	3.396	2.704	2.387	2.120	2.048	1.836	1.229	1.072	0.450	0.437
160	3.509	2.743	2.425	2.160	2.088	1.934	1.318	1.143	0.474	0.437
165	3.621	2.783	2.463	2.200	2.128	2.013	1.432	1.213	0.498	0.437
170	3.734	2.822	2.501	2.240	2.168	2.054	1.547	1.283	0.522	0.437
175	3.847	2.862	2.539	2.280	2.208	2.094	1.661	1.354	0.546	0.437
180	3.959	2.901	2.577	2.320	2.248	2.135	1.776	1.424	0.570	0.437
185	-	2.941	2.615	2.360	2.289	2.175	1.890	1.495	0.593	0.437
190	-	2.981	2.653	2.401	2.329	2.216	2.002	1.565	0.617	0.437
195	-	3.020	2.690	2.441	2.369	2.257	2.039	1.636	0.641	0.437
200	-	3.060	2.728	2.481	2.409	2.297	2.076	1.706	0.665	0.437
205	-	3.099	2.766	2.521	2.449	2.338	2.113	1.776	0.689	0.437
210	-	3.139	2.804	2.561	2.489	2.378	2.150	1.847	0.713	0.437
215	-	3.178	2.842	2.601	2.529	2.419	2.187	1.917	0.737	0.437
220	-	3.218	2.880	2.641	2.570	2.459	2.224	1.988	0.761	0.437
225	-	3.258	2.918	2.681	2.610	2.500	2.261	2.027	0.784	0.437
230	-	3.297	2.955	2.721	2.650	2.540	2.298	2.059	0.808	0.437
235	-	3.337	2.993	2.761	2.690	2.581	2.335	2.092	0.832	0.437
240	-	3.376	3.031	2.801	2.730	2.622	2.372	2.125	0.856	0.437
245	-	3.416	3.069	2.841	2.770	2.662	2.410	2.157	0.880	0.437
250	-	3.456	3.107	2.882	2.811	2.703	2.447	2.190	0.904	0.437
255	-	3.495	3.145	2.922	2.851	2.743	2.484	2.222	0.928	0.449
260	-	3.535	3.183	2.962	2.891	2.784	2.521	2.255	0.951	0.483
265	-	3.574	3.221	3.002	2.931	2.824	2.558	2.287	0.975	0.518
270	-	3.614	3.258	3.042	2.971	2.865	2.595	2.320	0.999	0.553
275	-	3.653	3.296	3.082	3.011	2.906	2.632	2.353	1.023	0.588
280	-	3.693	3.334	3.122	3.051	2.946	2.669	2.385	1.047	0.623
285	-	3.733	3.372	3.162	3.092	2.987	2.706	2.418	1.071	0.657
290	-	3.772	3.410	3.202	3.132	3.027	2.743	2.450	1.095	0.692
295	-	3.812	3.448	3.242	3.172	3.068	2.780	2.483	1.118	0.727
300	-	3.851	3.486	3.282	3.212	3.108	2.818	2.516	1.142	0.762
305	-	3.891	3.523	3.322	3.252	3.149	2.855	2.548	1.166	0.797
310	-	3.930	3.561	3.362	3.292	3.189	2.892	2.581	1.190	0.832
315	-	3.970	3.599	3.403	3.332	3.230	2.929	2.613	1.214	0.866
320	-	4.010	3.637	3.443	3.373	3.271	2.966	2.646	1.238	0.901
325	-	-	3.675	3.483	3.413	3.311	3.003	2.678	1.557	0.936
330	-	-	3.713	3.523	3.453	3.352	3.040	2.711	2.011	0.971
335	-	-	3.751	3.563	3.493	3.392	3.077	2.744	2.047	1.006
340	-	-	3.789	3.603	3.533	3.433	3.114	2.776	2.084	1.041
345	-	-	3.826	3.643	3.573	3.473	3.151	2.809	2.121	1.075
350	-	-	3.864	3.683	3.613	3.514	3.188	2.841	2.157	1.110
355	-	-	3.902	3.723	3.654	3.554	3.226	2.874	2.194	1.145
360	-	-	3.940	3.763	3.694	3.595	3.263	2.907	2.230	1.180
365	-	-	3.978	3.803	3.734	3.636	3.300	2.939	2.267	1.215
370	-	-	4.016	3.843	3.774	3.676	3.337	2.972	2.304	1.250
375	-	-	-	3.884	3.814	3.717	3.374	3.004	2.340	1.435
380	-	-	-	3.924	3.854	3.757	3.411	3.037	2.377	1.622
385	-	-	-	3.964	3.895	3.798	3.448	3.069	2.414	1.809
390	-	-	-	4.004	3.935	3.838	3.485	3.102	2.450	1.996
395	-	-	-	-	3.975	3.879	3.522	3.135	2.487	2.026
400	-	-	-	-	4.015	3.919	3.559	3.167	2.523	2.052
405	-	-	-	-	-	3.960	3.596	3.200	2.560	2.078

Thickness is intumescent only.

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CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 19: Circular Hollow Columns 60 Minutes 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
40	-	1.519	1.483	1.692	1.598	0.437	0.437	0.437	0.437	0.437
45	-	1.590	1.540	1.727	1.642	0.437	0.465	0.437	0.437	0.437
50	-	1.680	1.614	1.772	1.686	0.458	0.523	0.437	0.437	0.437
55	-	1.771	1.687	1.817	1.730	0.554	0.581	0.465	0.437	0.437
60	-	1.862	1.761	1.863	1.774	0.651	0.638	0.512	0.437	0.437
65	-	1.953	1.835	1.908	1.818	0.747	0.696	0.558	0.437	0.437
70	-	2.044	1.908	1.953	1.862	0.844	0.753	0.605	0.465	0.437
75	-	2.135	1.982	1.999	1.906	0.940	0.811	0.652	0.501	0.437
80	-	2.226	2.055	2.044	1.951	1.036	0.868	0.698	0.538	0.437
85	-	2.317	2.129	2.089	1.995	1.133	0.927	0.746	0.575	0.437
90	-	2.407	2.203	2.134	2.039	1.229	1.012	0.820	0.635	0.437
95	-	2.498	2.276	2.180	2.083	1.341	1.096	0.893	0.695	0.437
100	-	2.589	2.350	2.225	2.127	1.458	1.181	0.966	0.755	0.437
105	-	2.680	2.424	2.270	2.171	1.574	1.275	1.040	0.815	0.437
110	-	2.771	2.497	2.316	2.215	1.690	1.409	1.113	0.875	0.437
115	-	2.862	2.571	2.361	2.259	1.807	1.542	1.187	0.935	0.437
120	-	2.953	2.645	2.406	2.303	1.923	1.676	1.266	0.995	0.452
125	-	3.043	2.718	2.452	2.347	2.039	1.810	1.377	1.055	0.537
130	-	3.134	2.792	2.497	2.391	2.156	1.944	1.489	1.115	0.622
135	-	3.225	2.866	2.542	2.435	2.269	2.034	1.601	1.174	0.707
140	-	3.316	2.939	2.588	2.479	2.311	2.074	1.713	1.234	0.792
145	-	3.407	3.013	2.633	2.523	2.353	2.114	1.825	1.326	0.877
150	-	3.498	3.086	2.678	2.567	2.394	2.154	1.936	1.430	0.961
155	-	3.589	3.160	2.723	2.611	2.436	2.194	2.017	1.533	1.046
160	-	3.679	3.234	2.769	2.655	2.478	2.234	2.058	1.636	1.131
165	-	3.770	3.307	2.814	2.699	2.520	2.274	2.099	1.739	1.216
170	-	3.861	3.381	2.859	2.743	2.561	2.315	2.139	1.842	1.301
175	-	3.952	3.455	2.905	2.787	2.603	2.355	2.180	1.945	1.386
180	-	-	3.528	2.950	2.831	2.645	2.395	2.220	2.019	1.471
185	-	-	3.602	2.995	2.875	2.686	2.435	2.261	2.058	1.556
190	-	-	3.676	3.041	2.919	2.728	2.475	2.301	2.098	1.640
195	-	-	3.749	3.086	2.963	2.770	2.515	2.342	2.138	1.725
200	-	-	3.823	3.131	3.007	2.811	2.555	2.382	2.177	1.810
205	-	-	3.897	3.177	3.051	2.853	2.595	2.423	2.217	1.895
210	-	-	3.970	3.222	3.095	2.895	2.635	2.463	2.256	1.980
215	-	-	-	3.267	3.140	2.937	2.675	2.504	2.296	2.025
220	-	-	-	3.313	3.184	2.978	2.715	2.544	2.336	2.057
225	-	-	-	3.358	3.228	3.020	2.755	2.585	2.375	2.089
230	-	-	-	3.403	3.272	3.062	2.796	2.625	2.415	2.121
235	-	-	-	3.448	3.316	3.103	2.836	2.666	2.455	2.153
240	-	-	-	3.494	3.360	3.145	2.876	2.707	2.494	2.186
245	-	-	-	3.539	3.404	3.187	2.916	2.747	2.534	2.218
250	-	-	-	3.584	3.448	3.228	2.956	2.788	2.574	2.250
255	-	-	-	3.630	3.492	3.270	2.996	2.828	2.613	2.282
260	-	-	-	3.675	3.536	3.312	3.036	2.869	2.653	2.314
265	-	-	-	3.720	3.580	3.354	3.076	2.909	2.693	2.347
270	-	-	-	3.766	3.624	3.395	3.116	2.950	2.732	2.379
275	-	-	-	3.811	3.668	3.437	3.156	2.990	2.772	2.411
280	-	-	-	3.856	3.712	3.479	3.196	3.031	2.812	2.443
285	-	-	-	3.902	3.756	3.520	3.236	3.071	2.851	2.476
290	-	-	-	3.947	3.800	3.562	3.277	3.112	2.891	2.508
295	-	-	-	3.992	3.844	3.604	3.317	3.152	2.930	2.540
300	-	-	-	-	3.888	3.645	3.357	3.193	2.970	2.572
305	-	-	-	-	3.932	3.687	3.397	3.234	3.010	2.604
310	-	-	-	-	3.976	3.729	3.437	3.274	3.049	2.637
315	-	-	-	-	4.020	3.770	3.477	3.315	3.089	2.669
320	-	-	-	-	-	3.812	3.517	3.355	3.129	2.701
325	-	-	-	-	-	3.854	3.557	3.396	3.168	2.733
330	-	-	-	-	-	3.896	3.597	3.436	3.208	2.765
335	-	-	-	-	-	3.937	3.637	3.477	3.248	2.798
340	-	-	-	-	-	3.979	3.677	3.517	3.287	2.830
345	-	-	-	-	-	4.021	3.717	3.558	3.327	2.862
350	-	-	-	-	-	-	3.758	3.598	3.367	2.894
355	-	-	-	-	-	-	3.798	3.639	3.406	2.926
360	-	-	-	-	-	-	3.838	3.679	3.446	2.959
365	-	-	-	-	-	-	3.878	3.720	3.485	2.991
370	-	-	-	-	-	-	3.918	3.760	3.525	3.023
375	-	-	-	-	-	-	3.958	3.801	3.565	3.055
380	-	-	-	-	-	-	3.998	3.842	3.604	3.088
385	-	-	-	-	-	-	-	3.882	3.644	3.120
390	-	-	-	-	-	-	-	3.923	3.684	3.152
395	-	-	-	-	-	-	-	3.963	3.723	3.184
400	-	-	-	-	-	-	-	4.004	3.763	3.216
405	-	-	-	-	-	-	-	-	3.803	3.249

Thickness is intumescent only.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 20: Circular Hollow Columns (with reinforcement mesh support) 75 Minutes									
	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
70	5.740	4.156	3.037	3.037	3.037	3.037	3.037	3.037	3.037	3.037
75	5.740	4.156	3.037	3.037	3.037	3.037	3.037	3.037	3.037	3.037
80	5.740	4.156	3.127	3.037	3.037	3.037	3.037	3.037	3.037	3.037
85	5.740	4.156	3.245	3.042	3.037	3.037	3.037	3.037	3.037	3.037
90	5.740	4.242	3.362	3.093	3.037	3.037	3.037	3.037	3.037	3.037
95	5.740	4.328	3.480	3.144	3.047	3.037	3.037	3.037	3.037	3.037
100	5.740	4.414	3.597	3.194	3.095	3.038	3.037	3.037	3.037	3.037
105	5.740	4.499	3.714	3.245	3.143	3.083	3.037	3.037	3.037	3.037
110	5.740	4.585	3.832	3.296	3.191	3.128	3.073	3.040	3.037	3.037
115	5.740	4.671	3.949	3.346	3.239	3.173	3.111	3.071	3.052	3.037
120	5.740	4.757	4.067	3.397	3.287	3.217	3.148	3.102	3.078	3.037
125	5.740	4.842	4.184	3.447	3.335	3.262	3.185	3.133	3.103	3.051
130	5.740	4.928	4.301	3.498	3.383	3.307	3.222	3.165	3.129	3.072
135	5.740	5.014	4.416	3.549	3.431	3.352	3.259	3.196	3.154	3.094
140	-	5.099	4.499	3.599	3.480	3.397	3.296	3.227	3.179	3.115
145	-	5.185	4.582	3.650	3.528	3.441	3.334	3.258	3.205	3.137
150	-	5.271	4.666	3.701	3.576	3.486	3.371	3.290	3.230	3.158
155	-	5.357	4.749	3.751	3.624	3.531	3.408	3.321	3.255	3.180
160	-	5.442	4.832	3.802	3.672	3.576	3.445	3.352	3.281	3.201
165	-	5.528	4.915	3.852	3.720	3.620	3.482	3.383	3.306	3.223
170	-	5.614	4.998	3.903	3.768	3.665	3.519	3.415	3.332	3.244
175	-	5.700	5.081	3.954	3.816	3.710	3.557	3.446	3.357	3.266
180	-	5.785	5.164	4.004	3.864	3.755	3.594	3.477	3.382	3.287
185	-	5.871	5.247	4.055	3.912	3.799	3.631	3.508	3.408	3.309
190	-	5.957	5.330	4.106	3.960	3.844	3.668	3.540	3.433	3.330
195	-	6.043	5.413	4.156	4.008	3.889	3.705	3.571	3.458	3.352
200	-	6.128	5.496	4.207	4.056	3.934	3.742	3.602	3.484	3.373
205	-	6.214	5.580	4.257	4.104	3.978	3.780	3.633	3.509	3.394
210	-	6.300	5.663	4.308	4.153	4.023	3.817	3.665	3.535	3.416
215	-	-	5.746	4.359	4.201	4.068	3.854	3.696	3.560	3.437
220	-	-	5.829	4.409	4.249	4.113	3.891	3.727	3.585	3.459
225	-	-	5.912	4.466	4.297	4.157	3.928	3.758	3.611	3.480
230	-	-	5.995	4.504	4.345	4.202	3.965	3.790	3.636	3.502
235	-	-	6.078	4.503	4.393	4.247	4.003	3.821	3.661	3.523
240	-	-	6.161	4.502	4.444	4.292	4.040	3.852	3.687	3.545
245	-	-	6.244	4.500	4.493	4.336	4.077	3.883	3.712	3.566
250	-	-	6.327	4.599	4.542	4.381	4.114	3.915	3.737	3.588
255	-	-	-	4.698	4.591	4.426	4.151	3.946	3.763	3.609
260	-	-	-	4.797	4.690	4.523	4.248	4.043	3.860	3.706
265	-	-	-	-	-	4.623	4.348	4.143	3.960	3.806
270	-	-	-	-	-	4.706	4.431	4.226	4.043	3.860
275	-	-	-	-	-	4.789	4.514	4.309	4.126	3.931
280	-	-	-	-	-	4.872	4.597	4.392	4.209	4.014
285	-	-	-	-	-	4.955	4.680	4.475	4.292	4.107
290	-	-	-	-	-	5.038	4.763	4.558	4.375	4.190
295	-	-	-	-	-	5.121	4.846	4.641	4.458	4.273
300	-	-	-	-	-	5.204	4.929	4.724	4.541	4.356
305	-	-	-	-	-	5.287	5.012	4.807	4.624	4.439
310	-	-	-	-	-	5.370	5.095	4.890	4.707	4.522
315	-	-	-	-	-	5.453	5.178	4.973	4.790	4.607
320	-	-	-	-	-	5.536	5.261	5.056	4.873	4.688

Thickness is intumescent only.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 21: Circular Hollow Columns (with reinforcement mesh support) 90 Minutes									
	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
70	-	-	4.157	3.326	3.037	3.037	3.037	3.037	3.037	3.037
75	-	-	4.157	3.326	3.037	3.037	3.037	3.037	3.037	3.037
80	-	-	4.157	3.326	3.123	3.037	3.037	3.037	3.037	3.037
85	-	-	4.256	3.468	3.252	3.037	3.037	3.037	3.037	3.037
90	-	-	4.355	3.610	3.382	3.130	3.037	3.037	3.037	3.037
95	-	-	4.454	3.752	3.512	3.226	3.037	3.037	3.037	3.037
100	-	-	4.553	3.894	3.641	3.322	3.037	3.037	3.037	3.037
105	-	-	4.652	4.036	3.771	3.417	3.093	3.063	3.060	3.037
110	-	-	4.750	4.178	3.901	3.513	3.153	3.108	3.093	3.037
115	-	-	4.849	4.320	4.030	3.609	3.213	3.152	3.126	3.050
120	-	-	4.948	4.444	4.160	3.705	3.273	3.197	3.159	3.078
125	-	-	5.047	4.538	4.289	3.801	3.333	3.241	3.192	3.107
130	-	-	5.146	4.631	4.417	3.896	3.393	3.286	3.225	3.136
135	-	-	5.245	4.725	4.509	3.992	3.453	3.330	3.258	3.164
140	-	-	5.344	4.819	4.602	4.088	3.514	3.375	3.291	3.193
145	-	-	5.443	4.912	4.695	4.184	3.574	3.419	3.324	3.222
150	-	-	5.542	5.006	4.788	4.279	3.634	3.464	3.357	3.250
155	-	-	5.641	5.099	4.881	4.375	3.694	3.508	3.390	3.279
160	-	-	5.740	5.193	4.973	4.477	3.754	3.553	3.423	3.308
165	-	-	5.839	5.286	5.066	4.581	3.814	3.597	3.456	3.337
170	-	-	5.938	5.380	5.159	4.686	3.874	3.641	3.489	3.365
175	-	-	-	5.474	5.252	4.791	3.934	3.686	3.522	3.394
180	-	-	-	5.567	5.345	4.895	3.994	3.730	3.555	3.423
185	-	-	-	5.661	5.438	5.000	4.054	3.775	3.588	3.451
190	-	-	-	5.754	5.530	5.105	4.114	3.819	3.621	3.480
195	-	-	-	5.848	5.623	5.210	4.174	3.864	3.654	3.509
200	-	-	-	5.942	5.716	5.314	4.235	3.908	3.687	3.537
205	-	-	-	-	-	5.419	4.295	3.953	3.720	3.566
210	-	-	-	-	-	5.524	4.355	3.997	3.753	3.595
215	-	-	-	-	-	5.628	4.423	4.042	3.786	3.624
220	-	-	-	-	-	5.733	4.586	4.086	3.819	3.652
225	-	-	-	-	-	5.838	4.748	4.131	3.852	3.681
230	-	-	-	-	-	5.942	4.911	4.175	3.885	3.710
235	-	-	-	-	-	-	5.073	4.220	3.918	3.738
240	-	-	-	-	-	-	5.236	4.264	3.951	3.767
245	-	-	-	-	-	-	5.399	4.309	3.984	3.796
250	-	-	-	-	-	-	5.561	4.353	4.017	3.824
255	-	-	-	-	-	-	5.724	4.398	4.050	3.853
260	-	-	-	-	-	-	5.887	4.529	4.083	3.882
265	-	-	-	-	-	-	-	4.693	4.116	3.911
270	-	-	-	-	-	-	-	4.858	4.149	3.939
275	-	-	-	-	-	-	-	5.022	4.183	3.968
280	-	-	-	-	-	-	-	5.187	4.216	3.997
285	-	-	-	-	-	-	-	5.351	4.249	4.025
290	-	-	-	-	-	-	-	5.516	4.282	4.054
295	-	-	-	-	-	-	-	5.680	4.315	4.083
300	-	-	-	-	-	-	-	5.845	4.348	4.111
305	-	-	-	-	-	-	-	6.009	4.381	4.140
310	-	-	-	-	-	-	-	-	4.446	4.169
315	-	-	-	-	-	-	-	-	4.770	4.197
320	-	-	-	-	-	-	-	-	5.093	4.226

Thickness is intumescent only.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 22: Circular Hollow Columns (with reinforcement mesh support) 120 Minutes									
	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
70	-	-	-	-	5.740	4.575	4.410	3.410	3.410	3.410
75	-	-	-	-	5.740	4.575	4.410	3.410	3.410	3.410
80	-	-	-	-	5.740	4.575	4.410	3.410	3.410	3.410
85	-	-	-	-	5.740	4.606	4.410	3.410	3.410	3.410
90	-	-	-	-	5.740	4.700	4.410	3.410	3.410	3.410
95	-	-	-	-	5.740	4.793	4.410	3.544	3.410	3.410
100	-	-	-	-	5.740	4.886	4.410	3.680	3.410	3.410
105	-	-	-	-	5.740	4.980	4.417	3.816	3.410	3.410
110	-	-	-	-	5.740	5.073	4.522	3.953	3.410	3.410
115	-	-	-	-	5.740	5.166	4.628	4.089	3.496	3.410
120	-	-	-	-	5.740	5.260	4.734	4.225	3.597	3.410
125	-	-	-	-	5.740	5.353	4.840	4.362	3.698	3.410
130	-	-	-	-	5.740	5.446	4.945	4.475	3.798	3.410
135	-	-	-	-	5.740	5.540	5.051	4.576	3.899	3.410
140	-	-	-	-	-	5.633	5.157	4.676	4.000	3.445
145	-	-	-	-	-	5.727	5.262	4.777	4.101	3.509
150	-	-	-	-	-	5.820	5.368	4.878	4.202	3.573
155	-	-	-	-	-	5.913	5.474	4.978	4.303	3.637
160	-	-	-	-	-	6.007	5.580	5.079	4.403	3.701
165	-	-	-	-	-	6.100	5.685	5.180	4.508	3.765
170	-	-	-	-	-	6.193	5.791	5.280	4.613	3.829
175	-	-	-	-	-	6.287	5.897	5.381	4.717	3.893
180	-	-	-	-	-	-	6.002	5.482	4.822	3.957
185	-	-	-	-	-	-	6.108	5.582	4.927	4.021
190	-	-	-	-	-	-	6.214	5.683	5.031	4.085
195	-	-	-	-	-	-	6.320	5.784	5.136	4.149
200	-	-	-	-	-	-	-	5.884	5.241	4.213
205	-	-	-	-	-	-	-	5.985	5.345	4.277
210	-	-	-	-	-	-	-	6.086	5.450	4.341
215	-	-	-	-	-	-	-	6.186	5.555	4.405
220	-	-	-	-	-	-	-	6.287	5.659	4.535
225	-	-	-	-	-	-	-	-	5.764	4.671
230	-	-	-	-	-	-	-	-	5.869	4.808
235	-	-	-	-	-	-	-	-	5.973	4.944
240	-	-	-	-	-	-	-	-	6.078	5.080
245	-	-	-	-	-	-	-	-	6.183	5.217
250	-	-	-	-	-	-	-	-	6.287	5.353
255	-	-	-	-	-	-	-	-	-	5.490
260	-	-	-	-	-	-	-	-	-	5.626
265	-	-	-	-	-	-	-	-	-	5.763
270	-	-	-	-	-	-	-	-	-	5.899
275	-	-	-	-	-	-	-	-	-	6.035
280	-	-	-	-	-	-	-	-	-	6.172
285	-	-	-	-	-	-	-	-	-	6.308
290	-	-	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 23: Rectangular Hollow Columns (with reinforcement mesh support) 30 Minutes									
	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	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
55	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
60	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
65	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
70	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
75	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
80	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
85	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
90	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
95	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
100	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
105	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
110	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
115	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
120	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
125	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
130	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
135	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
140	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
145	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
150	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
155	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
160	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
165	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
170	2.912	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
175	3.302	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
180	3.692	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
185	4.083	2.729	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
190	4.473	2.772	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
195	4.863	2.814	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
200	5.039	2.857	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
205	5.056	2.900	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
210	5.072	2.943	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
215	5.089	2.985	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
220	5.105	3.028	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
225	5.122	3.071	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
230	5.138	3.114	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
235	5.155	3.156	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
240	5.171	3.199	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
245	5.188	3.242	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
250	5.204	3.285	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
255	5.221	3.327	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709

Thickness is intumescent only.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 24: Rectangular Hollow Columns (with reinforcement mesh support) 45 Minutes									
	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	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
55	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
60	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
65	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
70	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
75	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
80	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
85	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
90	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
95	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
100	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
105	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
110	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
115	2.785	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
120	3.132	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
125	3.478	2.712	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
130	3.825	2.790	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
135	4.172	2.869	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
140	4.518	2.947	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
145	4.865	3.025	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
150	5.045	3.103	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
155	5.073	3.181	2.745	2.709	2.709	2.709	2.709	2.709	2.709	2.709
160	5.100	3.260	2.820	2.709	2.709	2.709	2.709	2.709	2.709	2.709
165	5.128	3.338	2.895	2.709	2.709	2.709	2.709	2.709	2.709	2.709
170	5.156	3.416	2.969	2.709	2.709	2.709	2.709	2.709	2.709	2.709
175	5.184	3.494	3.044	2.709	2.709	2.709	2.709	2.709	2.709	2.709
180	5.212	3.572	3.119	2.709	2.709	2.709	2.709	2.709	2.709	2.709
185	5.240	3.650	3.194	2.709	2.709	2.709	2.709	2.709	2.709	2.709
190	5.268	3.729	3.269	2.742	2.709	2.709	2.709	2.709	2.709	2.709
195	5.296	3.807	3.344	2.834	2.709	2.709	2.709	2.709	2.709	2.709
200	5.324	3.885	3.418	2.926	2.709	2.709	2.709	2.709	2.709	2.709
205	5.352	3.963	3.493	3.018	2.727	2.709	2.709	2.709	2.709	2.709
210	5.380	4.043	3.568	3.110	2.829	2.709	2.709	2.709	2.709	2.709
215	5.407	4.123	3.643	3.202	2.932	2.709	2.709	2.709	2.709	2.709
220	5.435	4.202	3.718	3.294	3.034	2.709	2.709	2.709	2.709	2.709
225	5.463	4.282	3.793	3.387	3.137	2.709	2.709	2.709	2.709	2.709
230	5.491	4.362	3.867	3.479	3.239	2.741	2.709	2.709	2.709	2.709
235	5.519	4.441	3.942	3.571	3.342	2.863	2.709	2.709	2.709	2.709
240	5.547	4.521	4.033	3.663	3.444	2.986	2.709	2.709	2.709	2.709
245	5.575	4.601	4.129	3.755	3.547	3.108	2.709	2.709	2.709	2.709
250	5.603	4.680	4.224	3.847	3.649	3.231	2.709	2.709	2.709	2.709
255	5.631	4.760	4.320	3.939	3.752	3.353	2.709	2.709	2.709	2.709

Thickness is intumescent only.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 25: Rectangular Hollow Columns (with reinforcement mesh support) 60 Minutes									
	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	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
55	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
60	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
65	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
70	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
75	2.756	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
80	2.944	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
85	3.133	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
90	3.322	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
95	3.510	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
100	3.699	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
105	3.887	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
110	4.215	3.033	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
115	4.629	3.519	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
120	5.033	4.004	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
125	5.110	4.490	2.747	2.709	2.709	2.709	2.709	2.709	2.709	2.709
130	5.187	4.976	3.116	2.709	2.709	2.709	2.709	2.709	2.709	2.709
135	5.264	5.059	3.486	2.709	2.709	2.709	2.709	2.709	2.709	2.709
140	5.342	5.092	3.856	2.743	2.709	2.709	2.709	2.709	2.709	2.709
145	5.419	5.125	4.226	2.865	2.709	2.709	2.709	2.709	2.709	2.709
150	5.496	5.157	4.596	2.986	2.714	2.709	2.709	2.709	2.709	2.709
155	5.573	5.190	4.965	3.107	2.848	2.709	2.709	2.709	2.709	2.709
160	5.651	5.223	5.057	3.228	2.981	2.709	2.709	2.709	2.709	2.709
165	5.728	5.255	5.089	3.349	3.115	2.709	2.709	2.709	2.709	2.709
170	5.805	5.288	5.121	3.470	3.248	2.804	2.709	2.709	2.709	2.709
175	5.882	5.321	5.153	3.592	3.382	2.962	2.709	2.709	2.709	2.709
180	5.960	5.354	5.186	3.713	3.515	3.120	2.709	2.709	2.709	2.709
185	6.037	5.386	5.218	3.834	3.648	3.278	2.709	2.709	2.709	2.709
190	6.114	5.419	5.250	3.955	3.782	3.437	2.709	2.709	2.709	2.709
195	6.192	5.452	5.282	4.122	3.915	3.595	2.709	2.709	2.709	2.709
200	6.269	5.484	5.315	4.291	4.050	3.753	2.709	2.709	2.709	2.709
205	6.346	5.517	5.347	4.459	4.185	3.911	3.009	2.709	2.709	2.709
210	6.423	5.550	5.379	4.628	4.321	4.055	3.255	2.709	2.709	2.709
215	-	5.583	5.412	4.797	4.456	4.192	3.502	2.709	2.709	2.709
220	-	5.615	5.444	4.966	4.591	4.329	3.748	2.709	2.709	2.709
225	-	5.648	5.476	5.059	4.726	4.466	3.979	2.709	2.709	2.709
230	-	5.681	5.508	5.105	4.862	4.603	4.114	2.709	2.709	2.709
235	-	5.713	5.541	5.151	4.997	4.740	4.249	2.709	2.709	2.709
240	-	5.746	5.573	5.198	5.066	4.877	4.384	3.202	2.709	2.709
245	-	5.779	5.605	5.244	5.113	5.014	4.519	3.754	2.709	2.709
250	-	5.812	5.637	5.290	5.161	5.068	4.654	4.043	2.709	2.709
255	-	5.844	5.670	5.337	5.208	5.110	4.790	4.175	2.709	2.709

Thickness is intumescent only.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 26: Rectangular Hollow Columns (with reinforcement mesh support) 75 Minutes									
	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	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
55	2.812	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
60	3.142	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
65	3.472	2.786	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
70	3.802	2.983	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
75	4.116	3.179	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
80	4.416	3.376	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
85	4.715	3.572	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
90	5.015	3.768	2.883	2.709	2.709	2.709	2.709	2.709	2.709	2.709
95	5.153	3.966	3.095	2.709	2.709	2.709	2.709	2.709	2.709	2.709
100	5.282	4.225	3.306	2.709	2.709	2.709	2.709	2.709	2.709	2.709
105	5.412	4.484	3.518	2.709	2.709	2.709	2.709	2.709	2.709	2.709
110	5.541	4.743	3.729	2.709	2.709	2.709	2.709	2.709	2.709	2.709
115	5.671	5.002	3.941	2.979	2.709	2.709	2.709	2.709	2.709	2.709
120	5.800	5.178	4.588	3.310	2.709	2.709	2.709	2.709	2.709	2.709
125	5.930	5.345	5.048	3.641	3.070	2.709	2.709	2.709	2.709	2.709
130	6.059	5.511	5.099	4.017	3.432	2.709	2.709	2.709	2.709	2.709
135	6.189	5.677	5.150	5.043	3.794	2.761	2.709	2.709	2.709	2.709
140	6.318	5.843	5.200	5.079	4.043	3.034	2.709	2.709	2.709	2.709
145	6.448	6.010	5.251	5.116	4.197	3.308	2.709	2.709	2.709	2.709
150	-	6.176	5.302	5.152	4.351	3.581	2.709	2.709	2.709	2.709
155	-	6.342	5.352	5.189	4.505	3.855	2.728	2.709	2.709	2.709
160	-	-	5.403	5.226	4.659	5.035	2.979	2.709	2.709	2.709
165	-	-	5.454	5.262	4.813	5.072	3.229	2.709	2.709	2.709
170	-	-	5.504	5.299	4.967	5.110	3.479	2.709	2.709	2.709
175	-	-	5.555	5.335	5.059	5.147	3.729	2.709	2.709	2.709
180	-	-	5.605	5.372	5.109	5.184	3.997	2.709	2.709	2.709
185	-	-	5.656	5.409	5.159	5.222	4.475	3.010	2.709	2.709
190	-	-	5.707	5.445	5.208	5.259	4.952	3.426	2.709	2.709
195	-	-	5.757	5.482	5.258	5.296	5.062	3.842	2.709	2.709
200	-	-	5.808	5.518	5.307	5.334	5.101	4.132	2.709	2.709
205	-	-	5.859	5.555	5.357	5.371	5.139	4.371	2.709	2.709
210	-	-	5.909	5.592	5.406	5.408	5.178	4.611	2.715	2.807
215	-	-	5.960	5.628	5.456	5.446	5.216	4.851	3.385	2.971
220	-	-	6.011	5.665	5.505	5.483	5.255	5.039	4.056	3.134
225	-	-	6.061	5.701	5.555	5.521	5.293	5.075	4.258	3.298
230	-	-	6.112	5.738	5.605	5.558	5.331	5.112	4.460	3.462
235	-	-	6.163	5.775	5.654	5.595	5.370	5.148	4.662	3.626
240	-	-	6.213	5.811	5.704	5.633	5.408	5.184	4.864	3.790
245	-	-	6.264	5.848	5.753	5.670	5.447	5.221	5.035	3.953
250	-	-	6.315	5.884	5.803	5.707	5.485	5.257	5.066	4.117
255	-	-	6.365	5.921	5.852	5.745	5.524	5.293	5.096	4.281

Thickness is intumescent only.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 27: Rectangular Hollow Columns (with reinforcement mesh support) 90 Minutes									
	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	5.860	2.934	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
55	5.860	3.324	2.709	2.709	2.709	2.709	2.709	2.709	2.709	2.709
60	-	3.714	2.897	2.709	2.709	2.709	2.709	2.709	2.709	2.709
65	-	4.014	3.184	2.709	2.709	2.709	2.709	2.709	2.709	2.709
70	-	4.162	3.472	2.709	2.709	2.709	2.709	2.709	2.709	2.709
75	-	4.310	3.759	2.895	2.709	2.709	2.709	2.709	2.709	2.709
80	-	4.458	4.012	3.083	2.733	2.709	2.709	2.709	2.709	2.709
85	-	4.606	4.185	3.271	2.924	2.709	2.709	2.709	2.709	2.709
90	-	4.754	4.358	3.459	3.114	2.709	2.709	2.709	2.709	2.709
95	-	4.902	4.531	3.647	3.305	2.709	2.709	2.709	2.709	2.709
100	-	5.059	4.704	3.836	3.495	2.709	2.709	2.709	2.709	2.709
105	-	5.283	4.877	4.093	3.686	2.978	2.709	2.709	2.709	2.709
110	-	5.507	5.054	4.487	3.876	3.290	2.709	2.709	2.709	2.709
115	-	5.731	5.259	4.880	4.094	3.601	2.709	2.709	2.709	2.709
120	-	5.955	5.463	5.090	4.335	3.913	2.709	2.709	2.709	2.709
125	-	6.179	5.667	5.188	4.576	4.697	2.779	2.709	2.709	2.709
130	-	6.403	5.872	5.285	4.816	5.062	3.154	2.709	2.709	2.709
135	-	-	6.076	5.382	5.041	5.114	3.529	2.709	2.709	2.709
140	-	-	6.281	5.480	5.137	5.166	3.904	2.709	2.709	2.709
145	-	-	6.485	5.577	5.234	5.218	5.053	2.709	2.709	2.709
150	-	-	-	5.674	5.330	5.270	5.093	2.899	2.709	2.709
155	-	-	-	5.772	5.427	5.322	5.133	3.344	2.709	2.709
160	-	-	-	5.869	5.523	5.374	5.173	3.790	2.709	2.709
165	-	-	-	5.966	5.619	5.426	5.213	4.545	2.709	2.709
170	-	-	-	6.063	5.716	5.478	5.254	5.049	2.731	2.709
175	-	-	-	6.161	5.812	5.530	5.294	5.089	3.199	2.709
180	-	-	-	6.258	5.909	5.582	5.334	5.129	3.666	2.788
185	-	-	-	6.355	6.005	5.634	5.374	5.169	4.151	3.055
190	-	-	-	6.453	6.101	5.686	5.414	5.208	4.664	3.322
195	-	-	-	-	6.198	5.738	5.455	5.248	5.040	3.589
200	-	-	-	-	6.294	5.790	5.495	5.288	5.077	3.857
205	-	-	-	-	6.391	5.842	5.535	5.328	5.113	4.124
210	-	-	-	-	6.487	5.894	5.575	5.367	5.149	4.391
215	-	-	-	-	-	5.946	5.615	5.407	5.185	4.659
220	-	-	-	-	-	5.999	5.655	5.447	5.221	4.926
225	-	-	-	-	-	6.051	5.696	5.487	5.258	5.049
230	-	-	-	-	-	6.103	5.736	5.526	5.294	5.081
235	-	-	-	-	-	6.155	5.776	5.566	5.330	5.112
240	-	-	-	-	-	6.207	5.816	5.606	5.366	5.144
245	-	-	-	-	-	6.259	5.856	5.646	5.402	5.175
250	-	-	-	-	-	6.311	5.897	5.685	5.439	5.206
255	-	-	-	-	-	6.363	5.937	5.725	5.475	5.238

Thickness is intumescent only.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 28: Rectangular Hollow Columns (with reinforcement mesh support) 105 Minutes									
	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	-	4.120	3.348	2.709	2.709	2.709	2.709	2.709	2.709	2.709
55	-	4.321	3.847	2.944	2.709	2.709	2.709	2.709	2.709	2.709
60	-	4.522	4.088	3.348	2.967	2.709	2.709	2.709	2.709	2.709
65	-	4.723	4.253	3.752	3.320	2.722	2.709	2.709	2.709	2.709
70	-	4.924	4.418	4.034	3.673	3.009	2.709	2.709	2.709	2.709
75	-	5.808	4.583	4.185	3.989	3.295	2.709	2.709	2.709	2.709
80	-	-	4.748	4.337	4.147	3.582	2.709	2.709	2.709	2.709
85	-	-	4.914	4.489	4.305	3.868	2.709	2.709	2.709	2.709
90	-	-	5.091	4.641	4.464	4.106	2.878	2.709	2.709	2.709
95	-	-	5.296	4.793	4.622	4.320	3.109	2.709	2.709	2.709
100	-	-	5.502	4.945	4.780	4.535	3.341	2.709	2.709	2.709
105	-	-	5.707	5.135	4.938	4.749	3.572	2.709	2.709	2.709
110	-	-	5.913	5.373	5.120	4.964	3.804	2.709	2.709	2.709
115	-	-	6.118	5.612	5.337	5.119	4.168	2.711	2.709	2.709
120	-	-	6.324	5.851	5.553	5.248	4.806	3.045	2.709	2.709
125	-	-	-	6.090	5.770	5.378	5.076	3.379	2.709	2.709
130	-	-	-	6.328	5.986	5.507	5.146	3.713	2.709	2.709
135	-	-	-	-	6.203	5.636	5.216	4.491	2.709	2.709
140	-	-	-	-	6.419	5.765	5.286	5.064	2.709	2.709
145	-	-	-	-	-	5.894	5.357	5.111	2.959	2.709
150	-	-	-	-	-	6.023	5.427	5.158	3.406	2.709
155	-	-	-	-	-	6.152	5.497	5.205	3.853	2.709
160	-	-	-	-	-	6.282	5.567	5.252	5.032	2.866
165	-	-	-	-	-	6.411	5.638	5.298	5.074	3.285
170	-	-	-	-	-	-	5.708	5.345	5.116	3.704
175	-	-	-	-	-	-	5.778	5.392	5.158	4.123
180	-	-	-	-	-	-	5.848	5.439	5.200	4.543
185	-	-	-	-	-	-	5.919	5.485	5.242	4.962
190	-	-	-	-	-	-	5.989	5.532	5.283	5.062
195	-	-	-	-	-	-	6.059	5.579	5.325	5.100
200	-	-	-	-	-	-	6.129	5.626	5.367	5.139
205	-	-	-	-	-	-	6.200	5.673	5.409	5.177
210	-	-	-	-	-	-	6.270	5.719	5.451	5.215
215	-	-	-	-	-	-	6.340	5.766	5.493	5.254
220	-	-	-	-	-	-	6.411	5.813	5.535	5.292
225	-	-	-	-	-	-	6.481	5.860	5.577	5.330
230	-	-	-	-	-	-	-	5.907	5.619	5.369
235	-	-	-	-	-	-	-	5.953	5.661	5.407
240	-	-	-	-	-	-	-	6.000	5.703	5.445
245	-	-	-	-	-	-	-	6.047	5.745	5.483
250	-	-	-	-	-	-	-	6.094	5.787	5.522
255	-	-	-	-	-	-	-	6.140	5.829	5.560

Thickness is intumescent only.

CERTIFICATE No CF 5594

MULTIFIRE INTERNATIONAL BV

Multifire FSX 4120-S and FSX 4120-R

Section Factor up to m ⁻¹	Table 29: Rectangular Hollow Columns (with reinforcement mesh support) 120 Minutes									
	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	-	5.030	4.203	3.801	3.389	2.764	2.709	2.709	2.709	2.709
55	-	5.030	4.399	4.081	3.918	3.275	2.709	2.709	2.709	2.709
60	-	-	4.595	4.247	4.109	3.785	2.709	2.709	2.709	2.709
65	-	-	4.790	4.412	4.270	4.064	2.961	2.709	2.709	2.709
70	-	-	4.986	4.577	4.432	4.221	3.400	2.709	2.709	2.709
75	-	-	5.182	4.743	4.593	4.378	3.839	2.709	2.709	2.709
80	-	-	5.378	4.908	4.755	4.536	4.086	2.709	2.709	2.709
85	-	-	5.573	5.170	4.917	4.693	4.259	2.953	2.709	2.709
90	-	-	5.769	5.703	5.149	4.851	4.433	3.200	2.709	2.709
95	-	-	6.236	6.236	5.548	5.008	4.607	3.447	2.709	2.709
100	-	-	-	-	5.948	5.288	4.780	3.693	2.709	2.709
105	-	-	-	-	6.347	5.587	4.954	3.940	2.709	2.709
110	-	-	-	-	-	5.886	5.108	4.352	2.785	2.709
115	-	-	-	-	-	6.185	5.248	4.779	3.049	2.709
120	-	-	-	-	-	6.484	5.388	5.063	3.313	2.709
125	-	-	-	-	-	-	5.527	5.143	3.578	2.709
130	-	-	-	-	-	-	5.667	5.224	3.842	2.709
135	-	-	-	-	-	-	5.806	5.304	4.807	2.709
140	-	-	-	-	-	-	5.946	5.384	5.080	2.709
145	-	-	-	-	-	-	6.086	5.464	5.139	2.709
150	-	-	-	-	-	-	6.225	5.545	5.198	3.263
155	-	-	-	-	-	-	6.365	5.625	5.256	4.096
160	-	-	-	-	-	-	-	5.705	5.315	5.032
165	-	-	-	-	-	-	-	5.786	5.374	5.077
170	-	-	-	-	-	-	-	5.866	5.433	5.122
175	-	-	-	-	-	-	-	5.946	5.492	5.167
180	-	-	-	-	-	-	-	6.026	5.550	5.213
185	-	-	-	-	-	-	-	6.107	5.609	5.258
190	-	-	-	-	-	-	-	6.187	5.668	5.303
195	-	-	-	-	-	-	-	6.267	5.727	5.348
200	-	-	-	-	-	-	-	6.347	5.785	5.393
205	-	-	-	-	-	-	-	6.428	5.844	5.438
210	-	-	-	-	-	-	-	-	5.903	5.484
215	-	-	-	-	-	-	-	-	5.962	5.529
220	-	-	-	-	-	-	-	-	6.020	5.574
225	-	-	-	-	-	-	-	-	6.079	5.619
230	-	-	-	-	-	-	-	-	6.138	5.664
235	-	-	-	-	-	-	-	-	6.197	5.710
240	-	-	-	-	-	-	-	-	6.255	5.755
245	-	-	-	-	-	-	-	-	6.314	5.800
250	-	-	-	-	-	-	-	-	6.373	5.845
255	-	-	-	-	-	-	-	-	6.432	5.890

Thickness is intumescent only.