



Certificate No: IFCC1077

This certifies that the products below,

Phoenix 370-90

manufactured by

Phoenix Fire Protection (UK) Ltd

40 Gerard Street

London

W1D 5QE

United Kingdom

Satisfies the requirements of IFCC scheme SDP 012 for Surface Spread of Flame & Intumescent Steel Protection. This includes the testing of products, the inspection of the Factory Production Control and continuing surveillance audits and testing of samples of products taken from production. The product specification and thickness for various steel sections to achieve periods up to **120 minutes** fire resistance to **BS476: Part 21: 1987** are detailed in the following schedule. Full details regarding the scope of approval, including application of the product are given in **WF Assessment Reports No. 407939B, 357597 and 357598**.

The certificate remains valid subject to satisfactory annual surveillance of factory production control by IFC Certification. The reader should contact IFC Certification or refer to www.ifccertification.com to validate its status.



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175

A handwritten signature in black ink, which appears to read 'Ian Woodhouse'.

Ian Woodhouse
Director of Certification

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**Table 1: Three Sided Protection to I-Section Beams
Fire Resistance Period: 15 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
30	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
35	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
40	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
45	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
50	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
55	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
60	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
65	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
70	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
75	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
80	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
85	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
90	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
95	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
100	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
105	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
110	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
115	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
120	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
125	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
130	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
135	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
140	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
145	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
150	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
155	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
160	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
165	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
170	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
175	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
180	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
185	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
190	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
195	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
200	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
205	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
210	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
215	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
220	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
225	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
230	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
235	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
240	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
245	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
250	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
255	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
260	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
265	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
270	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
275	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
280	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
285	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
290	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
295	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
300	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
305	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
310	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
315	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
320	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
325	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
330	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468

Thickness is in mm and is intumescent only. Beams with concrete slabs.

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**Table 2: Three Sided Protection to I-Section Beams
Fire Resistance Period: 30 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
30	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
35	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
40	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
45	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
50	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
55	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
60	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
65	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
70	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
75	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
80	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
85	0.477	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
90	0.490	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
95	0.502	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
100	0.515	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
105	0.527	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
110	0.539	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
115	0.552	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
120	0.564	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
125	0.577	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
130	0.589	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
135	0.601	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
140	0.614	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
145	0.626	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
150	0.639	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
155	0.651	0.470	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
160	0.663	0.477	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
165	0.676	0.484	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
170	0.688	0.491	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
175	0.701	0.498	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
180	0.713	0.505	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
185	0.725	0.512	0.471	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
190	0.738	0.519	0.477	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
195	0.750	0.526	0.483	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
200	0.763	0.533	0.489	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
205	0.775	0.540	0.495	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
210	0.787	0.547	0.501	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
215	0.800	0.554	0.507	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
220	0.812	0.561	0.513	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
225	0.825	0.568	0.519	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
230	0.837	0.575	0.525	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
235	0.850	0.582	0.531	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
240	0.862	0.589	0.537	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
245	0.874	0.596	0.543	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
250	0.887	0.603	0.549	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
255	0.899	0.610	0.556	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
260	0.912	0.617	0.562	0.469	0.468	0.468	0.468	0.468	0.468	0.468	0.468
265	0.923	0.624	0.568	0.475	0.468	0.468	0.468	0.468	0.468	0.468	0.468
270	0.934	0.631	0.574	0.481	0.468	0.468	0.468	0.468	0.468	0.468	0.468
275	0.945	0.638	0.580	0.487	0.468	0.468	0.468	0.468	0.468	0.468	0.468
280	0.956	0.645	0.586	0.494	0.468	0.468	0.468	0.468	0.468	0.468	0.468
285	0.967	0.652	0.592	0.500	0.468	0.468	0.468	0.468	0.468	0.468	0.468
290	0.978	0.659	0.598	0.506	0.468	0.468	0.468	0.468	0.468	0.468	0.468
295	0.989	0.666	0.604	0.512	0.468	0.468	0.468	0.468	0.468	0.468	0.468
300	1.000	0.673	0.610	0.518	0.468	0.468	0.468	0.468	0.468	0.468	0.468
305	1.011	0.680	0.616	0.524	0.468	0.468	0.468	0.468	0.468	0.468	0.468
310	1.022	0.687	0.622	0.531	0.468	0.468	0.468	0.468	0.468	0.468	0.468
315	1.033	0.694	0.628	0.537	0.468	0.468	0.468	0.468	0.468	0.468	0.468
320	1.044	0.701	0.634	0.543	0.468	0.468	0.468	0.468	0.468	0.468	0.468
325	1.055	0.708	0.640	0.549	0.468	0.468	0.468	0.468	0.468	0.468	0.468
330	1.066	0.715	0.646	0.555	0.468	0.468	0.468	0.468	0.468	0.468	0.468

Thickness is in mm and is intumescent only. Beams with concrete slabs.

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**Table 3: Three Sided Protection to I-Section Beams
Fire Resistance Period: 45 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
30	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
35	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
40	0.507	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
45	0.554	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
50	0.601	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
55	0.647	0.483	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
60	0.694	0.500	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
65	0.741	0.516	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
70	0.788	0.533	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
75	0.835	0.550	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
80	0.882	0.567	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
85	0.927	0.583	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
90	0.964	0.600	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
95	1.002	0.617	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
100	1.040	0.634	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
105	1.078	0.651	0.479	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
110	1.116	0.667	0.492	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
115	1.154	0.684	0.504	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
120	1.192	0.701	0.517	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
125	1.230	0.718	0.530	0.471	0.468	0.468	0.468	0.468	0.468	0.468	0.468
130	1.268	0.734	0.543	0.480	0.468	0.468	0.468	0.468	0.468	0.468	0.468
135	1.306	0.751	0.555	0.490	0.468	0.468	0.468	0.468	0.468	0.468	0.468
140	1.344	0.768	0.568	0.500	0.468	0.468	0.468	0.468	0.468	0.468	0.468
145	1.381	0.785	0.581	0.509	0.468	0.468	0.468	0.468	0.468	0.468	0.468
150	1.419	0.802	0.593	0.519	0.468	0.468	0.468	0.468	0.468	0.468	0.468
155	1.457	0.818	0.606	0.529	0.468	0.468	0.468	0.468	0.468	0.468	0.468
160	1.495	0.835	0.619	0.538	0.468	0.468	0.468	0.468	0.468	0.468	0.468
165	1.533	0.852	0.632	0.548	0.468	0.468	0.468	0.468	0.468	0.468	0.468
170	1.571	0.869	0.644	0.558	0.475	0.468	0.468	0.468	0.468	0.468	0.468
175	1.609	0.885	0.657	0.567	0.483	0.468	0.468	0.468	0.468	0.468	0.468
180	1.647	0.902	0.670	0.577	0.491	0.473	0.468	0.468	0.468	0.468	0.468
185	1.685	0.919	0.683	0.587	0.499	0.480	0.469	0.468	0.468	0.468	0.468
190	1.720	0.942	0.695	0.596	0.506	0.488	0.476	0.468	0.468	0.468	0.468
195	1.745	0.965	0.708	0.606	0.514	0.495	0.483	0.468	0.468	0.468	0.468
200	1.769	0.988	0.721	0.616	0.522	0.503	0.490	0.470	0.468	0.468	0.468
205	1.794	1.011	0.734	0.625	0.530	0.510	0.497	0.476	0.468	0.468	0.468
210	1.818	1.035	0.746	0.635	0.538	0.518	0.505	0.483	0.470	0.468	0.468
215	1.843	1.058	0.759	0.645	0.545	0.525	0.512	0.490	0.477	0.468	0.468
220	1.868	1.081	0.772	0.654	0.553	0.533	0.519	0.497	0.483	0.468	0.468
225	1.892	1.104	0.785	0.664	0.561	0.540	0.526	0.504	0.490	0.468	0.468
230	1.917	1.127	0.797	0.674	0.569	0.548	0.533	0.511	0.496	0.468	0.468
235	1.941	1.150	0.810	0.683	0.577	0.556	0.540	0.518	0.503	0.468	0.468
240	1.966	1.173	0.823	0.693	0.584	0.563	0.547	0.525	0.509	0.468	0.468
245	1.991	1.196	0.835	0.702	0.592	0.571	0.555	0.532	0.516	0.468	0.468
250	2.015	1.220	0.848	0.712	0.600	0.578	0.562	0.538	0.522	0.468	0.468
255	2.040	1.243	0.861	0.722	0.608	0.586	0.569	0.545	0.528	0.468	0.468
260	2.064	1.266	0.874	0.731	0.616	0.593	0.576	0.552	0.535	0.468	0.468
265	2.089	1.289	0.886	0.741	0.623	0.601	0.583	0.559	0.541	0.468	0.468
270	2.114	1.312	0.899	0.751	0.631	0.608	0.590	0.566	0.548	0.468	0.468
275	2.138	1.335	0.912	0.760	0.639	0.616	0.597	0.573	0.554	0.468	0.468
280	2.163	1.358	0.927	0.770	0.647	0.623	0.605	0.580	0.561	0.468	0.468
285	2.187	1.381	0.945	0.780	0.655	0.631	0.612	0.587	0.567	0.468	0.468
290	2.212	1.405	0.963	0.789	0.662	0.638	0.619	0.593	0.574	0.468	0.468
295	2.237	1.428	0.981	0.799	0.670	0.646	0.626	0.600	0.580	0.468	0.468
300	2.261	1.451	0.999	0.809	0.678	0.653	0.633	0.607	0.587	0.468	0.468
305	2.286	1.474	1.017	0.818	0.686	0.661	0.640	0.614	0.593	0.468	0.468
310	2.311	1.497	1.034	0.828	0.694	0.669	0.647	0.621	0.600	0.468	0.468
315	2.335	1.520	1.052	0.838	0.701	0.676	0.655	0.628	0.606	0.468	0.468
320	2.360	1.543	1.070	0.847	0.709	0.684	0.662	0.635	0.613	0.468	0.468
325	2.384	1.566	1.088	0.857	0.717	0.691	0.669	0.642	0.619	0.474	0.468
330	2.409	1.589	1.106	0.867	0.725	0.699	0.676	0.649	0.626	0.482	0.468

Thickness is in mm and is intumescent only. Beams with concrete slabs.

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**Table 4: Three Sided Protection to I-Section Beams
Fire Resistance Period: 60 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
30	0.668	0.474	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
35	0.749	0.521	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
40	0.831	0.569	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
45	0.912	0.616	0.469	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
50	1.018	0.664	0.490	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
55	1.127	0.711	0.510	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
60	1.236	0.758	0.531	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
65	1.345	0.806	0.552	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
70	1.454	0.853	0.572	0.483	0.468	0.468	0.468	0.468	0.468	0.468	0.468
75	1.563	0.901	0.593	0.497	0.468	0.468	0.468	0.468	0.468	0.468	0.468
80	1.672	0.946	0.614	0.512	0.468	0.468	0.468	0.468	0.468	0.468	0.468
85	1.743	0.991	0.634	0.527	0.468	0.468	0.468	0.468	0.468	0.468	0.468
90	1.789	1.035	0.655	0.542	0.476	0.468	0.468	0.468	0.468	0.468	0.468
95	1.835	1.079	0.676	0.557	0.487	0.468	0.468	0.468	0.468	0.468	0.468
100	1.881	1.124	0.696	0.571	0.498	0.468	0.468	0.468	0.468	0.468	0.468
105	1.927	1.168	0.717	0.586	0.509	0.468	0.468	0.468	0.468	0.468	0.468
110	1.973	1.212	0.738	0.601	0.520	0.468	0.468	0.468	0.468	0.468	0.468
115	2.019	1.257	0.758	0.616	0.530	0.475	0.468	0.468	0.468	0.468	0.468
120	2.065	1.301	0.779	0.631	0.541	0.486	0.468	0.468	0.468	0.468	0.468
125	2.111	1.345	0.800	0.645	0.552	0.496	0.468	0.468	0.468	0.468	0.468
130	2.158	1.390	0.820	0.660	0.563	0.507	0.475	0.468	0.468	0.468	0.468
135	2.204	1.434	0.841	0.675	0.574	0.518	0.486	0.468	0.468	0.468	0.468
140	2.250	1.478	0.862	0.690	0.585	0.528	0.497	0.473	0.468	0.468	0.468
145	2.296	1.523	0.882	0.705	0.596	0.539	0.508	0.483	0.468	0.468	0.468
150	2.342	1.567	0.903	0.719	0.606	0.550	0.519	0.493	0.477	0.468	0.468
155	2.388	1.612	0.926	0.734	0.617	0.561	0.530	0.504	0.487	0.468	0.468
160	2.434	1.656	0.959	0.749	0.628	0.571	0.541	0.514	0.497	0.468	0.468
165	2.480	1.700	0.991	0.764	0.639	0.582	0.551	0.524	0.507	0.468	0.468
170	2.526	1.730	1.023	0.779	0.650	0.593	0.562	0.534	0.517	0.468	0.468
175	2.572	1.754	1.055	0.793	0.661	0.603	0.573	0.545	0.527	0.468	0.468
180	2.618	1.777	1.087	0.808	0.671	0.614	0.584	0.555	0.537	0.468	0.468
185	2.664	1.800	1.119	0.823	0.682	0.625	0.595	0.565	0.547	0.468	0.468
190	2.710	1.823	1.151	0.838	0.693	0.635	0.606	0.576	0.557	0.468	0.468
195	2.756	1.846	1.183	0.853	0.704	0.646	0.617	0.586	0.567	0.468	0.468
200	2.802	1.870	1.215	0.867	0.715	0.657	0.628	0.596	0.577	0.474	0.468
205	2.848	1.893	1.248	0.882	0.726	0.667	0.639	0.606	0.587	0.483	0.468
210	2.895	1.916	1.280	0.897	0.737	0.678	0.650	0.617	0.597	0.492	0.468
215	2.941	1.939	1.312	0.912	0.747	0.689	0.661	0.627	0.607	0.501	0.468
220	2.987	1.962	1.344	0.934	0.758	0.700	0.672	0.637	0.617	0.509	0.468
225	3.033	1.986	1.376	0.962	0.769	0.710	0.682	0.647	0.627	0.518	0.468
230	3.079	2.009	1.408	0.991	0.780	0.721	0.693	0.658	0.637	0.527	0.472
235	3.125	2.032	1.440	1.019	0.791	0.732	0.704	0.668	0.648	0.535	0.480
240	3.171	2.055	1.472	1.048	0.802	0.742	0.715	0.678	0.658	0.544	0.487
245	3.217	2.078	1.504	1.076	0.812	0.753	0.726	0.689	0.668	0.553	0.495
250	3.263	2.102	1.537	1.105	0.823	0.764	0.737	0.699	0.678	0.562	0.502
255	3.309	2.125	1.569	1.133	0.834	0.774	0.748	0.709	0.688	0.570	0.510
260	3.355	2.148	1.601	1.162	0.845	0.785	0.759	0.719	0.698	0.579	0.517
265	3.401	2.171	1.633	1.190	0.856	0.796	0.770	0.730	0.708	0.588	0.525
270	3.447	2.194	1.665	1.219	0.867	0.807	0.781	0.740	0.718	0.597	0.532
275	3.493	2.218	1.697	1.247	0.878	0.817	0.792	0.750	0.728	0.605	0.540
280	3.539	2.241	1.729	1.276	0.888	0.828	0.803	0.760	0.738	0.614	0.547
285	3.586	2.264	1.762	1.304	0.899	0.839	0.813	0.771	0.748	0.623	0.555
290	3.632	2.287	1.794	1.333	0.910	0.849	0.824	0.781	0.758	0.632	0.562
295	3.678	2.310	1.827	1.361	0.924	0.860	0.835	0.791	0.768	0.640	0.570
300	3.724	2.334	1.859	1.390	0.952	0.871	0.846	0.802	0.778	0.649	0.578
305	3.770	2.357	1.892	1.418	0.981	0.881	0.857	0.812	0.788	0.658	0.585
310	3.816	2.380	1.924	1.446	1.009	0.892	0.868	0.822	0.798	0.667	0.593
315	3.862	2.403	1.957	1.475	1.037	0.903	0.879	0.832	0.808	0.675	0.600
320		2.426	1.989	1.503	1.065	0.913	0.890	0.843	0.818	0.684	0.608
325		2.449	2.022	1.532	1.094	0.932	0.901	0.853	0.828	0.693	0.615
330		2.473	2.054	1.560	1.122	0.957	0.912	0.863	0.838	0.701	0.623

Thickness is in mm and is intumescent only. Beams with concrete slabs.

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**Table 5: Three Sided Protection to I-Section Beams
Fire Resistance Period: 75 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
30	0.990	0.690	0.557	0.468	0.468	0.468	0.468	0.468	0.468	0.468	0.468
35	1.160	0.775	0.596	0.481	0.468	0.468	0.468	0.468	0.468	0.468	0.468
40	1.331	0.860	0.634	0.510	0.468	0.468	0.468	0.468	0.468	0.468	0.468
45	1.501	0.945	0.673	0.538	0.480	0.468	0.468	0.468	0.468	0.468	0.468
50	1.671	1.032	0.712	0.566	0.495	0.468	0.468	0.468	0.468	0.468	0.468
55	1.746	1.119	0.750	0.594	0.510	0.468	0.468	0.468	0.468	0.468	0.468
60	1.787	1.206	0.789	0.623	0.526	0.477	0.468	0.468	0.468	0.468	0.468
65	1.828	1.293	0.827	0.651	0.541	0.492	0.468	0.468	0.468	0.468	0.468
70	1.869	1.380	0.866	0.679	0.556	0.507	0.468	0.468	0.468	0.468	0.468
75	1.910	1.467	0.904	0.708	0.571	0.521	0.468	0.468	0.468	0.468	0.468
80	1.952	1.554	0.952	0.736	0.587	0.536	0.468	0.468	0.468	0.468	0.468
85	1.993	1.641	1.005	0.764	0.602	0.551	0.468	0.468	0.468	0.468	0.468
90	2.034	1.720	1.059	0.792	0.617	0.566	0.468	0.468	0.468	0.468	0.468
95	2.075	1.752	1.112	0.821	0.632	0.581	0.478	0.480	0.468	0.468	0.468
100	2.116	1.784	1.165	0.849	0.648	0.596	0.494	0.493	0.468	0.468	0.468
105	2.158	1.816	1.219	0.877	0.663	0.611	0.510	0.506	0.468	0.468	0.468
110	2.199	1.848	1.272	0.906	0.678	0.626	0.526	0.519	0.478	0.468	0.468
115	2.240	1.880	1.325	0.937	0.693	0.641	0.542	0.532	0.492	0.468	0.468
120	2.281	1.912	1.379	0.972	0.709	0.656	0.558	0.545	0.505	0.468	0.468
125	2.322	1.944	1.432	1.007	0.724	0.671	0.574	0.558	0.518	0.468	0.468
130	2.363	1.976	1.485	1.041	0.739	0.685	0.590	0.571	0.531	0.469	0.468
135	2.405	2.008	1.539	1.076	0.754	0.700	0.606	0.584	0.544	0.480	0.477
140	2.446	2.040	1.592	1.110	0.770	0.715	0.622	0.597	0.557	0.491	0.487
145	2.487	2.073	1.645	1.145	0.785	0.730	0.638	0.610	0.570	0.502	0.496
150	2.528	2.105	1.699	1.180	0.800	0.745	0.654	0.624	0.583	0.513	0.506
155	2.569	2.137	1.737	1.214	0.815	0.760	0.670	0.637	0.597	0.525	0.515
160	2.611	2.169	1.769	1.249	0.831	0.775	0.686	0.650	0.610	0.536	0.524
165	2.652	2.201	1.801	1.284	0.846	0.790	0.702	0.663	0.623	0.547	0.534
170	2.693	2.233	1.833	1.318	0.861	0.805	0.718	0.676	0.636	0.558	0.543
175	2.734	2.265	1.865	1.353	0.876	0.820	0.735	0.689	0.649	0.569	0.553
180	2.775	2.297	1.896	1.388	0.892	0.835	0.751	0.702	0.662	0.580	0.562
185	2.817	2.329	1.928	1.422	0.907	0.849	0.767	0.715	0.675	0.591	0.571
190	2.858	2.361	1.960	1.457	0.927	0.864	0.783	0.728	0.689	0.602	0.581
195	2.899	2.393	1.992	1.491	0.964	0.879	0.799	0.741	0.702	0.613	0.590
200	2.940	2.426	2.024	1.526	1.002	0.894	0.815	0.754	0.715	0.624	0.599
205	2.981	2.458	2.056	1.561	1.040	0.909	0.831	0.767	0.728	0.635	0.609
210	3.023	2.490	2.087	1.595	1.078	0.930	0.847	0.780	0.741	0.646	0.618
215	3.064	2.522	2.119	1.630	1.116	0.961	0.863	0.793	0.754	0.657	0.628
220	3.105	2.554	2.151	1.665	1.154	0.993	0.879	0.806	0.767	0.668	0.637
225	3.146	2.586	2.183	1.699	1.192	1.025	0.895	0.819	0.780	0.679	0.646
230	3.187	2.618	2.215	1.735	1.230	1.057	0.911	0.832	0.794	0.690	0.656
235	3.228	2.650	2.247	1.771	1.268	1.089	0.935	0.845	0.807	0.702	0.665
240	3.270	2.682	2.279	1.807	1.306	1.121	0.967	0.859	0.820	0.713	0.674
245	3.311	2.714	2.310	1.843	1.344	1.152	0.998	0.872	0.833	0.724	0.684
250	3.352	2.746	2.342	1.880	1.381	1.184	1.030	0.885	0.846	0.735	0.693
255	3.393	2.779	2.374	1.916	1.419	1.216	1.062	0.898	0.859	0.746	0.703
260	3.434	2.811	2.406	1.952	1.457	1.248	1.094	0.911	0.872	0.757	0.712
265	3.476	2.843	2.438	1.988	1.495	1.280	1.126	0.933	0.885	0.768	0.721
270	3.517	2.875	2.470	2.025	1.533	1.312	1.158	0.970	0.899	0.779	0.731
275	3.558	2.907	2.501	2.061	1.571	1.344	1.190	1.007	0.912	0.790	0.740
280	3.599	2.939	2.533	2.097	1.609	1.375	1.222	1.044	0.932	0.801	0.749
285	3.640	2.971	2.565	2.133	1.647	1.407	1.254	1.081	0.960	0.812	0.759
290	3.682	3.003	2.597	2.170	1.685	1.439	1.286	1.118	0.989	0.823	0.768
295	3.723	3.035	2.629	2.206	1.722	1.471	1.318	1.155	1.018	0.834	0.778
300	3.764	3.067	2.661	2.242	1.756	1.503	1.350	1.193	1.046	0.845	0.787
305	3.805	3.099	2.692	2.278	1.791	1.535	1.382	1.230	1.075	0.856	0.796
310	3.846	3.132	2.724	2.315	1.825	1.566	1.414	1.267	1.104	0.867	0.806
315		3.164	2.756	2.351	1.860	1.598	1.446	1.304	1.132	0.878	0.815
320		3.196	2.788	2.387	1.894	1.630	1.478	1.341	1.161	0.890	0.825
325		3.228	2.820	2.423	1.928	1.662	1.510	1.378	1.190	0.901	0.834
330		3.260	2.852	2.460	1.963	1.694	1.542	1.415	1.218	0.912	0.843

Thickness is in mm and is intumescent only. Beams with concrete slabs.

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**Table 6: Three Sided Protection to I-Section Beams
Fire Resistance Period: 90 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
30	1.409	0.926	0.719	0.584	0.496	0.474	0.468	0.468	0.468	0.468	0.468
35	1.626	1.075	0.783	0.636	0.525	0.497	0.468	0.468	0.468	0.468	0.468
40	1.751	1.224	0.848	0.687	0.554	0.520	0.471	0.468	0.468	0.468	0.468
45	1.812	1.373	0.913	0.739	0.583	0.544	0.491	0.468	0.468	0.468	0.468
50	1.873	1.522	1.009	0.790	0.612	0.567	0.511	0.481	0.468	0.468	0.468
55	1.934	1.670	1.109	0.842	0.641	0.591	0.532	0.496	0.468	0.468	0.468
60	1.995	1.747	1.208	0.893	0.670	0.614	0.552	0.512	0.471	0.468	0.468
65	2.056	1.792	1.308	0.944	0.699	0.638	0.572	0.527	0.486	0.468	0.468
70	2.116	1.837	1.407	0.993	0.728	0.661	0.592	0.543	0.501	0.468	0.468
75	2.177	1.882	1.507	1.043	0.756	0.685	0.612	0.558	0.516	0.468	0.468
80	2.238	1.927	1.606	1.092	0.785	0.708	0.632	0.573	0.531	0.468	0.468
85	2.299	1.972	1.706	1.142	0.814	0.731	0.652	0.589	0.546	0.476	0.468
90	2.360	2.017	1.748	1.191	0.843	0.755	0.672	0.604	0.562	0.490	0.468
95	2.421	2.062	1.784	1.241	0.872	0.778	0.692	0.620	0.577	0.503	0.468
100	2.482	2.108	1.821	1.290	0.901	0.802	0.712	0.635	0.592	0.517	0.468
105	2.543	2.153	1.857	1.340	0.935	0.825	0.732	0.650	0.607	0.530	0.468
110	2.603	2.198	1.894	1.390	0.976	0.849	0.752	0.666	0.622	0.543	0.468
115	2.664	2.243	1.930	1.439	1.017	0.872	0.772	0.681	0.637	0.557	0.477
120	2.725	2.288	1.966	1.489	1.058	0.896	0.792	0.697	0.652	0.570	0.489
125	2.786	2.333	2.003	1.538	1.099	0.919	0.813	0.712	0.667	0.584	0.501
130	2.847	2.378	2.039	1.588	1.140	0.956	0.833	0.727	0.682	0.597	0.514
135	2.908	2.423	2.075	1.637	1.181	0.993	0.853	0.743	0.697	0.610	0.526
140	2.969	2.469	2.112	1.687	1.222	1.030	0.873	0.758	0.713	0.624	0.538
145	3.030	2.514	2.148	1.732	1.263	1.067	0.893	0.773	0.728	0.637	0.551
150	3.091	2.559	2.185	1.772	1.304	1.104	0.913	0.789	0.743	0.651	0.563
155	3.151	2.604	2.221	1.811	1.345	1.141	0.945	0.804	0.758	0.664	0.575
160	3.212	2.649	2.257	1.851	1.386	1.178	0.983	0.820	0.773	0.678	0.588
165	3.273	2.694	2.294	1.891	1.428	1.215	1.021	0.835	0.788	0.691	0.600
170	3.334	2.739	2.330	1.930	1.469	1.252	1.059	0.850	0.803	0.704	0.613
175	3.395	2.784	2.367	1.970	1.510	1.289	1.097	0.866	0.818	0.718	0.625
180	3.456	2.829	2.403	2.010	1.551	1.326	1.135	0.881	0.833	0.731	0.637
185	3.517	2.875	2.439	2.049	1.592	1.363	1.173	0.897	0.849	0.745	0.650
190	3.578	2.920	2.476	2.089	1.633	1.400	1.211	0.912	0.864	0.758	0.662
195	3.639	2.965	2.512	2.128	1.674	1.437	1.249	0.938	0.879	0.771	0.674
200	3.699	3.010	2.549	2.168	1.715	1.474	1.287	0.974	0.894	0.785	0.687
205	3.760	3.055	2.585	2.208	1.753	1.511	1.325	1.010	0.909	0.798	0.699
210	3.821	3.100	2.621	2.247	1.792	1.548	1.363	1.046	0.932	0.812	0.711
215		3.145	2.658	2.287	1.830	1.585	1.401	1.082	0.970	0.825	0.724
220		3.190	2.694	2.327	1.869	1.622	1.439	1.118	1.008	0.839	0.736
225		3.236	2.731	2.366	1.907	1.659	1.477	1.154	1.046	0.852	0.748
230		3.281	2.767	2.406	1.946	1.696	1.515	1.190	1.085	0.865	0.761
235		3.326	2.803	2.446	1.984	1.730	1.553	1.226	1.123	0.879	0.773
240		3.371	2.840	2.485	2.022	1.761	1.590	1.262	1.161	0.892	0.785
245		3.416	2.876	2.525	2.061	1.791	1.628	1.298	1.199	0.906	0.798
250		3.461	2.912	2.565	2.099	1.822	1.666	1.334	1.237	0.919	0.810
255		3.506	2.949	2.604	2.138	1.853	1.704	1.370	1.276	0.952	0.822
260		3.551	2.985	2.644	2.176	1.884	1.739	1.406	1.314	0.985	0.835
265		3.597	3.022	2.683	2.214	1.914	1.772	1.442	1.352	1.018	0.847
270		3.642	3.058	2.723	2.253	1.945	1.806	1.478	1.390	1.051	0.859
275		3.687	3.094	2.763	2.291	1.976	1.839	1.513	1.428	1.084	0.872
280		3.732	3.131	2.802	2.330	2.006	1.873	1.549	1.467	1.117	0.884
285		3.777	3.167	2.842	2.368	2.037	1.906	1.585	1.505	1.150	0.896
290		3.822	3.204	2.882	2.407	2.068	1.940	1.621	1.543	1.184	0.909
295		3.867	3.240	2.921	2.445	2.098	1.973	1.657	1.581	1.217	0.923
300			3.276	2.961	2.483	2.129	2.006	1.693	1.619	1.250	0.948
305			3.313	3.001	2.522	2.160	2.040	1.733	1.658	1.283	0.973
310			3.349	3.040	2.560	2.191	2.073	1.779	1.696	1.316	0.998
315			3.386	3.080	2.599	2.221	2.107	1.825	1.734	1.349	1.023
320			3.422	3.120	2.637	2.252	2.140	1.870	1.772	1.382	1.047
325			3.458	3.159	2.675	2.283	2.173	1.916	1.811	1.415	1.072
330			3.495	3.199	2.714	2.313	2.207	1.962	1.849	1.448	1.097

Thickness is in mm and is intumescent only. Beams with concrete slabs.

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**Table 7: Three Sided Protection to I-Section Beams
Fire Resistance Period: 105 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
30		1.383	0.883	0.721	0.619	0.579	0.538	0.515	0.468	0.468	0.468
35		1.461	1.038	0.803	0.666	0.615	0.569	0.535	0.485	0.468	0.468
40		1.539	1.193	0.886	0.712	0.651	0.600	0.556	0.507	0.468	0.468
45		1.617	1.348	0.974	0.758	0.687	0.631	0.577	0.529	0.468	0.468
50		1.695	1.504	1.065	0.804	0.724	0.663	0.597	0.551	0.484	0.468
55		1.773	1.659	1.157	0.850	0.760	0.694	0.618	0.573	0.499	0.468
60		1.851	1.747	1.248	0.896	0.796	0.725	0.638	0.595	0.514	0.468
65		1.929	1.796	1.340	0.947	0.832	0.757	0.659	0.617	0.530	0.473
70		2.007	1.846	1.432	1.003	0.869	0.788	0.679	0.639	0.545	0.487
75		2.084	1.896	1.523	1.059	0.905	0.819	0.700	0.661	0.560	0.500
80		2.162	1.946	1.615	1.116	0.950	0.851	0.721	0.683	0.576	0.513
85		2.240	1.995	1.706	1.172	1.000	0.882	0.741	0.705	0.591	0.526
90		2.318	2.045	1.753	1.228	1.050	0.913	0.762	0.728	0.606	0.540
95		2.396	2.095	1.794	1.284	1.100	0.967	0.782	0.750	0.621	0.553
100		2.474	2.145	1.835	1.340	1.151	1.026	0.803	0.772	0.637	0.566
105		2.552	2.194	1.877	1.397	1.201	1.084	0.823	0.794	0.652	0.580
110		2.630	2.244	1.918	1.453	1.251	1.143	0.844	0.816	0.667	0.593
115		2.708	2.294	1.960	1.509	1.301	1.202	0.865	0.838	0.683	0.606
120		2.786	2.344	2.001	1.565	1.351	1.260	0.885	0.860	0.698	0.620
125		2.864	2.394	2.043	1.621	1.401	1.319	0.906	0.882	0.713	0.633
130		2.942	2.443	2.084	1.678	1.452	1.378	0.936	0.904	0.728	0.646
135		3.020	2.493	2.126	1.729	1.502	1.436	0.983	0.932	0.744	0.659
140		3.098	2.543	2.167	1.772	1.552	1.495	1.030	0.972	0.759	0.673
145		3.176	2.593	2.209	1.815	1.602	1.554	1.077	1.013	0.774	0.686
150		3.254	2.642	2.250	1.857	1.652	1.613	1.124	1.053	0.790	0.699
155		3.332	2.692	2.292	1.900	1.702	1.671	1.171	1.093	0.805	0.713
160		3.410	2.742	2.333	1.942	1.741	1.724	1.218	1.133	0.820	0.726
165		3.488	2.792	2.374	1.985	1.776	1.759	1.265	1.173	0.835	0.739
170		3.566	2.841	2.416	2.028	1.810	1.794	1.312	1.213	0.851	0.753
175		3.644	2.891	2.457	2.070	1.845	1.829	1.359	1.253	0.866	0.766
180		3.722	2.941	2.499	2.113	1.880	1.864	1.407	1.293	0.881	0.779
185		3.800	2.991	2.540	2.156	1.914	1.899	1.454	1.333	0.897	0.792
190			3.040	2.582	2.198	1.949	1.934	1.501	1.374	0.912	0.806
195			3.090	2.623	2.241	1.983	1.969	1.548	1.414	0.942	0.819
200			3.140	2.665	2.284	2.018	2.004	1.595	1.454	0.985	0.832
205			3.190	2.706	2.326	2.053	2.039	1.642	1.494	1.027	0.846
210			3.239	2.748	2.369	2.087	2.074	1.689	1.534	1.070	0.859
215			3.289	2.789	2.412	2.122	2.109	1.733	1.574	1.112	0.872
220			3.339	2.831	2.454	2.157	2.144	1.774	1.614	1.155	0.886
225			3.389	2.872	2.497	2.191	2.178	1.814	1.654	1.198	0.899
230			3.438	2.913	2.540	2.226	2.213	1.855	1.694	1.240	0.912
235			3.488	2.955	2.582	2.261	2.248	1.896	1.737	1.283	0.936
240			3.538	2.996	2.625	2.295	2.283	1.936	1.781	1.325	0.972
245			3.588	3.038	2.667	2.330	2.318	1.977	1.826	1.368	1.007
250			3.637	3.079	2.710	2.364	2.353	2.018	1.871	1.411	1.043
255			3.687	3.121	2.753	2.399	2.388	2.058	1.915	1.453	1.078
260			3.737	3.162	2.795	2.434	2.423	2.099	1.960	1.496	1.114
265			3.787	3.204	2.838	2.468	2.458	2.139	2.004	1.538	1.149
270			3.837	3.245	2.881	2.503	2.493	2.180	2.049	1.581	1.184
275				3.287	2.923	2.538	2.528	2.221	2.094	1.624	1.220
280				3.328	2.966	2.572	2.563	2.261	2.138	1.666	1.255
285				3.369	3.009	2.607	2.598	2.302	2.183	1.709	1.291
290				3.411	3.051	2.642	2.633	2.343	2.227	1.767	1.326
295				3.452	3.094	2.676	2.668	2.383	2.272	1.827	1.362
300				3.494	3.137	2.711	2.703	2.424	2.317	1.888	1.397
305				3.535	3.179	2.745	2.738	2.464	2.361	1.948	1.433
310				3.577	3.222	2.780	2.773	2.505	2.406	2.008	1.468
315				3.618	3.265	2.815	2.808	2.546	2.450	2.069	1.504
320				3.660	3.307	2.849	2.843	2.586	2.495	2.129	1.539
325				3.701	3.350	2.884	2.878	2.627	2.540	2.190	1.574
330				3.743	3.393	2.919	2.913	2.668	2.584	2.250	1.610

Thickness is in mm and is intumescent only. Beams with concrete slabs.

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**Table 8: Three Sided Protection to I-Section Beams
Fire Resistance Period: 120 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:										
	350°C	400°C	450°C	500°C	550°C	575°C	600°C	620°C	650°C	700°C	750°C
30		1.716	1.274	0.889	0.743	0.689	0.634	0.620	0.561	0.478	0.468
35		1.827	1.463	1.037	0.807	0.740	0.683	0.646	0.588	0.500	0.468
40		1.939	1.652	1.186	0.872	0.792	0.733	0.671	0.616	0.523	0.478
45		2.050	1.766	1.334	0.944	0.843	0.782	0.697	0.643	0.545	0.492
50		2.161	1.843	1.483	1.040	0.895	0.832	0.722	0.671	0.568	0.507
55		2.272	1.920	1.632	1.135	0.953	0.881	0.748	0.698	0.590	0.522
60		2.383	1.998	1.741	1.230	1.018	0.932	0.774	0.725	0.613	0.537
65		2.494	2.075	1.799	1.325	1.083	0.988	0.799	0.753	0.635	0.552
70		2.605	2.152	1.857	1.420	1.148	1.044	0.825	0.780	0.657	0.567
75		2.716	2.229	1.915	1.516	1.213	1.100	0.850	0.808	0.680	0.582
80		2.828	2.306	1.973	1.611	1.278	1.156	0.876	0.835	0.702	0.596
85		2.939	2.383	2.032	1.706	1.343	1.212	0.901	0.863	0.725	0.611
90		3.050	2.460	2.090	1.759	1.408	1.268	0.941	0.890	0.747	0.626
95		3.161	2.537	2.148	1.808	1.473	1.324	1.014	0.918	0.770	0.641
100		3.272	2.614	2.206	1.857	1.538	1.380	1.087	0.972	0.792	0.656
105		3.383	2.691	2.264	1.906	1.603	1.436	1.161	1.028	0.815	0.671
110		3.494	2.768	2.323	1.954	1.668	1.492	1.234	1.084	0.837	0.685
115		3.605	2.845	2.381	2.003	1.729	1.548	1.307	1.139	0.860	0.700
120		3.717	2.922	2.439	2.052	1.782	1.604	1.380	1.195	0.882	0.715
125		3.828	2.999	2.497	2.101	1.834	1.660	1.454	1.251	0.905	0.730
130			3.076	2.555	2.150	1.887	1.716	1.527	1.306	0.936	0.745
135			3.153	2.614	2.199	1.939	1.763	1.600	1.362	0.983	0.760
140			3.230	2.672	2.247	1.991	1.810	1.673	1.418	1.030	0.774
145			3.307	2.730	2.296	2.044	1.857	1.735	1.474	1.077	0.789
150			3.384	2.788	2.345	2.096	1.903	1.783	1.529	1.124	0.804
155			3.462	2.847	2.394	2.149	1.950	1.830	1.585	1.171	0.819
160			3.539	2.905	2.443	2.201	1.997	1.877	1.641	1.218	0.834
165			3.616	2.963	2.491	2.253	2.044	1.925	1.696	1.265	0.849
170			3.693	3.021	2.540	2.306	2.091	1.972	1.751	1.312	0.864
175			3.770	3.079	2.589	2.358	2.137	2.019	1.805	1.359	0.878
180			3.847	3.138	2.638	2.411	2.184	2.067	1.859	1.407	0.893
185				3.196	2.687	2.463	2.231	2.114	1.913	1.454	0.908
190				3.254	2.735	2.516	2.278	2.161	1.968	1.501	0.933
195				3.312	2.784	2.568	2.325	2.209	2.022	1.548	0.987
200				3.370	2.833	2.620	2.371	2.256	2.076	1.595	1.040
205				3.429	2.882	2.673	2.418	2.304	2.130	1.642	1.093
210				3.487	2.931	2.725	2.465	2.351	2.184	1.689	1.147
215				3.545	2.979	2.778	2.512	2.398	2.238	1.748	1.200
220				3.603	3.028	2.830	2.559	2.446	2.292	1.823	1.254
225				3.661	3.077	2.882	2.606	2.493	2.346	1.898	1.307
230				3.720	3.126	2.935	2.652	2.540	2.401	1.973	1.361
235				3.778	3.175	2.987	2.699	2.588	2.455	2.048	1.414
240				3.836	3.224	3.040	2.746	2.635	2.509	2.122	1.467
245					3.272	3.092	2.793	2.682	2.563	2.197	1.521
250					3.321	3.145	2.840	2.730	2.617	2.272	1.574
255					3.370	3.197	2.886	2.777	2.671	2.347	1.628
260					3.419	3.249	2.933	2.824	2.725	2.422	1.681
265					3.468	3.302	2.980	2.872	2.779	2.497	1.762
270					3.516	3.354	3.027	2.919	2.833	2.571	1.891
275					3.565	3.407	3.074	2.967	2.888	2.646	2.019
280					3.614	3.459	3.120	3.014	2.942	2.721	2.148
285					3.663	3.512	3.167	3.061	2.996	2.796	2.276
290					3.712	3.564	3.214	3.109	3.050	2.871	2.405
295					3.760	3.616	3.261	3.156	3.104	2.945	2.534
300					3.809	3.669	3.308	3.203	3.158	3.020	2.662
305					3.858	3.721	3.354	3.251	3.212	3.095	2.791
310						3.774	3.401	3.298	3.266	3.170	2.919
315						3.826	3.448	3.345	3.321	3.245	3.048
320							3.495	3.393	3.375	3.319	3.176
325							3.542	3.440	3.429	3.394	3.305
330							3.588	3.487	3.483	3.469	3.433

Thickness is in mm and is intumescent only. Beams with concrete slabs.

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Table 9: Protection to I-Section Columns
Fire Resistance Period: 15 minutes

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
30	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
35	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
40	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
45	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
50	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
55	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
60	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
65	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
70	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
75	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
80	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
85	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
90	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
95	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
100	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
105	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
110	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
115	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
120	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
125	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
130	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
135	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
140	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
145	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
150	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
155	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
160	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
165	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
170	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
175	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
180	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
185	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
190	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
195	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
200	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
205	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
210	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
215	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
220	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
225	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
230	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
235	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
240	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
245	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
250	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
255	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
260	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
265	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
270	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
275	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
280	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
285	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
290	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
295	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
300	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
305	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
310	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
315	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
320	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
325	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
330	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
335	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
340	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463

Thickness is in mm and is intumescent only. Table also applies to 4-sided I-section beams.

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**Table 10: Protection to I-Section Columns
Fire Resistance Period: 30 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
30	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
35	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
40	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
45	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
50	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
55	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
60	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
65	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
70	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
75	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
80	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
85	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
90	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
95	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
100	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
105	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
110	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
115	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
120	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
125	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
130	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
135	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
140	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
145	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
150	0.475	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
155	0.488	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
160	0.501	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
165	0.514	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
170	0.527	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
175	0.540	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
180	0.553	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
185	0.566	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
190	0.579	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
195	0.592	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
200	0.604	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
205	0.617	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
210	0.630	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
215	0.643	0.470	0.463	0.463	0.463	0.463	0.463	0.463	0.463
220	0.656	0.480	0.463	0.463	0.463	0.463	0.463	0.463	0.463
225	0.669	0.491	0.463	0.463	0.463	0.463	0.463	0.463	0.463
230	0.682	0.501	0.463	0.463	0.463	0.463	0.463	0.463	0.463
235	0.695	0.512	0.463	0.463	0.463	0.463	0.463	0.463	0.463
240	0.708	0.522	0.463	0.463	0.463	0.463	0.463	0.463	0.463
245	0.721	0.532	0.463	0.463	0.463	0.463	0.463	0.463	0.463
250	0.734	0.543	0.463	0.463	0.463	0.463	0.463	0.463	0.463
255	0.747	0.553	0.463	0.463	0.463	0.463	0.463	0.463	0.463
260	0.760	0.563	0.464	0.463	0.463	0.463	0.463	0.463	0.463
265	0.773	0.574	0.474	0.463	0.463	0.463	0.463	0.463	0.463
270	0.786	0.584	0.485	0.463	0.463	0.463	0.463	0.463	0.463
275	0.799	0.595	0.495	0.463	0.463	0.463	0.463	0.463	0.463
280	0.812	0.605	0.506	0.463	0.463	0.463	0.463	0.463	0.463
285	0.825	0.615	0.516	0.463	0.463	0.463	0.463	0.463	0.463
290	0.838	0.626	0.527	0.463	0.463	0.463	0.463	0.463	0.463
295	0.851	0.636	0.538	0.463	0.463	0.463	0.463	0.463	0.463
300	0.864	0.646	0.548	0.463	0.463	0.463	0.463	0.463	0.463
305	0.877	0.657	0.559	0.463	0.463	0.463	0.463	0.463	0.463
310	0.890	0.667	0.569	0.468	0.463	0.463	0.463	0.463	0.463
315	0.903	0.678	0.580	0.476	0.463	0.463	0.463	0.463	0.463
320	0.916	0.688	0.590	0.483	0.463	0.463	0.463	0.463	0.463
325	0.929	0.698	0.601	0.490	0.463	0.463	0.463	0.463	0.463
330	0.942	0.709	0.611	0.497	0.463	0.463	0.463	0.463	0.463
335	0.955	0.719	0.622	0.504	0.463	0.463	0.463	0.463	0.463
340	0.968	0.729	0.632	0.511	0.463	0.463	0.463	0.463	0.463

Thickness is in mm and is intumescent only. Table also applies to 4-sided I-section beams.

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**Table 11: Protection to I-Section Columns
Fire Resistance Period: 45 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
30	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
35	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
40	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
45	0.482	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
50	0.509	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
55	0.537	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
60	0.565	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
65	0.593	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
70	0.621	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
75	0.648	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
80	0.676	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
85	0.704	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
90	0.732	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
95	0.759	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
100	0.787	0.466	0.463	0.463	0.463	0.463	0.463	0.463	0.463
105	0.815	0.487	0.463	0.463	0.463	0.463	0.463	0.463	0.463
110	0.843	0.508	0.463	0.463	0.463	0.463	0.463	0.463	0.463
115	0.871	0.529	0.463	0.463	0.463	0.463	0.463	0.463	0.463
120	0.898	0.550	0.463	0.463	0.463	0.463	0.463	0.463	0.463
125	0.926	0.571	0.463	0.463	0.463	0.463	0.463	0.463	0.463
130	0.954	0.592	0.463	0.463	0.463	0.463	0.463	0.463	0.463
135	0.982	0.613	0.463	0.463	0.463	0.463	0.463	0.463	0.463
140	1.009	0.634	0.470	0.463	0.463	0.463	0.463	0.463	0.463
145	1.037	0.655	0.487	0.463	0.463	0.463	0.463	0.463	0.463
150	1.065	0.677	0.505	0.463	0.463	0.463	0.463	0.463	0.463
155	1.093	0.698	0.522	0.463	0.463	0.463	0.463	0.463	0.463
160	1.121	0.719	0.539	0.463	0.463	0.463	0.463	0.463	0.463
165	1.148	0.740	0.557	0.463	0.463	0.463	0.463	0.463	0.463
170	1.176	0.761	0.574	0.463	0.463	0.463	0.463	0.463	0.463
175	1.204	0.782	0.592	0.471	0.463	0.463	0.463	0.463	0.463
180	1.232	0.803	0.609	0.482	0.463	0.463	0.463	0.463	0.463
185	1.259	0.824	0.626	0.493	0.463	0.463	0.463	0.463	0.463
190	1.287	0.845	0.644	0.504	0.463	0.463	0.463	0.463	0.463
195	1.315	0.866	0.661	0.516	0.463	0.463	0.463	0.463	0.463
200	1.364	0.887	0.679	0.527	0.463	0.463	0.463	0.463	0.463
205	1.420	0.908	0.696	0.538	0.463	0.463	0.463	0.463	0.463
210	1.475	0.929	0.713	0.549	0.463	0.463	0.463	0.463	0.463
215	1.530	0.950	0.731	0.560	0.463	0.463	0.463	0.463	0.463
220	1.586	0.971	0.748	0.571	0.463	0.463	0.463	0.463	0.463
225	1.641	0.992	0.766	0.583	0.463	0.463	0.463	0.463	0.463
230	1.697	1.013	0.783	0.594	0.465	0.463	0.463	0.463	0.463
235	1.752	1.034	0.800	0.605	0.479	0.463	0.463	0.463	0.463
240	1.807	1.056	0.818	0.616	0.492	0.463	0.463	0.463	0.463
245	1.863	1.077	0.835	0.627	0.505	0.463	0.463	0.463	0.463
250	1.918	1.098	0.853	0.638	0.518	0.463	0.463	0.463	0.463
255	1.973	1.119	0.870	0.650	0.531	0.463	0.463	0.463	0.463
260	2.029	1.140	0.887	0.661	0.544	0.472	0.463	0.463	0.463
265	2.084	1.161	0.905	0.672	0.557	0.485	0.463	0.463	0.463
270	2.139	1.182	0.922	0.683	0.571	0.498	0.463	0.463	0.463
275	2.195	1.203	0.940	0.694	0.584	0.511	0.463	0.463	0.463
280	2.250	1.224	0.957	0.705	0.597	0.524	0.463	0.463	0.463
285	2.305	1.245	0.974	0.717	0.610	0.537	0.463	0.463	0.463
290	2.361	1.266	0.992	0.728	0.623	0.550	0.463	0.463	0.463
295	2.416	1.287	1.009	0.739	0.636	0.563	0.463	0.463	0.463
300	2.471	1.308	1.027	0.750	0.649	0.575	0.464	0.463	0.463
305	2.510	1.339	1.044	0.761	0.663	0.588	0.472	0.463	0.463
310	2.523	1.384	1.061	0.772	0.676	0.601	0.481	0.463	0.463
315	2.536	1.429	1.079	0.784	0.689	0.614	0.489	0.463	0.463
320	2.549	1.473	1.096	0.795	0.702	0.627	0.497	0.463	0.463
325	2.562	1.518	1.114	0.806	0.715	0.640	0.505	0.463	0.463
330	2.575	1.563	1.131	0.817	0.728	0.653	0.513	0.463	0.463
335	2.588	1.608	1.148	0.828	0.741	0.666	0.521	0.463	0.463
340	2.601	1.653	1.166	0.839	0.755	0.679	0.529	0.463	0.463

Thickness is in mm and is intumescent only. Table also applies to 4-sided I-section beams.

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**Table 12: Protection to I-Section Columns
Fire Resistance Period: 60 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
30	0.729	0.522	0.463	0.463	0.463	0.463	0.463	0.463	0.463
35	0.787	0.555	0.463	0.463	0.463	0.463	0.463	0.463	0.463
40	0.844	0.589	0.463	0.463	0.463	0.463	0.463	0.463	0.463
45	0.902	0.622	0.463	0.463	0.463	0.463	0.463	0.463	0.463
50	0.960	0.656	0.463	0.463	0.463	0.463	0.463	0.463	0.463
55	1.017	0.689	0.463	0.463	0.463	0.463	0.463	0.463	0.463
60	1.075	0.723	0.478	0.463	0.463	0.463	0.463	0.463	0.463
65	1.133	0.756	0.503	0.463	0.463	0.463	0.463	0.463	0.463
70	1.191	0.790	0.528	0.463	0.463	0.463	0.463	0.463	0.463
75	1.248	0.823	0.553	0.463	0.463	0.463	0.463	0.463	0.463
80	1.306	0.857	0.578	0.463	0.463	0.463	0.463	0.463	0.463
85	1.355	0.890	0.604	0.463	0.463	0.463	0.463	0.463	0.463
90	1.402	0.924	0.629	0.463	0.463	0.463	0.463	0.463	0.463
95	1.449	0.957	0.654	0.463	0.463	0.463	0.463	0.463	0.463
100	1.495	0.991	0.679	0.474	0.463	0.463	0.463	0.463	0.463
105	1.542	1.024	0.704	0.494	0.463	0.463	0.463	0.463	0.463
110	1.588	1.058	0.730	0.514	0.463	0.463	0.463	0.463	0.463
115	1.635	1.091	0.755	0.534	0.463	0.463	0.463	0.463	0.463
120	1.682	1.125	0.780	0.553	0.463	0.463	0.463	0.463	0.463
125	1.728	1.158	0.805	0.573	0.463	0.463	0.463	0.463	0.463
130	1.775	1.192	0.830	0.593	0.473	0.463	0.463	0.463	0.463
135	1.822	1.225	0.856	0.613	0.490	0.463	0.463	0.463	0.463
140	1.868	1.259	0.881	0.633	0.508	0.463	0.463	0.463	0.463
145	1.915	1.292	0.906	0.653	0.526	0.463	0.463	0.463	0.463
150	1.961	1.328	0.931	0.673	0.543	0.463	0.463	0.463	0.463
155	2.008	1.374	0.957	0.693	0.561	0.463	0.463	0.463	0.463
160	2.055	1.420	0.982	0.713	0.579	0.467	0.463	0.463	0.463
165	2.101	1.466	1.007	0.733	0.596	0.483	0.463	0.463	0.463
170	2.148	1.512	1.032	0.753	0.614	0.500	0.463	0.463	0.463
175	2.194	1.558	1.057	0.773	0.631	0.517	0.463	0.463	0.463
180	2.241	1.604	1.083	0.793	0.649	0.533	0.463	0.463	0.463
185	2.288	1.650	1.108	0.813	0.667	0.550	0.463	0.463	0.463
190	2.334	1.696	1.133	0.833	0.684	0.566	0.463	0.463	0.463
195	2.381	1.742	1.158	0.852	0.702	0.583	0.463	0.463	0.463
200	2.427	1.788	1.183	0.872	0.720	0.600	0.464	0.463	0.463
205	2.474	1.835	1.209	0.892	0.737	0.616	0.477	0.463	0.463
210	2.513	1.881	1.234	0.912	0.755	0.633	0.489	0.463	0.463
215	2.536	1.927	1.259	0.932	0.773	0.650	0.501	0.463	0.463
220	2.560	1.973	1.284	0.952	0.790	0.666	0.513	0.463	0.463
225	2.584	2.019	1.310	0.972	0.808	0.683	0.525	0.463	0.463
230	2.607	2.065	1.348	0.992	0.826	0.700	0.537	0.463	0.463
235	2.631	2.111	1.399	1.012	0.843	0.716	0.549	0.463	0.463
240	2.654	2.157	1.449	1.032	0.861	0.733	0.561	0.463	0.463
245	2.678	2.203	1.500	1.052	0.879	0.750	0.573	0.467	0.463
250	2.701	2.249	1.550	1.072	0.896	0.766	0.585	0.477	0.463
255	2.725	2.295	1.600	1.092	0.914	0.783	0.597	0.487	0.463
260	2.748	2.341	1.651	1.112	0.931	0.799	0.609	0.497	0.463
265	2.772	2.387	1.701	1.132	0.949	0.816	0.621	0.507	0.463
270	2.796	2.433	1.751	1.152	0.967	0.833	0.633	0.517	0.472
275	2.819	2.479	1.802	1.171	0.984	0.849	0.645	0.528	0.481
280	2.843	2.513	1.852	1.191	1.002	0.866	0.657	0.538	0.491
285	2.866	2.530	1.902	1.211	1.020	0.883	0.669	0.548	0.501
290	2.890	2.547	1.953	1.231	1.037	0.899	0.681	0.558	0.510
295	2.913	2.564	2.003	1.251	1.055	0.916	0.693	0.568	0.520
300	2.937	2.581	2.054	1.271	1.073	0.933	0.705	0.578	0.529
305	2.960	2.599	2.104	1.291	1.090	0.949	0.717	0.588	0.539
310	2.984	2.616	2.154	1.311	1.108	0.966	0.729	0.598	0.548
315	3.008	2.633	2.205	1.345	1.126	0.983	0.742	0.609	0.558
320	3.031	2.650	2.255	1.394	1.143	0.999	0.754	0.619	0.567
325	3.055	2.667	2.305	1.442	1.161	1.016	0.766	0.629	0.577
330	3.078	2.684	2.356	1.490	1.179	1.033	0.778	0.639	0.587
335	3.102	2.702	2.406	1.539	1.196	1.049	0.790	0.649	0.596
340	3.125	2.719	2.456	1.587	1.214	1.066	0.802	0.659	0.606

Thickness is in mm and is intumescent only. Table also applies to 4-sided I-section beams.

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**Table 13: Protection to I-Section Columns
Fire Resistance Period: 75 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
30	1.037	0.759	0.589	0.463	0.463	0.463	0.463	0.463	0.463
35	1.142	0.825	0.630	0.475	0.463	0.463	0.463	0.463	0.463
40	1.248	0.891	0.670	0.504	0.463	0.463	0.463	0.463	0.463
45	1.338	0.957	0.711	0.532	0.463	0.463	0.463	0.463	0.463
50	1.392	1.024	0.751	0.560	0.463	0.463	0.463	0.463	0.463
55	1.447	1.090	0.792	0.588	0.463	0.463	0.463	0.463	0.463
60	1.502	1.156	0.832	0.616	0.463	0.463	0.463	0.463	0.463
65	1.557	1.222	0.872	0.644	0.475	0.463	0.463	0.463	0.463
70	1.612	1.288	0.913	0.673	0.499	0.463	0.463	0.463	0.463
75	1.666	1.348	0.953	0.701	0.522	0.463	0.463	0.463	0.463
80	1.721	1.400	0.994	0.729	0.546	0.463	0.463	0.463	0.463
85	1.776	1.453	1.034	0.757	0.570	0.463	0.463	0.463	0.463
90	1.831	1.505	1.075	0.785	0.593	0.463	0.463	0.463	0.463
95	1.886	1.558	1.115	0.813	0.617	0.478	0.463	0.463	0.463
100	1.940	1.610	1.155	0.841	0.641	0.495	0.463	0.463	0.463
105	1.995	1.663	1.196	0.870	0.664	0.513	0.463	0.463	0.463
110	2.050	1.715	1.236	0.898	0.688	0.531	0.463	0.463	0.463
115	2.105	1.768	1.277	0.926	0.712	0.548	0.463	0.463	0.463
120	2.160	1.820	1.317	0.954	0.735	0.566	0.463	0.463	0.463
125	2.214	1.873	1.366	0.982	0.759	0.584	0.463	0.463	0.463
130	2.269	1.925	1.417	1.010	0.782	0.602	0.478	0.463	0.463
135	2.324	1.978	1.467	1.038	0.806	0.619	0.493	0.463	0.463
140	2.379	2.030	1.517	1.067	0.830	0.637	0.509	0.463	0.463
145	2.434	2.083	1.568	1.095	0.853	0.655	0.525	0.463	0.463
150	2.488	2.135	1.618	1.123	0.877	0.672	0.540	0.463	0.463
155	2.534	2.188	1.668	1.151	0.901	0.690	0.556	0.463	0.463
160	2.577	2.240	1.719	1.179	0.924	0.708	0.572	0.463	0.463
165	2.619	2.293	1.769	1.207	0.948	0.725	0.587	0.467	0.463
170	2.661	2.345	1.819	1.236	0.972	0.743	0.603	0.479	0.463
175	2.703	2.398	1.870	1.264	0.995	0.761	0.618	0.492	0.463
180	2.746	2.451	1.920	1.292	1.019	0.778	0.634	0.505	0.463
185	2.788	2.503	1.970	1.320	1.042	0.796	0.650	0.518	0.463
190	2.830	2.533	2.021	1.369	1.066	0.814	0.665	0.530	0.468
195	2.872	2.562	2.071	1.420	1.090	0.832	0.681	0.543	0.481
200	2.915	2.590	2.121	1.470	1.113	0.849	0.696	0.556	0.495
205	2.957	2.619	2.172	1.520	1.137	0.867	0.712	0.569	0.509
210	2.999	2.648	2.222	1.570	1.161	0.885	0.728	0.581	0.523
215	3.041	2.677	2.273	1.621	1.184	0.902	0.743	0.594	0.536
220	3.084	2.706	2.323	1.671	1.208	0.920	0.759	0.607	0.550
225	3.126	2.734	2.373	1.721	1.232	0.938	0.775	0.620	0.564
230	3.168	2.763	2.424	1.771	1.255	0.955	0.790	0.632	0.578
235	3.211	2.792	2.474	1.821	1.279	0.973	0.806	0.645	0.591
240	3.253	2.821	2.513	1.872	1.303	0.991	0.821	0.658	0.605
245	3.295	2.850	2.533	1.922	1.331	1.008	0.837	0.671	0.619
250	3.337	2.878	2.554	1.972	1.378	1.026	0.853	0.683	0.633
255	3.380	2.907	2.574	2.022	1.425	1.044	0.868	0.696	0.646
260	3.422	2.936	2.594	2.073	1.472	1.062	0.884	0.709	0.660
265	3.464	2.965	2.615	2.123	1.519	1.079	0.899	0.722	0.674
270	3.506	2.994	2.635	2.173	1.565	1.097	0.915	0.734	0.688
275	3.549	3.022	2.655	2.223	1.612	1.115	0.931	0.747	0.702
280	3.591	3.051	2.676	2.274	1.659	1.132	0.946	0.760	0.715
285	3.633	3.080	2.696	2.324	1.706	1.150	0.962	0.773	0.729
290	3.675	3.109	2.716	2.374	1.753	1.168	0.977	0.785	0.743
295	3.718	3.138	2.737	2.424	1.799	1.185	0.993	0.798	0.757
300	3.760	3.167	2.757	2.475	1.846	1.203	1.009	0.811	0.770
305	3.802	3.195	2.778	2.516	1.893	1.221	1.024	0.824	0.784
310	3.844	3.224	2.798	2.543	1.940	1.238	1.040	0.836	0.798
315	3.887	3.253	2.818	2.570	1.987	1.256	1.056	0.849	0.812
320	3.929	3.282	2.839	2.597	2.033	1.274	1.071	0.862	0.825
325		3.311	2.859	2.624	2.080	1.292	1.087	0.875	0.839
330		3.339	2.879	2.651	2.127	1.309	1.102	0.887	0.853
335		3.368	2.900	2.678	2.174	1.351	1.118	0.900	0.867
340		3.397	2.920	2.705	2.221	1.439	1.134	0.913	0.880

Thickness is in mm and is intumescent only. Table also applies to 4-sided I-section beams up to a maximum protection thickness of 3.871mm.

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Table 14: Protection to I-Section Columns
Fire Resistance Period: 90 minutes

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
30	1.342	1.017	0.677	0.642	0.504	0.463	0.463	0.463	0.463
35	1.479	1.124	0.763	0.693	0.535	0.463	0.463	0.463	0.463
40	1.617	1.230	0.849	0.743	0.567	0.463	0.463	0.463	0.463
45	1.754	1.331	0.934	0.794	0.599	0.468	0.463	0.463	0.463
50	1.892	1.397	1.020	0.845	0.631	0.495	0.463	0.463	0.463
55	2.029	1.464	1.106	0.895	0.662	0.521	0.463	0.463	0.463
60	2.167	1.530	1.191	0.946	0.694	0.548	0.463	0.463	0.463
65	2.304	1.597	1.277	0.996	0.726	0.575	0.463	0.463	0.463
70	2.442	1.663	1.348	1.047	0.758	0.602	0.463	0.463	0.463
75	2.579	1.730	1.405	1.098	0.789	0.629	0.463	0.463	0.463
80	2.717	1.796	1.461	1.148	0.821	0.656	0.468	0.463	0.463
85	2.854	1.863	1.518	1.199	0.853	0.682	0.488	0.463	0.463
90	2.992	1.929	1.574	1.249	0.885	0.709	0.508	0.463	0.463
95	3.129	1.996	1.631	1.300	0.916	0.736	0.528	0.463	0.463
100	3.267	2.062	1.687	1.350	0.948	0.763	0.548	0.463	0.463
105	3.404	2.128	1.744	1.399	0.980	0.790	0.567	0.463	0.463
110	3.541	2.195	1.800	1.448	1.012	0.816	0.587	0.479	0.463
115	3.679	2.261	1.857	1.497	1.043	0.843	0.607	0.496	0.463
120	3.816	2.328	1.913	1.547	1.075	0.870	0.627	0.512	0.463
125		2.394	1.970	1.596	1.107	0.897	0.647	0.528	0.463
130		2.461	2.026	1.645	1.139	0.924	0.667	0.544	0.463
135		2.520	2.082	1.694	1.170	0.951	0.687	0.560	0.472
140		2.566	2.139	1.743	1.202	0.977	0.707	0.576	0.488
145		2.612	2.195	1.793	1.234	1.004	0.727	0.593	0.504
150		2.657	2.252	1.842	1.266	1.031	0.747	0.609	0.520
155		2.703	2.308	1.891	1.297	1.058	0.767	0.625	0.536
160		2.749	2.365	1.940	1.331	1.085	0.787	0.641	0.552
165		2.795	2.421	1.989	1.372	1.111	0.807	0.657	0.568
170		2.840	2.478	2.039	1.413	1.138	0.826	0.673	0.584
175		2.886	2.522	2.088	1.454	1.165	0.846	0.689	0.600
180		2.932	2.555	2.137	1.496	1.192	0.866	0.706	0.616
185		2.978	2.588	2.186	1.537	1.219	0.886	0.722	0.632
190		3.023	2.622	2.235	1.578	1.245	0.906	0.738	0.648
195		3.069	2.655	2.285	1.619	1.272	0.926	0.754	0.664
200		3.115	2.688	2.334	1.660	1.299	0.946	0.770	0.681
205		3.160	2.721	2.383	1.701	1.331	0.966	0.786	0.697
210		3.206	2.754	2.432	1.742	1.386	0.986	0.803	0.713
215		3.252	2.787	2.481	1.783	1.440	1.006	0.819	0.729
220		3.298	2.821	2.522	1.824	1.495	1.026	0.835	0.745
225		3.343	2.854	2.554	1.865	1.549	1.046	0.851	0.761
230		3.389	2.887	2.585	1.906	1.604	1.066	0.867	0.777
235		3.435	2.920	2.617	1.947	1.659	1.085	0.883	0.793
240		3.481	2.953	2.649	1.988	1.713	1.105	0.900	0.809
245		3.526	2.986	2.681	2.029	1.768	1.125	0.916	0.825
250		3.572	3.019	2.713	2.070	1.822	1.145	0.932	0.841
255		3.618	3.053	2.745	2.111	1.877	1.165	0.948	0.857
260		3.663	3.086	2.777	2.152	1.932	1.185	0.964	0.873
265		3.709	3.119	2.809	2.193	1.986	1.205	0.980	0.889
270		3.755	3.152	2.841	2.234	2.041	1.225	0.997	0.905
275		3.801	3.185	2.873	2.275	2.095	1.245	1.013	0.921
280		3.846	3.218	2.904	2.316	2.150	1.265	1.029	0.937
285		3.892	3.252	2.936	2.357	2.205	1.285	1.045	0.953
290			3.285	2.968	2.398	2.259	1.305	1.061	0.969
295			3.318	3.000	2.439	2.314	1.333	1.077	0.985
300			3.351	3.032	2.480	2.368	1.398	1.094	1.001
305			3.384	3.064	2.521	2.423	1.463	1.110	1.017
310			3.417	3.096	2.561	2.478	1.529	1.126	1.033
315			3.450	3.128	2.602	2.517	1.594	1.142	1.049
320			3.484	3.160	2.642	2.542	1.660	1.158	1.065
325			3.517	3.192	2.683	2.567	1.725	1.174	1.081
330			3.550	3.224	2.723	2.592	1.790	1.191	1.097
335			3.583	3.255	2.764	2.617	1.856	1.207	1.113
340			3.616	3.287	2.804	2.642	1.921	1.223	1.129

Thickness is in mm and is intumescent only. Table also applies to 4-sided I-section beams up to a maximum protection thickness of 3.871mm.

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Table 15: Protection to I-Section Columns
Fire Resistance Period: 105 minutes

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
30		1.278	1.032	0.838	0.708	0.565	0.463	0.463	0.463
35		1.451	1.132	0.915	0.748	0.604	0.463	0.463	0.463
40		1.624	1.232	0.992	0.788	0.644	0.465	0.463	0.463
45		1.798	1.329	1.069	0.829	0.684	0.495	0.463	0.463
50		1.971	1.397	1.146	0.869	0.724	0.525	0.463	0.463
55		2.145	1.466	1.223	0.909	0.764	0.556	0.463	0.463
60		2.318	1.535	1.300	0.949	0.804	0.586	0.463	0.463
65		2.492	1.603	1.365	0.989	0.843	0.616	0.463	0.463
70		2.665	1.672	1.426	1.029	0.883	0.646	0.464	0.463
75		2.838	1.741	1.487	1.069	0.923	0.676	0.488	0.463
80		3.012	1.809	1.548	1.109	0.963	0.706	0.512	0.463
85		3.185	1.878	1.609	1.149	1.003	0.737	0.536	0.473
90		3.359	1.947	1.669	1.190	1.042	0.767	0.559	0.492
95		3.532	2.015	1.730	1.230	1.082	0.797	0.583	0.510
100		3.705	2.084	1.791	1.270	1.122	0.827	0.607	0.529
105		3.879	2.153	1.852	1.310	1.162	0.857	0.631	0.547
110			2.221	1.913	1.361	1.202	0.888	0.655	0.566
115			2.290	1.973	1.417	1.241	0.918	0.678	0.585
120			2.359	2.034	1.473	1.281	0.948	0.702	0.603
125			2.427	2.095	1.528	1.321	0.978	0.726	0.622
130			2.496	2.156	1.584	1.371	1.008	0.750	0.641
135			2.565	2.216	1.639	1.421	1.038	0.774	0.659
140			2.633	2.277	1.695	1.470	1.069	0.797	0.678
145			2.702	2.338	1.751	1.520	1.099	0.821	0.697
150			2.771	2.399	1.806	1.570	1.129	0.845	0.715
155			2.839	2.460	1.862	1.620	1.159	0.869	0.734
160			2.908	2.514	1.918	1.670	1.189	0.893	0.753
165			2.977	2.551	1.973	1.719	1.219	0.916	0.771
170			3.045	2.588	2.029	1.769	1.250	0.940	0.790
175			3.114	2.625	2.085	1.819	1.280	0.964	0.808
180			3.183	2.662	2.140	1.869	1.310	0.988	0.827
185			3.252	2.699	2.196	1.918	1.355	1.012	0.846
190			3.320	2.736	2.252	1.968	1.407	1.035	0.864
195			3.389	2.773	2.307	2.018	1.460	1.059	0.883
200			3.458	2.810	2.363	2.068	1.513	1.083	0.902
205			3.526	2.847	2.419	2.118	1.565	1.107	0.920
210			3.595	2.884	2.474	2.167	1.618	1.131	0.939
215			3.664	2.921	2.525	2.217	1.671	1.154	0.958
220			3.732	2.958	2.569	2.267	1.724	1.178	0.976
225			3.801	2.995	2.613	2.317	1.776	1.202	0.995
230			3.870	3.032	2.658	2.367	1.829	1.226	1.013
235			3.938	3.069	2.702	2.416	1.882	1.250	1.032
240				3.106	2.746	2.466	1.934	1.273	1.051
245				3.143	2.790	2.512	1.987	1.297	1.069
250				3.180	2.835	2.543	2.040	1.321	1.088
255				3.217	2.879	2.574	2.093	1.376	1.107
260				3.254	2.923	2.604	2.145	1.432	1.125
265				3.291	2.967	2.635	2.198	1.487	1.144
270				3.328	3.012	2.666	2.251	1.542	1.163
275				3.365	3.056	2.697	2.303	1.597	1.181
280				3.402	3.100	2.728	2.356	1.653	1.200
285				3.439	3.144	2.759	2.409	1.708	1.218
290				3.476	3.189	2.790	2.462	1.763	1.237
295				3.513	3.233	2.821	2.510	1.818	1.256
300				3.550	3.277	2.851	2.539	1.874	1.274
305				3.587	3.321	2.882	2.569	1.929	1.293
310				3.624	3.366	2.913	2.598	1.984	1.312
315				3.661	3.410	2.944	2.627	2.039	1.349
320				3.697	3.454	2.975	2.657	2.095	1.406
325				3.734	3.498	3.006	2.686	2.150	1.463
330				3.771	3.543	3.037	2.715	2.205	1.520
335				3.808	3.587	3.068	2.745	2.260	1.577
340				3.845	3.631	3.099	2.774	2.316	1.634

Thickness is in mm and is intumescent only. Table also applies to 4-sided I-section beams up to a maximum protection thickness of 3.871mm.

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Table 16: Protection to I-Section Columns
Fire Resistance Period: 120 minutes

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:								
	350°C	400°C	450°C	500°C	550°C	600°C	650°C	700°C	750°C
30			2.132	1.044	0.897	0.798	0.595	0.463	0.463
35			2.267	1.154	0.947	0.853	0.640	0.483	0.463
40			2.402	1.265	0.997	0.907	0.686	0.518	0.463
45			2.537	1.365	1.047	0.961	0.731	0.553	0.463
50			2.672	1.456	1.097	1.016	0.777	0.587	0.475
55			2.807	1.547	1.147	1.070	0.822	0.622	0.499
60			2.942	1.637	1.197	1.124	0.868	0.656	0.524
65			3.078	1.728	1.246	1.178	0.913	0.691	0.548
70			3.213	1.819	1.296	1.233	0.958	0.725	0.573
75			3.348	1.909	1.370	1.287	1.004	0.760	0.597
80			3.483	2.000	1.468	1.346	1.049	0.794	0.622
85			3.618	2.091	1.565	1.413	1.095	0.829	0.647
90			3.753	2.182	1.662	1.480	1.140	0.863	0.671
95			3.888	2.272	1.759	1.547	1.186	0.898	0.696
100				2.363	1.857	1.614	1.231	0.932	0.720
105				2.454	1.954	1.680	1.277	0.967	0.745
110				2.544	2.051	1.747	1.322	1.002	0.769
115				2.635	2.148	1.814	1.373	1.036	0.794
120				2.726	2.246	1.881	1.423	1.071	0.819
125				2.816	2.343	1.948	1.473	1.105	0.843
130				2.907	2.440	2.015	1.524	1.140	0.868
135				2.998	2.518	2.082	1.574	1.174	0.892
140				3.088	2.557	2.148	1.625	1.209	0.917
145				3.179	2.596	2.215	1.675	1.243	0.942
150				3.270	2.635	2.282	1.726	1.278	0.966
155				3.360	2.674	2.349	1.776	1.312	0.991
160				3.451	2.713	2.416	1.826	1.355	1.015
165				3.542	2.752	2.483	1.877	1.401	1.040
170				3.632	2.791	2.528	1.927	1.447	1.064
175				3.723	2.830	2.562	1.978	1.492	1.089
180				3.814	2.869	2.596	2.028	1.538	1.114
185				3.905	2.908	2.630	2.079	1.584	1.138
190					2.947	2.665	2.129	1.630	1.163
195					2.986	2.699	2.179	1.675	1.187
200					3.024	2.733	2.230	1.721	1.212
205					3.063	2.767	2.280	1.767	1.236
210					3.102	2.802	2.331	1.813	1.261
215					3.141	2.836	2.381	1.858	1.286
220					3.180	2.870	2.432	1.904	1.310
225					3.219	2.904	2.482	1.950	1.351
230					3.258	2.938	2.525	1.995	1.404
235					3.297	2.973	2.563	2.041	1.457
240					3.336	3.007	2.600	2.087	1.510
245					3.375	3.041	2.637	2.133	1.564
250					3.414	3.075	2.674	2.178	1.617
255					3.453	3.110	2.712	2.224	1.670
260					3.492	3.144	2.749	2.270	1.724
265					3.531	3.178	2.786	2.316	1.777
270					3.570	3.212	2.824	2.361	1.830
275					3.609	3.246	2.861	2.407	1.883
280					3.648	3.281	2.898	2.453	1.937
285					3.687	3.315	2.935	2.498	1.990
290					3.726	3.349	2.973	2.551	2.043
295					3.765	3.383	3.010	2.605	2.097
300					3.804	3.417	3.047	2.659	2.150
305					3.843	3.452	3.085	2.713	2.203
310					3.882	3.486	3.122	2.767	2.256
315					3.921	3.520	3.159	2.821	2.310
320						3.554	3.196	2.875	2.363
325						3.589	3.234	2.929	2.416
330						3.623	3.271	2.983	2.469
335						3.657	3.308	3.037	2.523
340						3.691	3.346	3.091	2.576

Thickness is in mm and is intumescent only. Table also applies to 4-sided I-section beams up to a maximum protection thickness of 3.871mm.

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**Table 17: Protection to Hollow Beams
Fire Resistance Period: 15 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
45	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
50	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
55	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
60	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
65	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
70	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
75	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
80	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
85	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
90	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
95	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
100	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
105	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
110	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
115	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
120	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
125	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
130	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
135	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
140	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
145	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
150	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
155	0.197	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
160	0.220	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
165	0.243	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
170	0.267	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
175	0.290	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
180	0.313	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
185	0.336	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
190	0.359	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
195	0.383	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
200	0.406	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
205	0.429	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
210	0.452	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
215	0.475	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
220	0.499	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
225	0.522	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
230	0.545	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
235	0.568	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
240	0.591	0.192	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
245	0.615	0.214	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
250	0.638	0.235	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
255	0.661	0.257	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182

Thickness is in mm and is intumescent only. Results apply to rectangular hollow beams limited to a maximum protection thickness of 5.426mm.

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**Table 18: Protection to Hollow Beams
Fire Resistance Period: 30 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
45	0.387	0.216	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
50	0.424	0.249	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
55	0.461	0.282	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
60	0.498	0.315	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
65	0.535	0.349	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
70	0.572	0.382	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
75	0.609	0.415	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
80	0.646	0.448	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182
85	0.684	0.481	0.200	0.182	0.182	0.182	0.182	0.182	0.182	0.182
90	0.721	0.514	0.232	0.182	0.182	0.182	0.182	0.182	0.182	0.182
95	0.758	0.547	0.264	0.182	0.182	0.182	0.182	0.182	0.182	0.182
100	0.795	0.580	0.296	0.182	0.182	0.182	0.182	0.182	0.182	0.182
105	0.832	0.613	0.328	0.182	0.182	0.182	0.182	0.182	0.182	0.182
110	0.869	0.646	0.359	0.182	0.182	0.182	0.182	0.182	0.182	0.182
115	0.906	0.679	0.391	0.182	0.182	0.182	0.182	0.182	0.182	0.182
120	0.943	0.712	0.423	0.182	0.182	0.182	0.182	0.182	0.182	0.182
125	0.981	0.745	0.455	0.189	0.182	0.182	0.182	0.182	0.182	0.182
130	1.018	0.778	0.487	0.220	0.182	0.182	0.182	0.182	0.182	0.182
135	1.055	0.811	0.519	0.250	0.182	0.182	0.182	0.182	0.182	0.182
140	1.092	0.844	0.550	0.280	0.182	0.182	0.182	0.182	0.182	0.182
145	1.129	0.877	0.582	0.310	0.182	0.182	0.182	0.182	0.182	0.182
150	1.166	0.911	0.614	0.341	0.182	0.182	0.182	0.182	0.182	0.182
155	1.203	0.944	0.646	0.371	0.182	0.182	0.182	0.182	0.182	0.182
160	1.240	0.977	0.678	0.401	0.186	0.182	0.182	0.182	0.182	0.182
165	1.277	1.010	0.710	0.431	0.213	0.182	0.182	0.182	0.182	0.182
170	1.315	1.043	0.741	0.461	0.241	0.182	0.182	0.182	0.182	0.182
175	1.352	1.076	0.773	0.492	0.268	0.182	0.182	0.182	0.182	0.182
180	1.389	1.109	0.805	0.522	0.296	0.182	0.182	0.182	0.182	0.182
185	1.426	1.142	0.837	0.552	0.324	0.182	0.182	0.182	0.182	0.182
190	1.463	1.175	0.869	0.582	0.351	0.182	0.182	0.182	0.182	0.182
195	1.500	1.208	0.901	0.613	0.379	0.182	0.182	0.182	0.182	0.182
200	1.537	1.241	0.932	0.643	0.406	0.182	0.182	0.182	0.182	0.182
205	1.574	1.274	0.964	0.673	0.434	0.182	0.182	0.182	0.182	0.182
210	1.611	1.307	0.996	0.703	0.462	0.182	0.182	0.182	0.182	0.182
215	1.649	1.340	1.028	0.734	0.489	0.182	0.182	0.182	0.182	0.182
220	1.686	1.373	1.060	0.764	0.517	0.204	0.182	0.182	0.182	0.182
225	1.723	1.406	1.092	0.794	0.544	0.230	0.182	0.182	0.182	0.182
230	1.760	1.439	1.123	0.824	0.572	0.255	0.182	0.182	0.182	0.182
235	1.797	1.473	1.155	0.855	0.600	0.281	0.182	0.182	0.182	0.182
240	1.834	1.506	1.187	0.885	0.627	0.307	0.193	0.182	0.182	0.182
245	1.871	1.539	1.219	0.915	0.655	0.332	0.217	0.182	0.182	0.182
250	1.908	1.572	1.251	0.945	0.683	0.358	0.241	0.182	0.182	0.182
255	1.945	1.605	1.282	0.976	0.710	0.384	0.265	0.182	0.182	0.182

Thickness is in mm and is intumescent only. Results apply to rectangular hollow beams limited to a maximum protection thickness of 5.426mm.

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**Table 19: Protection to Hollow Beams
Fire Resistance Period: 45 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
45	0.823	0.593	0.423	0.294	0.191	0.182	0.182	0.182	0.182	0.182
50	0.869	0.637	0.463	0.332	0.225	0.182	0.182	0.182	0.182	0.182
55	0.915	0.680	0.504	0.369	0.259	0.182	0.182	0.182	0.182	0.182
60	0.961	0.724	0.544	0.407	0.294	0.182	0.182	0.182	0.182	0.182
65	1.007	0.768	0.585	0.444	0.328	0.182	0.182	0.182	0.182	0.182
70	1.053	0.811	0.626	0.481	0.362	0.194	0.182	0.182	0.182	0.182
75	1.099	0.855	0.666	0.519	0.396	0.226	0.182	0.182	0.182	0.182
80	1.145	0.898	0.707	0.556	0.430	0.258	0.182	0.182	0.182	0.182
85	1.191	0.942	0.747	0.593	0.465	0.290	0.182	0.182	0.182	0.182
90	1.237	0.985	0.788	0.631	0.499	0.322	0.182	0.182	0.182	0.182
95	1.283	1.029	0.828	0.668	0.533	0.354	0.210	0.182	0.182	0.182
100	1.329	1.072	0.869	0.706	0.567	0.386	0.242	0.182	0.182	0.182
105	1.375	1.116	0.909	0.743	0.602	0.418	0.274	0.182	0.182	0.182
110	1.421	1.160	0.950	0.780	0.636	0.450	0.307	0.182	0.182	0.182
115	1.467	1.203	0.991	0.818	0.670	0.482	0.339	0.183	0.182	0.182
120	1.513	1.247	1.031	0.855	0.704	0.514	0.371	0.214	0.182	0.182
125	1.559	1.290	1.072	0.892	0.738	0.546	0.404	0.245	0.182	0.182
130	1.605	1.334	1.112	0.930	0.773	0.578	0.436	0.276	0.182	0.182
135	1.651	1.377	1.153	0.967	0.807	0.610	0.468	0.307	0.182	0.182
140	1.697	1.421	1.193	1.005	0.841	0.642	0.501	0.338	0.182	0.182
145	1.743	1.464	1.234	1.042	0.875	0.674	0.533	0.370	0.182	0.182
150	1.789	1.508	1.274	1.079	0.909	0.706	0.565	0.401	0.182	0.182
155	1.835	1.552	1.315	1.117	0.944	0.738	0.597	0.432	0.186	0.182
160	1.881	1.595	1.356	1.154	0.978	0.770	0.630	0.463	0.214	0.182
165	1.927	1.639	1.396	1.191	1.012	0.802	0.662	0.494	0.242	0.182
170	1.973	1.682	1.437	1.229	1.046	0.834	0.694	0.525	0.269	0.182
175	2.043	1.726	1.477	1.266	1.080	0.866	0.727	0.557	0.297	0.182
180	2.144	1.769	1.518	1.304	1.115	0.898	0.759	0.588	0.324	0.182
185	2.246	1.813	1.558	1.341	1.149	0.930	0.791	0.619	0.352	0.182
190	2.348	1.856	1.599	1.378	1.183	0.962	0.824	0.650	0.380	0.182
195	2.450	1.900	1.639	1.416	1.217	0.994	0.856	0.681	0.407	0.182
200	2.552	1.944	1.680	1.453	1.251	1.027	0.888	0.712	0.435	0.182
205	2.653	1.987	1.721	1.490	1.286	1.059	0.920	0.744	0.463	0.182
210	2.755	2.070	1.761	1.528	1.320	1.091	0.953	0.775	0.490	0.182
215	2.857	2.171	1.802	1.565	1.354	1.123	0.985	0.806	0.518	0.204
220	2.959	2.271	1.842	1.603	1.388	1.155	1.017	0.837	0.545	0.227
225	3.061	2.371	1.883	1.640	1.423	1.187	1.050	0.868	0.573	0.250
230	3.162	2.471	1.923	1.677	1.457	1.219	1.082	0.899	0.601	0.273
235	3.264	2.572	1.964	1.715	1.491	1.251	1.114	0.931	0.628	0.296
240	3.366	2.672	2.011	1.752	1.525	1.283	1.147	0.962	0.656	0.319
245	3.468	2.772	2.106	1.789	1.559	1.315	1.179	0.993	0.683	0.342
250	3.528	2.872	2.201	1.827	1.594	1.347	1.211	1.024	0.711	0.365
255	3.588	2.972	2.296	1.864	1.628	1.379	1.243	1.055	0.739	0.388

Thickness is in mm and is intumescent only. Results apply to rectangular hollow beams limited to a maximum protection thickness of 5.426mm.

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Table 20: Protection to Hollow Beams
Fire Resistance Period: 60 minutes

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
45	1.273	0.978	0.767	0.605	0.473	0.366	0.324	0.263	0.182	0.182
50	1.316	1.025	0.813	0.650	0.515	0.405	0.362	0.299	0.184	0.182
55	1.359	1.072	0.860	0.694	0.557	0.444	0.399	0.335	0.216	0.182
60	1.403	1.119	0.907	0.739	0.599	0.483	0.437	0.370	0.248	0.182
65	1.446	1.166	0.953	0.784	0.641	0.522	0.475	0.406	0.280	0.182
70	1.489	1.214	1.000	0.828	0.683	0.561	0.512	0.441	0.312	0.182
75	1.533	1.261	1.046	0.873	0.726	0.600	0.550	0.477	0.344	0.182
80	1.576	1.308	1.093	0.917	0.768	0.639	0.588	0.513	0.376	0.182
85	1.619	1.355	1.139	0.962	0.810	0.678	0.625	0.548	0.408	0.182
90	1.663	1.402	1.186	1.006	0.852	0.717	0.663	0.584	0.440	0.182
95	1.706	1.449	1.232	1.051	0.894	0.756	0.701	0.619	0.472	0.182
100	1.749	1.496	1.279	1.096	0.936	0.795	0.739	0.655	0.504	0.182
105	1.792	1.543	1.325	1.140	0.978	0.834	0.776	0.691	0.536	0.182
110	1.836	1.590	1.372	1.185	1.020	0.873	0.814	0.726	0.568	0.182
115	1.879	1.637	1.418	1.229	1.062	0.912	0.852	0.762	0.600	0.184
120	1.922	1.684	1.465	1.274	1.104	0.951	0.889	0.798	0.632	0.216
125	1.966	1.731	1.511	1.319	1.147	0.990	0.927	0.833	0.664	0.248
130	2.058	1.778	1.558	1.363	1.189	1.029	0.965	0.869	0.696	0.280
135	2.336	1.825	1.604	1.408	1.231	1.068	1.002	0.904	0.728	0.312
140	2.613	1.872	1.651	1.452	1.273	1.107	1.040	0.940	0.760	0.344
145	2.890	1.919	1.697	1.497	1.315	1.146	1.078	0.976	0.792	0.376
150	3.167	1.966	1.744	1.542	1.357	1.185	1.115	1.011	0.824	0.408
155	3.445	2.053	1.790	1.586	1.399	1.224	1.153	1.047	0.856	0.440
160	3.524	2.248	1.837	1.631	1.441	1.263	1.191	1.082	0.888	0.472
165	3.586	2.442	1.884	1.675	1.483	1.302	1.228	1.118	0.920	0.504
170	3.648	2.637	1.930	1.720	1.525	1.341	1.266	1.154	0.952	0.536
175	3.709	2.832	1.977	1.764	1.567	1.380	1.304	1.189	0.984	0.568
180	3.771	3.026	2.065	1.809	1.610	1.419	1.341	1.225	1.016	0.600
185	3.832	3.221	2.195	1.854	1.652	1.458	1.379	1.260	1.048	0.632
190	3.894	3.415	2.325	1.898	1.694	1.497	1.417	1.296	1.080	0.664
195	3.956	3.515	2.456	1.943	1.736	1.536	1.454	1.332	1.112	0.696
200	4.017	3.578	2.586	1.987	1.778	1.575	1.492	1.367	1.144	0.727
205	4.079	3.642	2.717	2.084	1.820	1.614	1.530	1.403	1.176	0.759
210	4.140	3.706	2.847	2.200	1.862	1.653	1.567	1.438	1.208	0.791
215	4.202	3.769	2.977	2.317	1.904	1.692	1.605	1.474	1.240	0.823
220	4.264	3.833	3.108	2.433	1.946	1.731	1.643	1.510	1.272	0.855
225	4.325	3.897	3.238	2.550	1.988	1.770	1.680	1.545	1.304	0.887
230	4.387	3.961	3.368	2.666	2.075	1.809	1.718	1.581	1.336	0.919
235	4.449	4.024	3.484	2.783	2.179	1.848	1.756	1.617	1.368	0.951
240	4.510	4.088	3.552	2.899	2.283	1.887	1.794	1.652	1.400	0.983
245	4.572	4.152	3.619	3.016	2.387	1.926	1.831	1.688	1.432	1.015
250	4.633	4.216	3.687	3.132	2.490	1.965	1.869	1.723	1.464	1.047
255	4.695	4.279	3.754	3.249	2.594	2.008	1.907	1.759	1.496	1.079

Thickness is in mm and is intumescent only. Results apply to rectangular hollow beams limited to a maximum protection thickness of 5.426mm.

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**Table 21: Protection to Hollow Beams
Fire Resistance Period: 75 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
45	1.667	1.357	1.118	0.920	0.760	0.626	0.576	0.502	0.385	0.239
50	1.756	1.413	1.164	0.967	0.806	0.671	0.620	0.544	0.424	0.274
55	1.844	1.469	1.210	1.015	0.853	0.715	0.663	0.586	0.462	0.309
60	1.932	1.526	1.255	1.062	0.899	0.760	0.707	0.628	0.501	0.344
65	2.048	1.582	1.301	1.109	0.946	0.804	0.750	0.670	0.539	0.379
70	2.257	1.638	1.347	1.156	0.992	0.849	0.794	0.711	0.577	0.414
75	2.465	1.695	1.393	1.203	1.039	0.893	0.837	0.753	0.616	0.448
80	2.674	1.751	1.439	1.250	1.085	0.938	0.881	0.795	0.654	0.483
85	2.882	1.807	1.485	1.297	1.132	0.982	0.924	0.837	0.693	0.518
90	3.091	1.864	1.531	1.345	1.178	1.027	0.968	0.879	0.731	0.553
95	3.300	1.920	1.577	1.392	1.225	1.071	1.011	0.921	0.770	0.588
100	3.487	1.976	1.623	1.439	1.271	1.116	1.055	0.963	0.808	0.623
105	3.589	2.127	1.669	1.486	1.317	1.160	1.098	1.004	0.847	0.658
110	3.690	2.345	1.715	1.533	1.364	1.205	1.142	1.046	0.885	0.692
115	3.791	2.564	1.761	1.580	1.410	1.249	1.185	1.088	0.923	0.727
120	3.892	2.783	1.807	1.627	1.457	1.294	1.229	1.130	0.962	0.762
125	3.994	3.002	1.853	1.675	1.503	1.338	1.272	1.172	1.000	0.797
130	4.095	3.220	1.899	1.722	1.550	1.383	1.316	1.214	1.039	0.832
135	4.196	3.439	1.944	1.769	1.596	1.427	1.359	1.255	1.077	0.867
140	4.297	3.527	1.990	1.816	1.643	1.472	1.403	1.297	1.116	0.902
145	4.398	3.594	2.274	1.863	1.689	1.516	1.446	1.339	1.154	0.937
150	4.500	3.662	2.620	1.910	1.735	1.561	1.490	1.381	1.193	0.971
155	4.601	3.729	2.966	1.957	1.782	1.605	1.533	1.423	1.231	1.006
160	4.702	3.797	3.312	2.021	1.828	1.650	1.577	1.465	1.269	1.041
165	4.803	3.864	3.505	2.237	1.875	1.694	1.620	1.506	1.308	1.076
170	4.905	3.931	3.571	2.453	1.921	1.739	1.664	1.548	1.346	1.111
175	5.006	3.999	3.638	2.669	1.968	1.783	1.707	1.590	1.385	1.146
180	5.107	4.066	3.704	2.885	2.041	1.828	1.751	1.632	1.423	1.181
185	5.208	4.134	3.771	3.101	2.175	1.872	1.794	1.674	1.462	1.215
190	5.309	4.201	3.837	3.317	2.310	1.917	1.838	1.716	1.500	1.250
195	5.411	4.269	3.904	3.488	2.445	1.961	1.881	1.757	1.539	1.285
200	-	4.336	3.970	3.555	2.579	2.015	1.925	1.799	1.577	1.320
205	-	4.404	4.037	3.622	2.714	2.131	1.968	1.841	1.616	1.355
210	-	4.471	4.103	3.689	2.849	2.247	2.029	1.883	1.654	1.390
215	-	4.539	4.170	3.756	2.983	2.364	2.140	1.925	1.692	1.425
220	-	4.606	4.236	3.823	3.118	2.480	2.251	1.967	1.731	1.459
225	-	4.674	4.303	3.890	3.253	2.596	2.362	2.021	1.769	1.494
230	-	4.741	4.369	3.957	3.387	2.712	2.473	2.124	1.808	1.529
235	-	4.809	4.435	4.024	3.496	2.829	2.583	2.227	1.846	1.564
240	-	4.876	4.502	4.091	3.566	2.945	2.694	2.330	1.885	1.599
245	-	4.944	4.568	4.158	3.636	3.061	2.805	2.433	1.923	1.634
250	-	5.011	4.635	4.224	3.706	3.178	2.916	2.536	1.962	1.669
255	-	5.079	4.701	4.291	3.775	3.294	3.026	2.639	2.000	1.704

Thickness is in mm and is intumescent only. Results apply to rectangular hollow beams limited to a maximum protection thickness of 5.426mm.

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**Table 22: Protection to Hollow Beams
Fire Resistance Period: 90 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
45	2.179	1.703	1.446	1.243	1.052	0.892	0.831	0.745	0.607	0.436
50	2.505	1.798	1.512	1.287	1.099	0.938	0.878	0.791	0.650	0.476
55	2.832	1.892	1.577	1.330	1.145	0.985	0.924	0.836	0.693	0.517
60	3.158	1.987	1.643	1.374	1.191	1.032	0.970	0.882	0.736	0.558
65	3.478	2.229	1.709	1.417	1.237	1.078	1.017	0.927	0.780	0.598
70	3.682	2.495	1.775	1.461	1.284	1.125	1.063	0.973	0.823	0.639
75	3.885	2.761	1.840	1.504	1.330	1.172	1.109	1.018	0.866	0.680
80	4.089	3.028	1.906	1.548	1.376	1.218	1.156	1.064	0.909	0.721
85	4.292	3.294	1.972	1.591	1.423	1.265	1.202	1.109	0.952	0.761
90	4.496	3.516	2.122	1.635	1.469	1.311	1.248	1.155	0.996	0.802
95	4.699	3.653	2.336	1.678	1.515	1.358	1.295	1.200	1.039	0.843
100	4.903	3.791	2.550	1.722	1.562	1.405	1.341	1.246	1.082	0.883
105	5.106	3.929	2.764	1.765	1.608	1.451	1.387	1.291	1.125	0.924
110	5.310	4.066	2.979	1.808	1.654	1.498	1.434	1.337	1.168	0.965
115	-	4.204	3.193	1.852	1.701	1.545	1.480	1.382	1.211	1.006
120	-	4.342	3.407	1.895	1.747	1.591	1.526	1.428	1.255	1.046
125	-	4.479	3.535	1.939	1.793	1.638	1.573	1.473	1.298	1.087
130	-	4.617	3.629	1.982	1.840	1.684	1.619	1.519	1.341	1.128
135	-	4.755	3.723	2.331	1.886	1.731	1.665	1.564	1.384	1.168
140	-	4.893	3.816	2.890	1.932	1.778	1.712	1.610	1.427	1.209
145	-	5.030	3.910	3.449	1.979	1.824	1.758	1.655	1.471	1.250
150	-	5.168	4.004	3.535	2.173	1.871	1.804	1.701	1.514	1.291
155	-	5.306	4.098	3.604	2.494	1.918	1.851	1.746	1.557	1.331
160	-	-	4.191	3.673	2.816	1.964	1.897	1.792	1.600	1.372
165	-	-	4.285	3.742	3.138	2.044	1.943	1.837	1.643	1.413
170	-	-	4.379	3.812	3.459	2.236	1.990	1.882	1.687	1.453
175	-	-	4.472	3.881	3.533	2.428	2.123	1.928	1.730	1.494
180	-	-	4.566	3.950	3.600	2.620	2.280	1.973	1.773	1.535
185	-	-	4.660	4.019	3.667	2.812	2.438	2.053	1.816	1.576
190	-	-	4.754	4.088	3.735	3.005	2.595	2.179	1.859	1.616
195	-	-	4.847	4.157	3.802	3.197	2.753	2.305	1.903	1.657
200	-	-	4.941	4.227	3.869	3.389	2.910	2.431	1.946	1.698
205	-	-	5.035	4.296	3.936	3.506	3.068	2.557	1.989	1.738
210	-	-	5.128	4.365	4.003	3.572	3.225	2.683	2.083	1.779
215	-	-	5.222	4.434	4.070	3.638	3.383	2.810	2.195	1.820
220	-	-	5.316	4.503	4.137	3.703	3.498	2.936	2.307	1.861
225	-	-	5.410	4.572	4.204	3.769	3.563	3.062	2.419	1.901
230	-	-	-	4.642	4.271	3.834	3.628	3.188	2.530	1.942
235	-	-	-	4.711	4.338	3.900	3.693	3.314	2.642	1.983
240	-	-	-	4.780	4.405	3.965	3.758	3.440	2.754	2.053
245	-	-	-	4.849	4.472	4.031	3.823	3.516	2.865	2.144
250	-	-	-	4.918	4.540	4.096	3.888	3.578	2.977	2.236
255	-	-	-	4.987	4.607	4.162	3.953	3.640	3.089	2.327

Thickness is in mm and is intumescent only. Results apply to rectangular hollow beams limited to a maximum protection thickness of 5.426mm.

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Table 23: Protection to Hollow Beams
Fire Resistance Period: 105 minutes

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
45	-	2.128	1.756	1.527	1.343	1.161	1.091	0.990	0.831	0.635
50	-	2.499	1.857	1.601	1.390	1.206	1.137	1.037	0.877	0.680
55	-	2.870	1.871	1.674	1.438	1.250	1.182	1.083	0.922	0.725
60	-	3.241	2.174	1.748	1.486	1.295	1.228	1.129	0.968	0.769
65	-	3.553	2.475	1.821	1.533	1.340	1.273	1.175	1.013	0.814
70	-	3.771	2.776	1.895	1.581	1.384	1.318	1.221	1.059	0.859
75	-	3.990	3.077	1.968	1.629	1.429	1.364	1.267	1.105	0.904
80	-	4.208	3.378	2.142	1.676	1.473	1.409	1.313	1.150	0.949
85	-	4.426	3.577	2.395	1.724	1.518	1.455	1.359	1.196	0.994
90	-	4.645	3.731	2.647	1.772	1.562	1.500	1.405	1.241	1.039
95	-	4.863	3.886	2.900	1.819	1.607	1.546	1.451	1.287	1.084
100	-	5.082	4.041	3.152	1.867	1.652	1.591	1.497	1.333	1.128
105	-	5.300	4.195	3.405	1.915	1.696	1.637	1.543	1.378	1.173
110	-	-	4.350	3.551	1.962	1.741	1.682	1.589	1.424	1.218
115	-	-	4.505	3.662	2.076	1.785	1.727	1.635	1.469	1.263
120	-	-	4.659	3.773	2.443	1.830	1.773	1.681	1.515	1.308
125	-	-	4.814	3.884	2.809	1.875	1.818	1.728	1.561	1.353
130	-	-	4.968	3.995	3.176	1.919	1.864	1.774	1.606	1.398
135	-	-	5.123	4.106	3.482	1.964	1.909	1.820	1.652	1.443
140	-	-	5.278	4.216	3.553	2.083	1.955	1.866	1.697	1.487
145	-	-	-	4.327	3.623	2.527	2.001	1.912	1.743	1.532
150	-	-	-	4.438	3.694	2.972	2.353	1.958	1.789	1.577
155	-	-	-	4.549	3.764	3.416	2.704	2.022	1.834	1.622
160	-	-	-	4.660	3.834	3.526	3.056	2.276	1.880	1.667
165	-	-	-	4.771	3.905	3.592	3.408	2.531	1.925	1.712
170	-	-	-	4.882	3.975	3.658	3.521	2.785	1.971	1.757
175	-	-	-	4.993	4.046	3.724	3.585	3.039	2.054	1.802
180	-	-	-	5.103	4.116	3.790	3.649	3.294	2.203	1.846
185	-	-	-	5.214	4.186	3.856	3.713	3.487	2.351	1.891
190	-	-	-	5.325	4.257	3.922	3.777	3.548	2.500	1.936
195	-	-	-	-	4.327	3.988	3.841	3.608	2.649	1.981
200	-	-	-	-	4.398	4.054	3.905	3.669	2.797	2.063
205	-	-	-	-	4.468	4.119	3.969	3.730	2.946	2.174
210	-	-	-	-	4.538	4.185	4.033	3.790	3.094	2.284
215	-	-	-	-	4.609	4.251	4.097	3.851	3.243	2.394
220	-	-	-	-	4.679	4.317	4.161	3.912	3.392	2.504
225	-	-	-	-	4.750	4.383	4.225	3.972	3.499	2.614
230	-	-	-	-	4.820	4.449	4.290	4.033	3.563	2.724
235	-	-	-	-	4.890	4.515	4.354	4.094	3.627	2.834
240	-	-	-	-	4.961	4.581	4.418	4.154	3.691	2.945
245	-	-	-	-	5.031	4.647	4.482	4.215	3.755	3.055
250	-	-	-	-	5.102	4.713	4.546	4.276	3.820	3.165
255	-	-	-	-	5.172	4.779	4.610	4.336	3.884	3.275

Thickness is in mm and is intumescent only. Results apply to rectangular hollow beams limited to a maximum protection thickness of 5.426mm.

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Table 24: Protection to Hollow Beams
Fire Resistance Period: 120 minutes

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
45	-	-	2.177	1.811	1.599	1.414	1.352	1.240	1.057	0.835
50	-	-	2.573	1.915	1.678	1.471	1.396	1.283	1.103	0.882
55	-	-	2.968	2.062	1.757	1.528	1.440	1.326	1.148	0.929
60	-	-	3.363	2.386	1.836	1.585	1.484	1.369	1.193	0.977
65	-	-	3.627	2.711	1.915	1.641	1.528	1.411	1.238	1.024
70	-	-	3.844	3.035	1.995	1.698	1.573	1.454	1.284	1.071
75	-	-	4.061	3.360	2.259	1.755	1.617	1.497	1.329	1.118
80	-	-	4.277	3.574	2.537	1.811	1.661	1.540	1.374	1.165
85	-	-	4.494	3.733	2.816	1.868	1.705	1.582	1.419	1.212
90	-	-	4.710	3.893	3.094	1.925	1.749	1.625	1.464	1.259
95	-	-	4.927	4.052	3.372	1.982	1.793	1.668	1.510	1.306
100	-	-	5.144	4.212	3.546	2.168	1.838	1.711	1.555	1.353
105	-	-	5.360	4.371	3.665	2.417	1.882	1.753	1.600	1.400
110	-	-	-	4.530	3.784	2.665	1.926	1.796	1.645	1.448
115	-	-	-	4.690	3.903	2.914	1.970	1.839	1.690	1.495
120	-	-	-	4.849	4.021	3.162	2.153	1.882	1.736	1.542
125	-	-	-	5.008	4.140	3.411	2.624	1.924	1.781	1.589
130	-	-	-	5.168	4.259	3.530	3.095	1.967	1.826	1.636
135	-	-	-	5.327	4.378	3.610	3.482	2.136	1.871	1.683
140	-	-	-	-	4.497	3.690	3.549	2.720	1.916	1.730
145	-	-	-	-	4.616	3.770	3.616	3.303	1.962	1.777
150	-	-	-	-	4.735	3.850	3.683	3.513	2.046	1.824
155	-	-	-	-	4.854	3.930	3.750	3.575	2.348	1.871
160	-	-	-	-	4.972	4.010	3.817	3.638	2.650	1.918
165	-	-	-	-	5.091	4.090	3.884	3.700	2.952	1.966
170	-	-	-	-	5.210	4.170	3.951	3.763	3.254	2.040
175	-	-	-	-	5.329	4.250	4.018	3.825	3.486	2.189
180	-	-	-	-	-	4.331	4.085	3.888	3.549	2.338
185	-	-	-	-	-	4.411	4.152	3.950	3.611	2.486
190	-	-	-	-	-	4.491	4.219	4.013	3.674	2.635
195	-	-	-	-	-	4.571	4.286	4.075	3.736	2.784
200	-	-	-	-	-	4.651	4.353	4.138	3.799	2.933
205	-	-	-	-	-	4.731	4.419	4.200	3.861	3.082
210	-	-	-	-	-	4.811	4.486	4.263	3.924	3.230
215	-	-	-	-	-	4.891	4.553	4.325	3.986	3.379
220	-	-	-	-	-	4.971	4.620	4.388	4.049	3.500
225	-	-	-	-	-	5.052	4.687	4.450	4.111	3.578
230	-	-	-	-	-	5.132	4.754	4.513	4.174	3.656
235	-	-	-	-	-	5.212	4.821	4.575	4.237	3.734
240	-	-	-	-	-	5.292	4.888	4.638	4.299	3.812
245	-	-	-	-	-	5.372	4.955	4.700	4.362	3.890
250	-	-	-	-	-	-	5.022	4.763	4.424	3.968
255	-	-	-	-	-	-	5.089	4.825	4.487	4.046

Thickness is in mm and is intumescent only. Results apply to rectangular hollow beams limited to a maximum protection thickness of 5.426mm.

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**Table 25: RHS and CHS Columns
Fire Resistance Period: 15 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
55	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
60	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
65	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
70	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
75	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
80	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
85	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
90	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
95	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
100	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
105	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
110	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
115	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
120	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
125	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
130	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
135	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
140	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
145	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
150	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
155	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
160	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
165	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
170	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
175	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
180	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
185	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
190	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
195	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
200	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
205	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
210	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
215	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
220	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
225	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
230	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
235	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
240	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
245	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
250	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
255	0.378	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
260	0.400	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
265	0.423	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
270	0.445	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
275	0.467	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
280	0.490	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
285	0.512	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
290	0.534	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
295	0.557	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
300	0.579	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
305	0.601	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
310	0.624	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
315	0.646	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
320	0.668	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
325	0.691	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
330	0.713	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
335	0.735	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
340	0.758	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359

Thickness is in mm and is intumescent only. Results apply to rectangular and circular hollow columns, and hollow beams exposed on four sides limited to a protection thickness of 4.429mm.

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**Table 26: RHS and CHS Columns
Fire Resistance Period: 30 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
55	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
60	0.383	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
65	0.416	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
70	0.450	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
75	0.483	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
80	0.516	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
85	0.550	0.361	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
90	0.583	0.389	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
95	0.617	0.416	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
100	0.650	0.443	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
105	0.683	0.470	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
110	0.717	0.497	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
115	0.750	0.524	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
120	0.783	0.551	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
125	0.817	0.578	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
130	0.850	0.606	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
135	0.884	0.633	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
140	0.917	0.660	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
145	0.950	0.687	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
150	0.984	0.714	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
155	1.017	0.741	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
160	1.050	0.768	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
165	1.084	0.795	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
170	1.117	0.823	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
175	1.151	0.850	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
180	1.184	0.877	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
185	1.217	0.904	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
190	1.251	0.931	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
195	1.284	0.958	0.380	0.359	0.359	0.359	0.359	0.359	0.359	0.359
200	1.317	0.985	0.412	0.359	0.359	0.359	0.359	0.359	0.359	0.359
205	1.351	1.012	0.445	0.359	0.359	0.359	0.359	0.359	0.359	0.359
210	1.384	1.039	0.477	0.359	0.359	0.359	0.359	0.359	0.359	0.359
215	1.418	1.067	0.510	0.359	0.359	0.359	0.359	0.359	0.359	0.359
220	1.451	1.094	0.542	0.359	0.359	0.359	0.359	0.359	0.359	0.359
225	1.484	1.121	0.575	0.359	0.359	0.359	0.359	0.359	0.359	0.359
230	1.518	1.148	0.607	0.359	0.359	0.359	0.359	0.359	0.359	0.359
235	1.551	1.175	0.639	0.359	0.359	0.359	0.359	0.359	0.359	0.359
240	1.584	1.202	0.672	0.359	0.359	0.359	0.359	0.359	0.359	0.359
245	1.618	1.229	0.704	0.376	0.359	0.359	0.359	0.359	0.359	0.359
250	1.651	1.256	0.737	0.406	0.359	0.359	0.359	0.359	0.359	0.359
255	1.685	1.284	0.769	0.436	0.359	0.359	0.359	0.359	0.359	0.359
260	1.718	1.311	0.802	0.466	0.363	0.359	0.359	0.359	0.359	0.359
265	1.745	1.338	0.834	0.497	0.392	0.359	0.359	0.359	0.359	0.359
270	1.772	1.365	0.866	0.527	0.421	0.359	0.359	0.359	0.359	0.359
275	1.799	1.392	0.899	0.557	0.449	0.359	0.359	0.359	0.359	0.359
280	1.826	1.419	0.931	0.588	0.478	0.359	0.359	0.359	0.359	0.359
285	1.853	1.446	0.964	0.618	0.507	0.359	0.359	0.359	0.359	0.359
290	1.880	1.473	0.996	0.648	0.536	0.362	0.359	0.359	0.359	0.359
295	1.908	1.501	1.029	0.679	0.565	0.389	0.359	0.359	0.359	0.359
300	1.935	1.528	1.061	0.709	0.594	0.416	0.359	0.359	0.359	0.359
305	1.962	1.555	1.093	0.739	0.623	0.442	0.359	0.359	0.359	0.359
310	1.989	1.582	1.126	0.770	0.652	0.469	0.359	0.359	0.359	0.359
315	2.016	1.609	1.158	0.800	0.681	0.496	0.359	0.359	0.359	0.359
320	2.043	1.636	1.191	0.830	0.710	0.523	0.359	0.359	0.359	0.359
325	2.070	1.663	1.223	0.861	0.738	0.549	0.359	0.359	0.359	0.359
330	2.097	1.690	1.256	0.891	0.767	0.576	0.359	0.359	0.359	0.359
335	2.125	1.717	1.288	0.921	0.796	0.603	0.359	0.359	0.359	0.359
340	2.152	1.743	1.320	0.951	0.825	0.630	0.359	0.359	0.359	0.359

Thickness is in mm and is intumescent only. Results apply to rectangular and circular hollow columns, and hollow beams exposed on four sides limited to a protection thickness of 4.429mm.

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**Table 27: RHS and CHS Columns
Fire Resistance Period: 45 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	0.838	0.528	0.359	0.359	0.359	0.359	0.359	0.359	0.359	0.359
55	0.918	0.576	0.384	0.359	0.359	0.359	0.359	0.359	0.359	0.359
60	0.997	0.624	0.420	0.359	0.359	0.359	0.359	0.359	0.359	0.359
65	1.077	0.671	0.456	0.359	0.359	0.359	0.359	0.359	0.359	0.359
70	1.157	0.719	0.493	0.381	0.359	0.359	0.359	0.359	0.359	0.359
75	1.237	0.767	0.529	0.411	0.365	0.359	0.359	0.359	0.359	0.359
80	1.317	0.814	0.565	0.440	0.393	0.359	0.359	0.359	0.359	0.359
85	1.397	0.862	0.601	0.470	0.421	0.359	0.359	0.359	0.359	0.359
90	1.477	0.909	0.638	0.500	0.449	0.365	0.359	0.359	0.359	0.359
95	1.557	0.957	0.674	0.530	0.477	0.391	0.359	0.359	0.359	0.359
100	1.636	1.005	0.710	0.560	0.505	0.418	0.359	0.359	0.359	0.359
105	1.716	1.052	0.746	0.590	0.533	0.445	0.359	0.359	0.359	0.359
110	1.746	1.100	0.783	0.620	0.561	0.471	0.359	0.359	0.359	0.359
115	1.776	1.148	0.819	0.650	0.589	0.498	0.359	0.359	0.359	0.359
120	1.805	1.195	0.855	0.679	0.617	0.524	0.359	0.359	0.359	0.359
125	1.835	1.243	0.891	0.709	0.645	0.551	0.359	0.359	0.359	0.359
130	1.864	1.291	0.928	0.739	0.673	0.578	0.359	0.359	0.359	0.359
135	1.894	1.338	0.964	0.769	0.701	0.604	0.359	0.359	0.359	0.359
140	1.923	1.386	1.000	0.799	0.729	0.631	0.359	0.359	0.359	0.359
145	1.953	1.433	1.036	0.829	0.757	0.658	0.359	0.359	0.359	0.359
150	1.982	1.481	1.073	0.859	0.785	0.684	0.360	0.359	0.359	0.359
155	2.012	1.529	1.109	0.888	0.813	0.711	0.388	0.359	0.359	0.359
160	2.041	1.576	1.145	0.918	0.841	0.737	0.416	0.359	0.359	0.359
165	2.071	1.624	1.181	0.948	0.869	0.764	0.444	0.359	0.359	0.359
170	2.101	1.672	1.218	0.978	0.897	0.791	0.472	0.359	0.359	0.359
175	2.130	1.718	1.254	1.008	0.925	0.817	0.500	0.359	0.359	0.359
180	2.160	1.748	1.290	1.038	0.953	0.844	0.528	0.359	0.359	0.359
185	2.189	1.778	1.326	1.068	0.981	0.870	0.557	0.359	0.359	0.359
190	2.219	1.808	1.363	1.098	1.009	0.897	0.585	0.359	0.359	0.359
195	2.248	1.837	1.399	1.127	1.037	0.924	0.613	0.359	0.359	0.359
200	2.278	1.867	1.435	1.157	1.065	0.950	0.641	0.359	0.359	0.359
205	2.307	1.897	1.471	1.187	1.093	0.977	0.669	0.359	0.359	0.359
210	2.337	1.926	1.508	1.217	1.121	1.004	0.697	0.359	0.359	0.359
215	2.366	1.956	1.544	1.247	1.149	1.030	0.725	0.359	0.359	0.359
220	2.396	1.986	1.580	1.277	1.177	1.057	0.753	0.359	0.359	0.359
225	2.425	2.015	1.616	1.307	1.205	1.083	0.781	0.359	0.359	0.359
230	2.455	2.045	1.653	1.336	1.233	1.110	0.809	0.373	0.359	0.359
235	2.484	2.075	1.689	1.366	1.261	1.137	0.837	0.403	0.359	0.359
240	2.514	2.104	1.725	1.396	1.289	1.163	0.866	0.434	0.359	0.359
245	2.543	2.134	1.758	1.426	1.317	1.190	0.894	0.465	0.359	0.359
250	2.573	2.164	1.791	1.456	1.345	1.216	0.922	0.495	0.359	0.359
255	2.602	2.194	1.824	1.486	1.373	1.243	0.950	0.526	0.359	0.359
260	2.632	2.223	1.857	1.516	1.401	1.270	0.978	0.556	0.359	0.359
265	2.661	2.253	1.890	1.546	1.429	1.296	1.006	0.587	0.384	0.359
270	2.691	2.283	1.923	1.575	1.457	1.323	1.034	0.618	0.410	0.359
275	2.720	2.312	1.956	1.605	1.485	1.350	1.062	0.648	0.435	0.359
280	2.750	2.342	1.990	1.635	1.513	1.376	1.090	0.679	0.461	0.359
285	2.780	2.372	2.023	1.665	1.541	1.403	1.118	0.710	0.486	0.359
290	2.809	2.401	2.056	1.695	1.569	1.429	1.146	0.740	0.512	0.359
295	2.839	2.431	2.089	1.726	1.597	1.456	1.174	0.771	0.537	0.359
300	2.868	2.461	2.122	1.761	1.625	1.483	1.203	0.802	0.562	0.362
305	2.898	2.490	2.155	1.795	1.653	1.509	1.231	0.832	0.588	0.381
310	2.927	2.520	2.188	1.830	1.681	1.536	1.259	0.863	0.613	0.400
315	2.957	2.550	2.221	1.865	1.709	1.562	1.287	0.894	0.639	0.419
320	2.986	2.579	2.255	1.900	1.742	1.589	1.315	0.924	0.664	0.438
325	3.016	2.609	2.288	1.934	1.777	1.616	1.343	0.955	0.689	0.457
330	-	2.639	2.321	1.969	1.812	1.642	1.371	0.986	0.715	0.476
335	-	2.669	2.354	2.004	1.847	1.669	1.399	1.016	0.740	0.495
340	-	2.698	2.387	2.039	1.882	1.696	1.427	1.047	0.766	0.515

Thickness is in mm and is intumescent only. Results apply to rectangular and circular hollow columns, and hollow beams exposed on four sides limited to a protection thickness of 4.429mm.

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**Table 28: RHS and CHS Columns
Fire Resistance Period: 60 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	1.425	1.035	0.768	0.574	0.510	0.415	0.359	0.359	0.359	0.359
55	1.562	1.132	0.838	0.623	0.551	0.452	0.359	0.359	0.359	0.359
60	1.698	1.229	0.908	0.671	0.592	0.489	0.391	0.359	0.359	0.359
65	1.786	1.326	0.978	0.720	0.633	0.526	0.422	0.359	0.359	0.359
70	1.866	1.423	1.048	0.768	0.674	0.563	0.454	0.359	0.359	0.359
75	1.947	1.520	1.118	0.816	0.715	0.600	0.485	0.370	0.359	0.359
80	2.027	1.617	1.188	0.865	0.756	0.636	0.517	0.398	0.359	0.359
85	2.107	1.715	1.258	0.913	0.797	0.673	0.548	0.425	0.359	0.359
90	2.187	1.760	1.328	0.962	0.838	0.710	0.580	0.453	0.359	0.359
95	2.267	1.804	1.398	1.010	0.879	0.747	0.611	0.480	0.359	0.359
100	2.348	1.849	1.468	1.058	0.920	0.784	0.643	0.508	0.359	0.359
105	2.428	1.893	1.538	1.107	0.962	0.820	0.674	0.535	0.359	0.359
110	2.508	1.937	1.608	1.155	1.003	0.857	0.705	0.563	0.359	0.359
115	2.588	1.981	1.678	1.204	1.044	0.894	0.737	0.591	0.359	0.359
120	2.668	2.025	1.732	1.252	1.085	0.931	0.768	0.618	0.377	0.359
125	2.748	2.070	1.765	1.301	1.126	0.968	0.800	0.646	0.404	0.359
130	2.836	2.114	1.799	1.349	1.167	1.005	0.831	0.673	0.432	0.359
135	2.963	2.158	1.832	1.397	1.208	1.041	0.863	0.701	0.459	0.359
140	3.090	2.202	1.866	1.446	1.249	1.078	0.894	0.728	0.487	0.359
145	3.217	2.247	1.900	1.494	1.290	1.115	0.926	0.756	0.514	0.359
150	3.344	2.291	1.933	1.543	1.331	1.152	0.957	0.784	0.542	0.359
155	3.471	2.335	1.967	1.591	1.372	1.189	0.989	0.811	0.569	0.359
160	3.598	2.379	2.000	1.639	1.413	1.225	1.020	0.839	0.596	0.359
165	3.725	2.424	2.034	1.688	1.454	1.262	1.052	0.866	0.624	0.359
170	3.852	2.468	2.067	1.730	1.495	1.299	1.083	0.894	0.651	0.359
175	3.979	2.512	2.101	1.763	1.536	1.336	1.115	0.922	0.679	0.359
180	4.106	2.556	2.134	1.797	1.577	1.373	1.146	0.949	0.706	0.359
185	4.233	2.600	2.168	1.830	1.618	1.410	1.178	0.977	0.734	0.359
190	4.360	2.645	2.201	1.863	1.659	1.446	1.209	1.004	0.761	0.359
195	-	2.689	2.235	1.896	1.700	1.483	1.240	1.032	0.789	0.359
200	-	2.733	2.268	1.930	1.739	1.520	1.272	1.059	0.816	0.359
205	-	2.777	2.302	1.963	1.775	1.557	1.303	1.087	0.844	0.359
210	-	2.862	2.336	1.996	1.812	1.594	1.335	1.115	0.871	0.360
215	-	3.226	2.369	2.030	1.848	1.630	1.366	1.142	0.898	0.390
220	-	3.590	2.403	2.063	1.885	1.667	1.398	1.170	0.926	0.421
225	-	3.954	2.436	2.096	1.921	1.704	1.429	1.197	0.953	0.452
230	-	4.318	2.470	2.129	1.958	1.742	1.461	1.225	0.981	0.483
235	-	-	2.503	2.163	1.994	1.780	1.492	1.252	1.008	0.513
240	-	-	2.537	2.196	2.031	1.818	1.524	1.280	1.036	0.544
245	-	-	2.570	2.229	2.067	1.856	1.555	1.308	1.063	0.575
250	-	-	2.604	2.262	2.104	1.895	1.587	1.335	1.091	0.606
255	-	-	2.637	2.296	2.140	1.933	1.618	1.363	1.118	0.636
260	-	-	2.671	2.329	2.176	1.971	1.650	1.390	1.145	0.667
265	-	-	2.704	2.362	2.213	2.009	1.681	1.418	1.173	0.698
270	-	-	2.738	2.395	2.249	2.048	1.713	1.445	1.200	0.729
275	-	-	2.771	2.429	2.286	2.086	1.751	1.473	1.228	0.759
280	-	-	2.805	2.462	2.322	2.124	1.790	1.501	1.255	0.790
285	-	-	2.839	2.495	2.359	2.162	1.829	1.528	1.283	0.821
290	-	-	2.872	2.529	2.395	2.201	1.868	1.556	1.310	0.852
295	-	-	2.906	2.562	2.432	2.239	1.907	1.583	1.338	0.882
300	-	-	2.939	2.595	2.468	2.277	1.947	1.611	1.365	0.913
305	-	-	2.973	2.628	2.505	2.315	1.986	1.639	1.393	0.944
310	-	-	3.006	2.662	2.541	2.353	2.025	1.666	1.420	0.975
315	-	-	-	2.695	2.578	2.392	2.064	1.694	1.447	1.005
320	-	-	-	2.728	2.614	2.430	2.103	1.723	1.475	1.036
325	-	-	-	2.761	2.651	2.468	2.143	1.762	1.502	1.067
330	-	-	-	2.795	2.687	2.506	2.182	1.801	1.530	1.098
335	-	-	-	2.828	2.724	2.545	2.221	1.840	1.557	1.128
340	-	-	-	2.861	2.760	2.583	2.260	1.879	1.585	1.159

Thickness is in mm and is intumescent only. Results apply to rectangular and circular hollow columns, and hollow beams exposed on four sides limited to a protection thickness of 4.429mm.

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**Table 29: RHS and CHS Columns
Fire Resistance Period: 75 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	2.352	1.530	1.211	0.973	0.893	0.784	0.620	0.468	0.359	0.359
55	2.545	1.677	1.324	1.058	0.968	0.846	0.664	0.503	0.376	0.359
60	2.738	1.803	1.436	1.143	1.043	0.908	0.709	0.538	0.407	0.359
65	2.880	1.922	1.549	1.228	1.118	0.970	0.753	0.573	0.439	0.359
70	2.988	2.041	1.662	1.313	1.193	1.032	0.798	0.608	0.470	0.359
75	3.096	2.160	1.746	1.398	1.269	1.094	0.842	0.643	0.501	0.359
80	3.204	2.279	1.803	1.484	1.344	1.156	0.887	0.678	0.532	0.365
85	3.311	2.398	1.859	1.569	1.419	1.218	0.931	0.713	0.563	0.393
90	3.419	2.516	1.916	1.654	1.494	1.280	0.976	0.748	0.594	0.421
95	3.527	2.635	1.973	1.729	1.569	1.342	1.020	0.783	0.625	0.449
100	3.634	2.754	2.029	1.775	1.645	1.404	1.065	0.818	0.656	0.477
105	3.742	2.869	2.086	1.821	1.719	1.466	1.109	0.853	0.687	0.505
110	3.850	2.980	2.142	1.867	1.761	1.528	1.154	0.888	0.718	0.533
115	3.957	3.092	2.199	1.912	1.804	1.590	1.198	0.923	0.749	0.561
120	4.065	3.203	2.256	1.958	1.847	1.652	1.243	0.958	0.780	0.589
125	4.173	3.314	2.312	2.004	1.889	1.714	1.287	0.993	0.811	0.617
130	4.281	3.425	2.369	2.050	1.932	1.754	1.332	1.028	0.842	0.645
135	4.388	3.536	2.425	2.096	1.975	1.792	1.376	1.063	0.873	0.673
140	-	3.647	2.482	2.142	2.017	1.831	1.421	1.098	0.904	0.701
145	-	3.759	2.539	2.188	2.060	1.869	1.465	1.133	0.936	0.729
150	-	3.870	2.595	2.234	2.102	1.908	1.510	1.167	0.967	0.757
155	-	3.981	2.652	2.280	2.145	1.946	1.554	1.202	0.998	0.785
160	-	4.092	2.708	2.326	2.188	1.985	1.599	1.237	1.029	0.814
165	-	4.203	2.765	2.372	2.230	2.024	1.643	1.272	1.060	0.842
170	-	4.314	2.844	2.417	2.273	2.062	1.688	1.307	1.091	0.870
175	-	4.426	3.127	2.463	2.316	2.101	1.730	1.342	1.122	0.898
180	-	-	3.409	2.509	2.358	2.139	1.767	1.377	1.153	0.926
185	-	-	3.692	2.555	2.401	2.178	1.804	1.412	1.184	0.954
190	-	-	3.975	2.601	2.444	2.216	1.841	1.447	1.215	0.982
195	-	-	4.257	2.647	2.486	2.255	1.878	1.482	1.246	1.010
200	-	-	-	2.693	2.529	2.294	1.915	1.517	1.277	1.038
205	-	-	-	2.739	2.572	2.332	1.952	1.552	1.308	1.066
210	-	-	-	2.785	2.614	2.371	1.989	1.587	1.339	1.094
215	-	-	-	2.919	2.657	2.409	2.026	1.622	1.370	1.122
220	-	-	-	3.242	2.699	2.448	2.063	1.657	1.402	1.150
225	-	-	-	3.566	2.742	2.486	2.100	1.692	1.433	1.178
230	-	-	-	3.889	2.785	2.525	2.137	1.729	1.464	1.206
235	-	-	-	4.213	2.903	2.564	2.174	1.772	1.495	1.234
240	-	-	-	-	3.231	2.602	2.211	1.815	1.526	1.262
245	-	-	-	-	3.560	2.641	2.248	1.858	1.557	1.290
250	-	-	-	-	3.888	2.679	2.285	1.900	1.588	1.319
255	-	-	-	-	4.216	2.718	2.322	1.943	1.619	1.347
260	-	-	-	-	-	2.757	2.359	1.986	1.650	1.375
265	-	-	-	-	-	2.795	2.396	2.029	1.681	1.403
270	-	-	-	-	-	2.966	2.433	2.072	1.712	1.431
275	-	-	-	-	-	3.294	2.470	2.115	1.753	1.459
280	-	-	-	-	-	3.622	2.507	2.158	1.795	1.487
285	-	-	-	-	-	3.950	2.544	2.201	1.838	1.515
290	-	-	-	-	-	4.278	2.581	2.244	1.880	1.543
295	-	-	-	-	-	-	2.618	2.286	1.923	1.571
300	-	-	-	-	-	-	2.655	2.329	1.965	1.599
305	-	-	-	-	-	-	2.692	2.372	2.007	1.627
310	-	-	-	-	-	-	2.729	2.415	2.050	1.655
315	-	-	-	-	-	-	2.766	2.458	2.092	1.683
320	-	-	-	-	-	-	2.803	2.501	2.135	1.711
325	-	-	-	-	-	-	2.840	2.544	2.177	1.748
330	-	-	-	-	-	-	2.877	2.587	2.219	1.787
335	-	-	-	-	-	-	2.914	2.630	2.262	1.826
340	-	-	-	-	-	-	2.951	2.673	2.304	1.865

Thickness is in mm and is intumescent only. Results apply to rectangular and circular hollow columns, and hollow beams exposed on four sides limited to a protection thickness of 4.429mm.

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Table 30: RHS and CHS Columns
Fire Resistance Period: 90 minutes

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	3.389	2.455	1.713	1.365	1.270	1.140	0.947	0.774	0.609	0.380
55	3.594	2.653	1.870	1.488	1.381	1.237	1.021	0.828	0.643	0.416
60	3.799	2.851	2.028	1.611	1.493	1.334	1.095	0.882	0.678	0.452
65	4.004	2.995	2.186	1.728	1.604	1.430	1.170	0.936	0.713	0.488
70	4.209	3.139	2.344	1.809	1.716	1.527	1.244	0.990	0.747	0.524
75	4.414	3.283	2.502	1.889	1.776	1.624	1.318	1.044	0.782	0.560
80	-	3.426	2.659	1.970	1.836	1.719	1.393	1.098	0.816	0.596
85	-	3.570	2.817	2.051	1.896	1.773	1.467	1.152	0.851	0.632
90	-	3.714	2.919	2.131	1.956	1.827	1.541	1.206	0.885	0.668
95	-	3.858	3.022	2.212	2.015	1.881	1.616	1.261	0.920	0.704
100	-	4.001	3.125	2.293	2.075	1.935	1.690	1.315	0.954	0.740
105	-	4.145	3.228	2.373	2.135	1.988	1.747	1.369	0.989	0.776
110	-	4.289	3.330	2.454	2.195	2.042	1.793	1.423	1.024	0.812
115	-	-	3.433	2.534	2.254	2.096	1.840	1.477	1.058	0.848
120	-	-	3.536	2.615	2.314	2.150	1.886	1.531	1.093	0.883
125	-	-	3.638	2.696	2.374	2.204	1.933	1.585	1.127	0.919
130	-	-	3.741	2.776	2.434	2.258	1.979	1.639	1.162	0.955
135	-	-	3.844	2.897	2.494	2.312	2.026	1.693	1.196	0.991
140	-	-	3.946	3.057	2.553	2.365	2.073	1.741	1.231	1.027
145	-	-	4.049	3.218	2.613	2.419	2.119	1.782	1.265	1.063
150	-	-	4.152	3.378	2.673	2.473	2.166	1.824	1.300	1.099
155	-	-	4.254	3.538	2.733	2.527	2.212	1.866	1.334	1.135
160	-	-	4.357	3.699	2.792	2.581	2.259	1.908	1.369	1.171
165	-	-	-	3.859	2.992	2.635	2.305	1.949	1.404	1.207
170	-	-	-	4.019	3.283	2.689	2.352	1.991	1.438	1.243
175	-	-	-	4.179	3.574	2.742	2.398	2.033	1.473	1.279
180	-	-	-	4.340	3.865	2.796	2.445	2.075	1.507	1.315
185	-	-	-	-	4.156	2.989	2.491	2.117	1.542	1.351
190	-	-	-	-	-	3.262	2.538	2.158	1.576	1.387
195	-	-	-	-	-	3.536	2.585	2.200	1.611	1.423
200	-	-	-	-	-	3.809	2.631	2.242	1.645	1.458
205	-	-	-	-	-	4.083	2.678	2.284	1.680	1.494
210	-	-	-	-	-	4.356	2.724	2.325	1.715	1.530
215	-	-	-	-	-	-	2.771	2.367	1.762	1.566
220	-	-	-	-	-	-	2.822	2.409	1.810	1.602
225	-	-	-	-	-	-	3.038	2.451	1.859	1.638
230	-	-	-	-	-	-	3.253	2.493	1.907	1.674
235	-	-	-	-	-	-	3.469	2.534	1.956	1.710
240	-	-	-	-	-	-	3.685	2.576	2.004	1.751
245	-	-	-	-	-	-	3.901	2.618	2.053	1.792
250	-	-	-	-	-	-	4.116	2.660	2.101	1.834
255	-	-	-	-	-	-	4.332	2.702	2.149	1.875
260	-	-	-	-	-	-	-	2.743	2.198	1.917
265	-	-	-	-	-	-	-	2.785	2.246	1.959
270	-	-	-	-	-	-	-	2.853	2.295	2.000
275	-	-	-	-	-	-	-	2.995	2.343	2.042
280	-	-	-	-	-	-	-	3.138	2.392	2.083
285	-	-	-	-	-	-	-	3.280	2.440	2.125
290	-	-	-	-	-	-	-	3.422	2.488	2.167
295	-	-	-	-	-	-	-	3.565	2.537	2.208
300	-	-	-	-	-	-	-	3.707	2.585	2.250
305	-	-	-	-	-	-	-	3.849	2.634	2.291
310	-	-	-	-	-	-	-	3.992	2.682	2.333
315	-	-	-	-	-	-	-	4.134	2.731	2.375
320	-	-	-	-	-	-	-	4.276	2.779	2.416
325	-	-	-	-	-	-	-	4.419	2.827	2.458
330	-	-	-	-	-	-	-	-	2.876	2.500
335	-	-	-	-	-	-	-	-	2.924	2.541
340	-	-	-	-	-	-	-	-	2.973	2.583

Thickness is in mm and is intumescent only. Results apply to rectangular and circular hollow columns, and hollow beams exposed on four sides limited to a protection thickness of 4.429mm.

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**Table 31: RHS and CHS Columns
Fire Resistance Period: 105 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	-	3.433	2.655	1.932	1.691	1.462	1.268	1.069	0.879	0.633
55	-	3.670	2.832	2.116	1.852	1.606	1.374	1.152	0.942	0.681
60	-	3.907	3.010	2.300	2.014	1.750	1.480	1.235	1.004	0.730
65	-	4.144	3.188	2.484	2.175	1.866	1.586	1.317	1.067	0.778
70	-	4.381	3.366	2.668	2.336	1.982	1.692	1.400	1.129	0.827
75	-	-	3.544	2.836	2.497	2.097	1.762	1.483	1.191	0.875
80	-	-	3.721	2.935	2.659	2.213	1.822	1.565	1.254	0.924
85	-	-	3.899	3.035	2.819	2.328	1.882	1.648	1.316	0.972
90	-	-	4.077	3.135	2.921	2.444	1.941	1.726	1.379	1.021
95	-	-	4.255	3.234	3.023	2.560	2.001	1.778	1.441	1.069
100	-	-	-	3.334	3.126	2.675	2.060	1.831	1.503	1.118
105	-	-	-	3.434	3.228	2.791	2.120	1.883	1.566	1.166
110	-	-	-	3.533	3.330	2.905	2.180	1.935	1.628	1.215
115	-	-	-	3.633	3.433	3.020	2.239	1.988	1.691	1.263
120	-	-	-	3.733	3.535	3.134	2.299	2.040	1.744	1.311
125	-	-	-	3.832	3.637	3.249	2.358	2.093	1.791	1.360
130	-	-	-	3.932	3.739	3.363	2.418	2.145	1.837	1.408
135	-	-	-	4.032	3.842	3.477	2.478	2.197	1.884	1.457
140	-	-	-	4.131	3.944	3.592	2.537	2.250	1.931	1.505
145	-	-	-	4.231	4.046	3.706	2.597	2.302	1.978	1.554
150	-	-	-	4.331	4.149	3.821	2.657	2.355	2.024	1.602
155	-	-	-	-	4.251	3.935	2.716	2.407	2.071	1.651
160	-	-	-	-	4.353	4.050	2.776	2.459	2.118	1.699
165	-	-	-	-	-	4.164	2.892	2.512	2.165	1.742
170	-	-	-	-	-	4.278	3.125	2.564	2.211	1.782
175	-	-	-	-	-	4.393	3.358	2.617	2.258	1.822
180	-	-	-	-	-	-	3.592	2.669	2.305	1.862
185	-	-	-	-	-	-	3.825	2.721	2.351	1.902
190	-	-	-	-	-	-	4.058	2.774	2.398	1.942
195	-	-	-	-	-	-	4.291	2.846	2.445	1.982
200	-	-	-	-	-	-	-	3.001	2.492	2.022
205	-	-	-	-	-	-	-	3.155	2.538	2.062
210	-	-	-	-	-	-	-	3.310	2.585	2.102
215	-	-	-	-	-	-	-	3.465	2.632	2.142
220	-	-	-	-	-	-	-	3.620	2.679	2.182
225	-	-	-	-	-	-	-	3.774	2.725	2.221
230	-	-	-	-	-	-	-	3.929	2.772	2.261
235	-	-	-	-	-	-	-	4.084	2.823	2.301
240	-	-	-	-	-	-	-	4.239	2.945	2.341
245	-	-	-	-	-	-	-	4.394	3.066	2.381
250	-	-	-	-	-	-	-	-	3.188	2.421
255	-	-	-	-	-	-	-	-	3.309	2.461
260	-	-	-	-	-	-	-	-	3.431	2.501
265	-	-	-	-	-	-	-	-	3.552	2.541
270	-	-	-	-	-	-	-	-	3.674	2.581
275	-	-	-	-	-	-	-	-	3.795	2.621
280	-	-	-	-	-	-	-	-	3.916	2.661
285	-	-	-	-	-	-	-	-	4.038	2.701
290	-	-	-	-	-	-	-	-	4.159	2.741
295	-	-	-	-	-	-	-	-	4.281	2.780
300	-	-	-	-	-	-	-	-	4.402	2.820
305	-	-	-	-	-	-	-	-	-	2.860
310	-	-	-	-	-	-	-	-	-	2.900
315	-	-	-	-	-	-	-	-	-	2.940
320	-	-	-	-	-	-	-	-	-	2.980
325	-	-	-	-	-	-	-	-	-	3.020
330	-	-	-	-	-	-	-	-	-	3.060
335	-	-	-	-	-	-	-	-	-	3.100
340	-	-	-	-	-	-	-	-	-	3.140

Thickness is in mm and is intumescent only. Results apply to rectangular and circular hollow columns, and hollow beams exposed on four sides limited to a protection thickness of 4.429mm.

Certificate No: IFCC1077

**Table 32: RHS and CHS Columns
Fire Resistance Period: 120 minutes**

Section Factor up to (m ⁻¹)	Protection Thickness (mm) for a temperature of:									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	-	-	3.570	2.835	2.524	2.130	1.575	1.363	1.149	0.879
55	-	-	3.833	3.038	2.721	2.333	1.725	1.474	1.238	0.947
60	-	-	4.096	3.241	2.918	2.536	1.875	1.585	1.327	1.016
65	-	-	4.359	3.443	3.087	2.740	2.024	1.696	1.415	1.085
70	-	-	-	3.646	3.256	2.881	2.174	1.781	1.504	1.154
75	-	-	-	3.848	3.426	2.986	2.324	1.859	1.593	1.223
80	-	-	-	4.051	3.595	3.091	2.474	1.937	1.681	1.292
85	-	-	-	4.254	3.765	3.196	2.623	2.016	1.751	1.361
90	-	-	-	-	3.934	3.301	2.773	2.094	1.807	1.430
95	-	-	-	-	4.103	3.406	2.885	2.172	1.864	1.499
100	-	-	-	-	4.273	3.511	2.982	2.251	1.920	1.568
105	-	-	-	-	-	3.616	3.079	2.329	1.977	1.637
110	-	-	-	-	-	3.721	3.176	2.407	2.033	1.706
115	-	-	-	-	-	3.826	3.273	2.486	2.090	1.758
120	-	-	-	-	-	3.931	3.370	2.564	2.146	1.808
125	-	-	-	-	-	4.036	3.468	2.642	2.203	1.858
130	-	-	-	-	-	4.140	3.565	2.721	2.259	1.908
135	-	-	-	-	-	4.245	3.662	2.799	2.316	1.957
140	-	-	-	-	-	4.350	3.759	2.910	2.372	2.007
145	-	-	-	-	-	-	3.856	3.029	2.429	2.057
150	-	-	-	-	-	-	3.953	3.149	2.485	2.106
155	-	-	-	-	-	-	4.050	3.269	2.542	2.156
160	-	-	-	-	-	-	4.147	3.389	2.598	2.206
165	-	-	-	-	-	-	4.244	3.508	2.655	2.255
170	-	-	-	-	-	-	4.341	3.628	2.711	2.305
175	-	-	-	-	-	-	-	3.748	2.768	2.355
180	-	-	-	-	-	-	-	3.867	2.838	2.404
185	-	-	-	-	-	-	-	3.987	2.983	2.454
190	-	-	-	-	-	-	-	4.107	3.129	2.504
195	-	-	-	-	-	-	-	4.226	3.274	2.553
200	-	-	-	-	-	-	-	4.346	3.420	2.603
205	-	-	-	-	-	-	-	-	3.566	2.653
210	-	-	-	-	-	-	-	-	3.711	2.702
215	-	-	-	-	-	-	-	-	3.857	2.752
220	-	-	-	-	-	-	-	-	4.002	2.802
225	-	-	-	-	-	-	-	-	4.148	2.933
230	-	-	-	-	-	-	-	-	4.293	3.096
235	-	-	-	-	-	-	-	-	-	3.260
240	-	-	-	-	-	-	-	-	-	3.424
245	-	-	-	-	-	-	-	-	-	3.587
250	-	-	-	-	-	-	-	-	-	3.751
255	-	-	-	-	-	-	-	-	-	3.915
260	-	-	-	-	-	-	-	-	-	4.078
265	-	-	-	-	-	-	-	-	-	4.242
270	-	-	-	-	-	-	-	-	-	4.406
275	-	-	-	-	-	-	-	-	-	-
280	-	-	-	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-	-	-

Thickness is in mm and is intumescent only. Results apply to rectangular and circular hollow columns, and hollow beams exposed on four sides limited to a protection thickness of 4.429mm.