CERTIFICATION DOCUMENT
BS-RC-0018
Issued : 28th June 2017

Sherwin-Williams Protective & Marine Coatings

No. 101 W Prospect Avenue
Cleveland
OH 44115-1093
USA

The product has been assessed against the requirements of the UL Guide Category: CDXA

UL Certified Product

FIRETEX FX5090

CERTIFICATION of FIRETEX FX5090
Sherwin-Williams Protective & Marine Coatings

This certification relates to the use of a reactive coating known as FIRETEX FX5090 for the fire protection of structural steel hollow section columns. The performance scope of the certification is given in Tables 1 to 8, which show the total dry film thickness of FIRETEX FX5090 (excluding primer and top coat) required to provide fire resistance periods in accordance with BS 476: Part 21: 1987 within the range of 15 minutes to 120 minutes for differing section shapes, section factors and steel design temperatures.

This certification is designed to demonstrate compliance of the product or system specifically with Approved Document B (England and Wales), Section D of the technical Standard (Scotland), Technical Booklet E (Northern Ireland). If compliance is required to other regulatory or guidance documents there may be additional considerations or conflict to be taken into account.

The products are certified on the basis of:

a) Initial type testing.
b) Audit testing
c) FUS-FPC
d) Quality system – ISO 9001
e) Performance assessment adopting the principles of the ASFP 'Yellow Book' 5th edition as required by UL guide category CDXA.

The data given in the performance tables of this certificate is applicable to steel sections blast cleaned to ISO 8501-1 Sa 2½ or equivalent and primed with a suitable compatible primer. Guidance with respect to surface preparations, primers and top coats should be obtained from Sherwin-Williams Protective & Marine Coatings whose responsibility it is to ensure that FIRETEX FX5090 is compatible for use in respect of both ambient and fire conditions. The dry film thickness of primer and top coat should not exceed that tested.

The data given in the performance tables relates to steel design temperatures for the section type and size. Selection of the appropriate design temperature is dependent on the actual load conditions for the section and as such the design temperature should be provided by a suitably qualified structural engineer.

In the absence of an appropriate design temperature guidance may be obtained by reference to the 'Yellow Book' clause relating to default limiting and critical temperatures.

It is acceptable to derive a protection thickness by linear interpolation between the temperatures given in the tables should the actual design or limiting critical temperature fall between two given temperatures.

This certification relates to ongoing production. Product and/or its immediate packaging are identified with the manufacturers name, the product name and the UL Certified label.

FIRETEX FX5090										
Section Factor up to m^{-1}	Table 1: Hollow Columns: Fire Resistance Period: 15 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	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

Table applies to circular and rectangular hollow columns with protection to all sides. Thickness is intumescent only.

FIRETEX FX5090										
Section Factor up to m^{-1}	Table 2: Hollow Columns: Fire Resistance Period: 30 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	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

Table applies to circular and rectangular hollow columns with protection to all sides. Thickness is intumescent only.

FIRETEX FX5090										
Section Factor up to m^{-1}	Table 3: Hollow Columns: Fire Resistance Period: 45 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	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
Table applies to circular and rectangular hollow columns with protection to all sides. Thickness is intumescent only.										

FIRETEX FX5090										
Section Factor up to m^{-1}	Table 4: Hollow Columns: Fire Resistance Period: 60 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	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
Table applies to circular and rectangular hollow columns with protection to all sides. Thickness is intumescent only.										

FIRETEX FX5090										
Section Factor up to m^{-1}	Table 5: Hollow Columns: Fire Resistance Period: 75 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	2.352	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

Table applies to circular and rectangular hollow columns with protection to all sides. Thickness is intumescent only.

FIRETEX FX5090										
Section Factor up to m^{-1}	Table 6: Hollow Columns: Fire Resistance Period: 90 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	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

Table applies to circular and rectangular hollow columns with protection to all sides. Thickness is intumescent only.

FIRETEX FX5090										
Section Factor up to m^{-1}	Table 7: Hollow Columns: Fire Resistance Period: 105 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	-	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

Table applies to circular and rectangular hollow columns with protection to all sides. Thickness is intumescent only.

FIRETEX FX5090										
Section Factor up to m^{-1}	Table 8: Hollow Columns: Fire Resistance Period: 120 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	520°C	550°C	600°C	650°C	700°C	750°C
50	-	-	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
Table applies to circular and rectangular hollow columns with protection to all sides. Thickness is intumescent only.										