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YELLOW BOOK

Fire protection for structural steel in buildings 4th Edition

(Volume 2: Part 3 Sprayed Non Reactive Coatings)

Amendments to Vol 2: Section 10:3 Product Data Sheets

DATE	SECTION	AMENDMENT SUMMARY	SOURCE
27/06/07	10:3	STEELGUARD CM4703 & CM4704: Moved from Reactive to Non Reactive Coatings	BP
27/06/07	10	List of Products amended	BP
13/07/07	ALL	Book divided into two volumes. Vol 1: Sections 1-8 & 10 and Vol 2: Section 9 Product Data Sheets	BP
27/07/07	10:3	MONOKOTE MK6: Amending errors in figures for 120mins on both tables	BP
27/07/07	10:3	All Grace Products: New website address	Requested by Grace
01/11/07	10:1	PROMATECT 250 Change to item 5, 9 and 11 Change to tables to reflect new 30mm thickness board	Requested by Promatect
20/11/07	ALL	Sections renumbered sequentially. 9 is now Bibliography and 10 the Product Data Sheets	BP
20/11/07	10	Product Sections renumbered and called Vol 2 Parts 1, 2, 3 and 4	BP
15/01/07	10:3	STEELGUARD CM4703 & CM4704: Amended web address, change to final line of entry	BP
07/10/09	10.3	Repagination of Section	BP
30/04/2010	Cover	New volume covers	NR
10/05/2010	10.2	VERMIPLASTER BD	NR
21-08-17	10.3	Revised entries for GCP Applied Technologies	NR

Note 1:

Amendments may only be inserted by ASFP Secretariat with approval of the ASFP Technical Officer.

SECTION 10:3

SPRAYED NON REACTIVE COATINGS

List of Product Data Sheets

CAFCO® 300
CAFCO® BLAZE-SHIELD II
CAFCO MANDOLITE CP2
CAFCO MANDOLITE HS3
CAFCO MANDOLITE TG
MONOKOTE MK6
MONOKOTE Z106
MONOKOTE Z146
STEELGUARD CM4703
STEELGUARD CM4704
VERMIPLASTER BD

This volume should be read in conjunction with Volume 1, available to download from www.asfp.org.uk

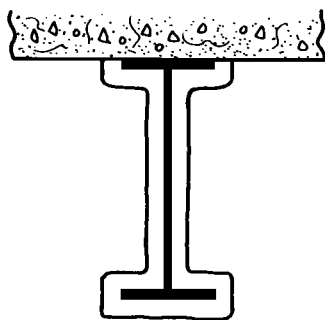
CAFCO® 300

1. **Product description**
Gypsum based vermiculite spray
2. **Manufacturer**
CAFCO INTERNATIONAL
Bluebell Close, Clover Nook Industrial Park, Alfreton, Derbyshire DE55 4RA
T: 01773 837900
F: 01773 836710 W: www.cafcointl.com
3. **Availability**
Supply and fix service by recognised applicators. Details from manufacturer
4. **Protection technique**
Profile, box or solid
5. **Application technique**
Factory prepared pre-packed, mixed with water on site and sprayed through standard slurry pump.
6. **Steel preparation requirements**
Steel must be de-greased and have loose scale and rust removed. Pre-treatment using a primer/adhesive is necessary in most cases when applying 300 to steelwork with painted surfaces.
7. **Additional mechanical fixing**
None within the scope of the following table
8. **Nominal density**
310 kg/m³
9. **Thickness range**
10 - 70mm
10. **Fire resistance range**
 - (a) Up to 4 hours
 - (b) Hp/A: 30 - 310 Profile
11. **Constraints for fire resistance**
 - (a) Minimum dry thickness 10mm
 - (b) Maximum unreinforced dry thickness 70mm
12. **Appearance**
Off-white textured finish. Surface finishes may be used
13. **On site use**
Internal -semi exposed (canopies)
14. **Durability**
Resistant to frost, vermin and mould growth and limited attack by water.
15. **Performance in other BS and EN fire tests**
Non-combustible in accordance with BS476-4, so complies with Class 0 requirements as defined in the Building Regulations 1991. EN test for fire protection to concrete.
16. **Other applications**
 - (a) Fire protection of concrete
 - (b) Marine protection (internal)
 - (c) Cavity fire barrier
 - (d) Acoustic correction
 - (e) Fire protection of ductwork

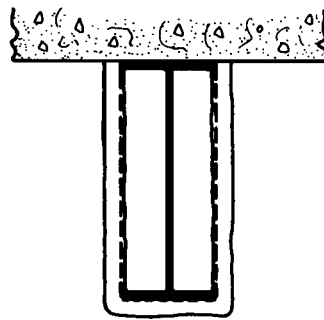
CAFCO® 300

Hp/A up to	Dry thickness in mm to provide fire resistance (mins) of					
	30	60	90	120	180	240
30	10	10	10	12	17	23
50	10	10	13	16	24	32
70	10	10	15	20	29	38
90	10	12	17	22	32	43
110	10	13	18	24	35	46
130	10	14	19	25	37	49
150	10	14	20	27	39	52
170	10	15	21	28	41	53
190	10	15	22	29	42	55
210	10	16	22	29	43	57
230	10	16	23	30	44	58
250	10	16	23	30	45	59
270	10	17	24	31	45	60
290	10	17	24	31	46	61
310	10	17	24	32	47	61
Linear interpolation is permissible between values of Hp/A						
Critical Temperature 550°C						

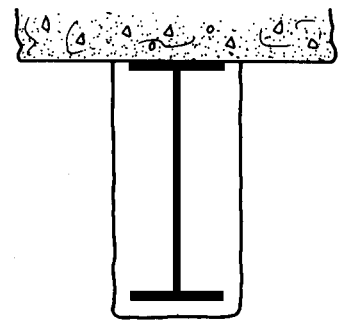
This product is certified by a 3rd Party Certification body accredited to ISO Guide 65
 The data provided complies with the principles in Sections 3 and 4 of this Yellow Book



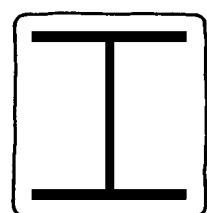
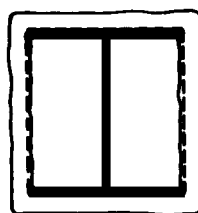
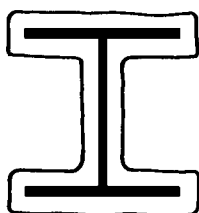
PROFILE



BOX



SOLID



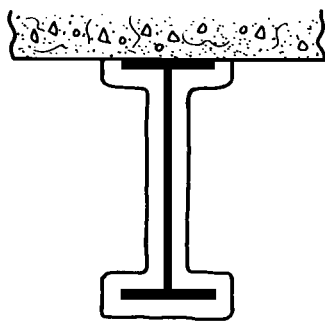
CAFCO® BLAZE-SHIELD II

- 1. Product description**
Sprayed mineral wool
- 2. Manufacturer**
CAFCO INTERNATIONAL
Bluebell Close, Clover Nook Industrial Park, Alfreton, Derbyshire DE55 4RA
T: 01773 837900
F: 01773 836710 W: www.cafcointl.com
- 3. Availability**
Supply and fix service by recognised applicators. Details from manufacturer
- 4. Protection technique**
Profile, box or solid
- 5. Application technique**
Air-borne spray mixed with water at gun
- 6. Steel preparation requirements**
The steel must be degreased and have loose scale and rust removed. The steel may be primed with a zinc epoxy primer or any other compatible type. No preparation is necessary for box protection
- 7. Additional mechanical fixing or reinforcement**
None for up to 65mm and 4 hours fire resistance for 3 or 4 sided applications. Mesh or equivalent (i.e. steel pins with spring washers) may need to be introduced for other applications
- 8. Nominal density**
250 - 280 kg/m³
- 9. Thickness range**
10 - 70mm
- 10. Fire resistance range**
 - (a) Up to 4 hours
 - (b) Hp/A: 26 - 315m⁻¹ for profile protection
17 - 260m⁻¹ for box or solid protection
- 11. Constraints for fire resistance**
 - (a) Minimum dry thickness - 10mm
 - (b) Maximum unreinforced dry thickness - 65mm
 - (c) For 3 and 4 hours fire resistance thicknesses in excess of 65mm require reinforcement and reference should be made to the manufacturer
- 12. Appearance**
White rough textured
- 13. On site use**
Internal
- 14. Durability**
Resistant to local short term water attack, vermin and mould growth
- 15. Performance in other BS and EN fire tests**
Non-combustible in accordance with BS476-4, so complies with Class 0 as defined in the Building Regulations 1991
- 16. Other applications**
 - (a) Thermal insulation
 - (b) Acoustic correction
 - (c) Condensation control
 - (d) Sound insulation
 - (e) Fire protection of ductwork
 - (f) Fire protection of concrete
 - (g) General fire protection - external walls, cavity barriers, etc
 - (h) Marine fire protection

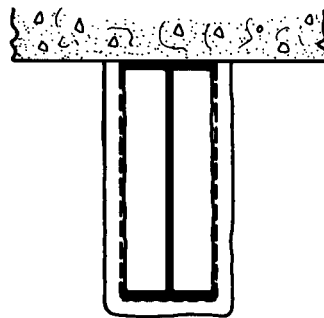
CAFCO® BLAZE-SHIELD II

Hp/A up to	Dry thickness in mm to provide fire resistance (mins) of					
	30	60	90	120	180	240
30	10	12	12	12	17	25
50	10	12	12	16	26	36
70	10	12	15	21	34	46
90	10	12	17	25	40	55
110	10	12	20	29	46	64
130	10	13	22	32	51	70
150	10	14	24	35	56	
170	10	15	26	37	60	
190	10	16	28	40	64	
210	10	16	29	42	67	
230	10	17	30	43	70	
250	10	18	31	45		
270	10	18	33	47		
290	10	19	34	48		
310	10	19	35	50		
Linear interpolation is permissible between values of Hp/A						
Critical Temperature 550°C						

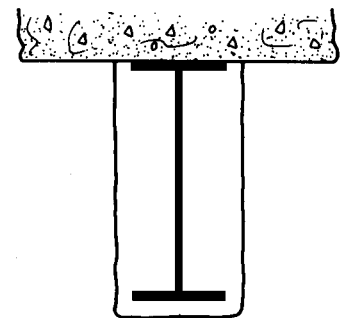
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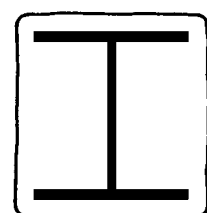
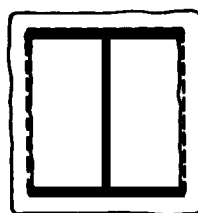
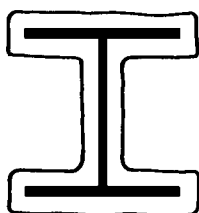
PROFILE



BOX



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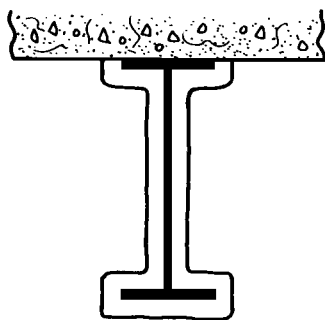
CAFCO MANDOLITE CP2

1. **Product description**
Cement based vermiculite spray
2. **Manufacturer**
CAFCO INTERNATIONAL
Bluebell Close, Clover Nook Industrial Park, Alfreton, Derbyshire DE55 4RA
T: 01773 837900
F: 01773 836710 W: www.cafcointl.com
3. **Availability**
Supply and fix service by recognised applicators. Details from manufacturer
4. **Protection technique**
Profile or solid
5. **Application technique**
Factory prepared pre-mix, mixed with water on site and spray applied
6. **Steel preparation requirements**
The steel must be degreased and have loose scale and rust removed. If the steel is primed reference must be made to the manufacturer
7. **Additional mechanical fixing or reinforcement**
None for up to 73mm and 4 hours resistance for 3 or 4 sided applications. Mesh or equivalent may be needed for other cases
8. **Nominal density**
390 kg/m³
9. **Thickness range**
8 to 100mm
10. **Fire resistance range**
 - (a) Up to 4 hours
 - (b) Hp/A 26 - 315 m⁻¹ for profile protection
17 - 260 m⁻¹ for solid protection
11. **Constraints for fire resistance**
 - (a) Minimum thickness - 8mm
 - (b) Maximum unreinforced thickness - 73mm
12. **Appearance**
Off-white textured surface. Surface finishes may be used
13. **On site use**
For interior and limited exterior exposure (during construction)
14. **Durability**
Resistant to frost, vermin and mould growth and limited attack by water. Surface damage can be made good with CP2 Patch Mix
15. **Performance in other BS fire tests**
Non-combustible in accordance with BS476-4 so complies with Class 0 as defined in the Building Regulations 1985
16. **Other applications**
 - (a) Fire protection of ductwork
 - (b) Fire protection of concrete elements and composite floors
 - (c) General fire protection -interior surfaces of external walls, cavity barriers, etc

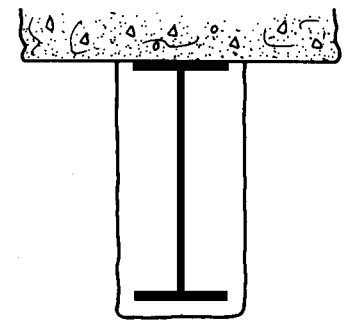
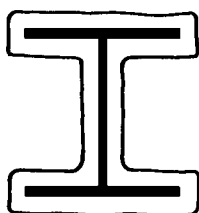
CAFCO MANDOLITE CP2

Hp/A up to	Dry thickness in mm to provide fire resistance (mins) of					
	30	60	90	120	180	240
30	8	8	10	13	19	25
50	8	10	14	18	25	33
70	8	12	16	21	30	39
90	8	13	18	23	33	43
110	9	14	19	25	35	46
130	9	15	20	26	37	48
150	10	15	21	27	39	50
170	10	16	22	28	40	52
190	10	16	22	29	41	53
210	10	17	23	29	42	54
230	11	17	23	30	42	55
250	11	17	24	30	43	56
270	11	17	24	30	44	57
290	11	18	24	31	44	57
310	11	18	24	31	45	58
Linear interpolation is permissible between values of Hp/A						
Critical Temperature 550°C						

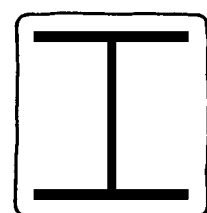
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PROFILE



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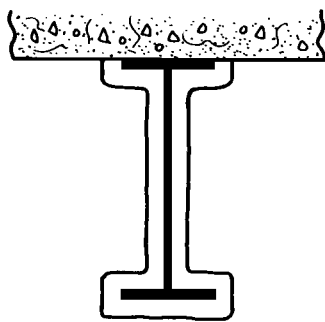
CAFCO MANDOLITE HS3

1. **Product description**
Lightweight aggregate cementitious mix
2. **Manufacturer**
CAFCO INTERNATIONAL
Bluebell Close, Clover Nook Industrial Park, Alfreton, Derbyshire DE55 4RA
T: 01773 837900
F: 01773 836710 W: www.cafcointl.com
3. **Availability**
Supply and fix service by recognised applicators. Details from manufacturer
4. **Protection technique**
Profile, box or solid
5. **Application technique**
Factory prepared pre-mix, mixed with water on site and spray applied (can be trowel finished)
6. **Steel preparation requirements**
The steel must be degreased and have loose scale and rust removed. If the steel is primed reference must be made to the manufacturer
7. **Additional mechanical fixing**
None for up to 58mm and 4 hour's resistance for three or four sided applications. Mesh or fixing equivalent may be needed for other cases. Mesh required for Box systems
8. **Nominal density**
750 kg/ m³
9. **Thickness range**
8 to 100mm
10. **Fire resistance range**
 - (a) Up to 4 hours
 - (b) Hp/A: 26 - 330 m⁻¹ for profile protection
17 - 260m⁻¹ for box or solid protection
11. **Constraints for fire resistance**
 - (a) Minimum dry thickness 8mm
 - (b) Maximum unreinforced dry thickness 58mm
12. **Appearance**
Off white textured or smooth surface suitable for top coating if required
13. **On site use**
For interior and exterior applications
14. **Durability**
Resistant to weather, impact, vermin and mould growth
15. **Performance in other BS fire tests**
Non-combustible in accordance with BS476-4 so complies with Class 0 as defined in the Building Regulations 1991
16. **Other applications**
 - (a) Fire protection of concrete
 - (c) General fire protection

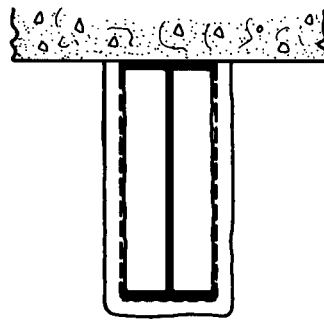
CAFCO MANDOLITE HS3

Hp/A up to	Dry thickness in mm to provide fire resistance (mins) of						
	30	60	90	120	180	240	
30	8	8	9	11	17	23	
50	8	8	12	16	24	33	
70	8	9	14	19	29	39	
90	8	11	16	22	33	45	
110	8	12	18	24	36	49	
130	8	12	19	26	39	52	
150	8	13	20	27	41	55	
170	8	13	21	28	43	58	
190	8	14	22	29	44		
210	8	14	22	30	46		
230	8	15	23	31	47		
250	8	15	23	31	48		
270	8	15	24	32	49		
290	8	16	24	33	49		
310	8	16	24	33	50		
Linear interpolation is permissible between values of Hp/A							
Critical Temperature 550°C							

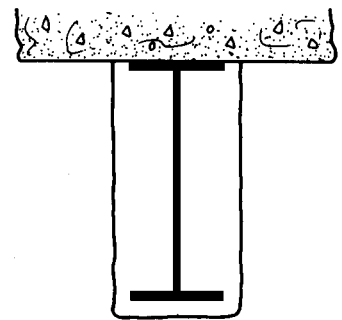
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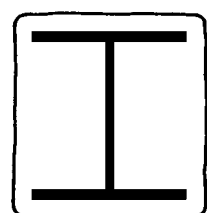
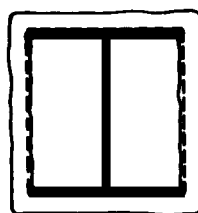
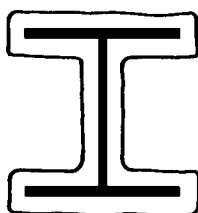
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BOX



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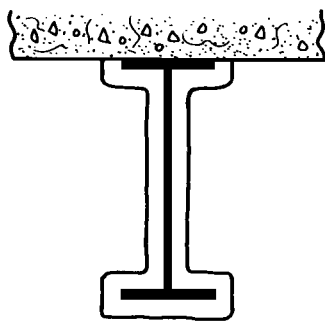
CAFCO MANDOLITE TG

1. **Product description**
Trowel grade lightweight aggregate cementitious mix
2. **Manufacturer**
CAFCO INTERNATIONAL
Bluebell Close, Clover Nook Industrial Park, Alfreton, Derbyshire DE55 4RA
T: 01773 837900
F: 01773 836710 W: www.cafcointl.com
3. **Availability**
Supply and fix service by recognised applicators. Details from manufacturer.
4. **Protection technique**
Profile, box or solid
5. **Application technique**
Factory prepared pre-mix, mixed with water on site and applied by trowel
6. **Steel preparation requirements**
The steel must be degreased and have loose scale and rust removed. If the steel is primed reference must be made to the manufacturer. No preparation is necessary for box protection
7. **Additional mechanical fixing**
Mesh may be required for specific applications. Mesh required for Box systems
8. **Nominal density**
675kg/ m³
9. **Thickness range**
8 to 100mm
10. **Fire resistance range**
 - a) Up to 4 hours
 - b) Hp/A: 26 - 330m⁻¹ for profile protection
17 - 260m⁻¹ for box or solid protection
11. **Constraints for fire resistance**
 - a) Minimum dry thickness 8mm
 - b) Maximum unreinforced dry thickness 58mm
12. **Appearance**
Off white smooth surface suitable for top coating if required
13. **On site use**
For interior and exterior applications
14. **Durability**
Resistant to weather, impact, vermin and mould growth
15. **Performance in other BS fire tests**
Non-combustible in accordance with BS476, Part 4, so complies with Class 0 as defined in the Building Regulations 1991.
16. **Other applications**
 - a) Hand repairs to Mandolite HS3
 - b) Fire protection of concrete
 - c) General fire protection of building structures

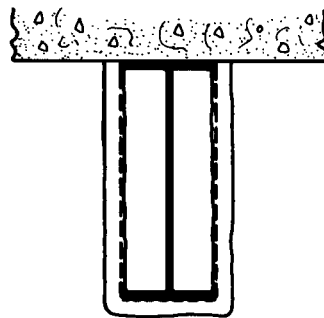
CAFCO MANDOLITE TG

Hp/A up to	Dry thickness in mm to provide fire resistance (mins) of					
	30	60	90	120	180	240
30	8	8	9	11	17	23
50	8	8	12	16	24	33
70	8	9	14	19	29	39
90	8	11	16	22	33	45
110	8	12	18	24	36	49
130	8	12	19	26	39	52
150	8	13	20	27	41	55
170	8	13	21	28	43	58
190	8	14	22	29	44	
210	8	14	22	30	46	
230	8	15	23	31	47	
250	8	15	23	31	48	
270	8	15	24	32	49	
290	8	16	24	33	49	
310	8	16	24	33	50	
Linear interpolation is permissible between values of Hp/A						
Critical Temperature 550°C						

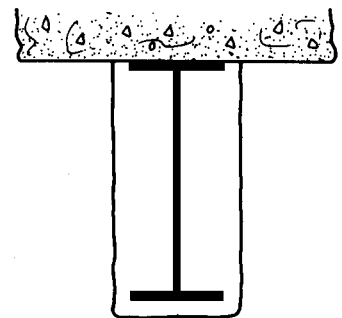
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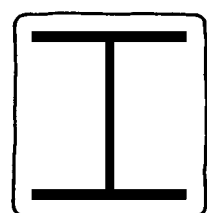
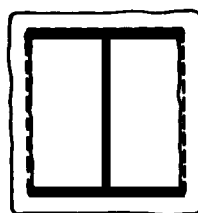
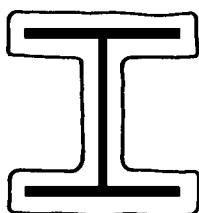
PROFILE



BOX



SOLID



MONOKOTE MK6

1. **Product description**
Gypsum based mixture containing synthetic aggregate
2. **Manufacturer**
GCP Applied Technologies
Ajax Avenue Slough, Berkshire SL1 4BH
T: 01753 692929
F: 01753 691623
W: www.gcpat.com
3. **Availability**
GCP Applied Technologies
4. **Protection technique**
Profile to beams, columns and soffits
5. **Surface preparation requirements**
Remove mill scale and contaminates. For compatible primers refer to manufacturer.
6. **Additional mechanical fixing**
None required for I beams with depths up to 1000mm, and I columns with flange widths up to 500mm
7. **Nominal density**

Monokote MK-6S	315 kg/m ³
Monokote MK6-HY	250 kg/m ³
8. **Thickness range**
9.4mm to 82.9mm
9. **Fire resistance range**
Up to and including 4 hours
10. **Appearance**
Sprayed, textured, light grey, other colours available
11. **On site use**
For internal applications only
12. **Durability**
Resistant to vermin, mould growth and minor impact and abrasions
13. **Performance in other BS tests**
Non-combustible BS 476-6, Class 0 BS 476-7
14. **Other applications**
 - a) Thermal insulation
 - b) Acoustic control

MONOKOTE MK6										
Section Factor up to m ⁻¹	Table 1: I-Section Beams and Columns: Fire Resistance Period: 30 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
35	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
40	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
45	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
50	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
55	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
60	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
65	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
70	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
75	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
80	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
85	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
90	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
95	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
100	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
105	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
110	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
115	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
120	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
125	9.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
130	10.3	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
135	10.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
140	11.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
145	11.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
150	12.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
155	12.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
160	12.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
165	13.0	9.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
170	13.3	10.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
175	13.6	10.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
180	13.9	10.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
185	14.1	11.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
190	14.3	11.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
195	14.6	11.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
200	14.8	12.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
205	15.0	12.3	9.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4
210	15.1	12.5	10.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4
215	15.3	12.8	10.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
220	15.5	13.0	10.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4
225	15.6	13.2	11.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4
230	15.8	13.4	11.3	9.4	9.4	9.4	9.4	9.4	9.4	9.4
235	15.9	13.6	11.5	9.6	9.4	9.4	9.4	9.4	9.4	9.4
240	16.1	13.8	11.7	9.9	9.4	9.4	9.4	9.4	9.4	9.4
245	16.2	14.0	12.0	10.1	9.4	9.4	9.4	9.4	9.4	9.4
250	16.3	14.2	12.2	10.4	9.4	9.4	9.4	9.4	9.4	9.4
255	16.5	14.4	12.4	10.7	9.4	9.4	9.4	9.4	9.4	9.4
260	16.6	14.5	12.6	10.9	9.4	9.4	9.4	9.4	9.4	9.4
265	16.7	14.7	12.8	11.1	9.7	9.4	9.4	9.4	9.4	9.4
270	16.8	14.8	13.0	11.4	9.9	9.4	9.4	9.4	9.4	9.4
275	16.9	15.0	13.2	11.6	10.2	9.4	9.4	9.4	9.4	9.4
280	17.0	15.1	13.3	11.8	10.4	9.4	9.4	9.4	9.4	9.4
285	17.1	15.2	13.5	12.0	10.6	9.5	9.4	9.4	9.4	9.4
290	17.2	15.4	13.7	12.2	10.8	9.7	9.4	9.4	9.4	9.4
295	17.3	15.5	13.8	12.3	11.1	10.0	9.5	9.4	9.4	9.4
300	17.4	15.6	14.0	12.5	11.3	10.2	9.7	9.4	9.4	9.4
305	17.4	15.7	14.1	12.7	11.5	10.4	9.9	9.4	9.4	9.4
310	17.5	15.8	14.2	12.9	11.6	10.6	10.1	9.4	9.4	9.4
315	17.6	15.9	14.4	13.0	11.8	10.8	10.4	9.6	9.4	9.4
320	17.7	16.0	14.5	13.2	12.0	11.0	10.6	9.8	9.4	9.4
325	17.7	16.1	14.6	13.3	12.2	11.2	10.8	10.0	9.4	9.4
330	17.8	16.2	14.7	13.5	12.3	11.4	11.0	10.2	9.4	9.4
335	17.9	16.3	14.9	13.6	12.5	11.6	11.1	10.4	9.4	9.4
340	17.9	16.4	15.0	13.7	12.6	11.8	11.3	10.6	9.6	9.4
345	18.0	16.5	15.1	13.9	12.8	11.9	11.5	10.8	9.8	9.4
350	18.1	16.6	15.2	14.0	12.9	12.1	11.7	11.0	10.0	9.4
355	18.1	16.7	15.3	14.1	13.1	12.2	11.8	11.2	10.2	9.4
360	18.2	16.7	15.4	14.2	13.2	12.4	12.0	11.3	10.4	9.6
365	18.2	16.8	15.5	14.3	13.4	12.5	12.1	11.5	10.5	9.8

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection material only.
Table also applies to beams and columns protected on four sides.

MONOKOTE MK6										
Section Factor up to m ⁻¹	Table 2: I-Section Beams and Columns: Fire Resistance Period: 60 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
35	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
40	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
45	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
50	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
55	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
60	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
65	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
70	9.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
75	11.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
80	13.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
85	14.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
90	15.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
95	16.8	9.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
100	17.7	11.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
105	18.5	12.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
110	19.2	13.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
115	19.8	14.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
120	20.4	15.0	9.9	9.4	9.4	9.4	9.4	9.4	9.4	9.4
125	20.9	15.8	10.9	9.4	9.4	9.4	9.4	9.4	9.4	9.4
130	21.4	16.5	11.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4
135	21.8	17.1	12.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4
140	22.3	17.7	13.4	9.5	9.4	9.4	9.4	9.4	9.4	9.4
145	22.6	18.2	14.1	10.3	9.4	9.4	9.4	9.4	9.4	9.4
150	23.0	18.7	14.7	11.1	9.4	9.4	9.4	9.4	9.4	9.4
155	23.3	19.2	15.3	11.8	9.4	9.4	9.4	9.4	9.4	9.4
160	23.6	19.6	15.9	12.5	9.5	9.4	9.4	9.4	9.4	9.4
165	23.9	20.0	16.4	13.1	10.3	9.4	9.4	9.4	9.4	9.4
170	24.1	20.4	16.9	13.7	10.9	9.4	9.4	9.4	9.4	9.4
175	24.4	20.7	17.3	14.3	11.6	9.4	9.4	9.4	9.4	9.4
180	24.6	21.1	17.8	14.8	12.2	10.0	9.4	9.4	9.4	9.4
185	24.8	21.4	18.2	15.3	12.8	10.6	9.6	9.4	9.4	9.4
190	25.0	21.7	18.5	15.7	13.3	11.2	10.3	9.4	9.4	9.4
195	25.2	21.9	18.9	16.2	13.8	11.8	10.8	9.4	9.4	9.4
200	25.4	22.2	19.2	16.6	14.3	12.3	11.4	9.9	9.4	9.4
205	25.6	22.5	19.5	17.0	14.7	12.8	11.9	10.4	9.4	9.4
210	25.7	22.7	19.8	17.3	15.1	13.3	12.4	11.0	9.4	9.4
215	25.9	22.9	20.1	17.7	15.5	13.8	12.9	11.5	9.4	9.4
220	26.0	23.1	20.4	18.0	15.9	14.2	13.4	12.0	9.9	9.4
225	26.2	23.3	20.6	18.3	16.3	14.6	13.8	12.4	10.4	9.4
230	26.3	23.5	20.9	18.6	16.6	15.0	14.2	12.8	10.9	9.4
235	26.4	23.7	21.1	18.9	16.9	15.4	14.6	13.3	11.4	9.8
240	26.6	23.9	21.3	19.1	17.2	15.7	14.9	13.7	11.8	10.3
245	26.7	24.0	21.5	19.4	17.5	16.0	15.3	14.0	12.2	10.7
250	26.8	24.2	21.7	19.6	17.8	16.4	15.6	14.4	12.6	11.2
255	26.9	24.3	21.9	19.9	18.1	16.7	16.0	14.7	13.0	11.6
260	27.0	24.5	22.1	20.1	18.4	17.0	16.3	15.1	13.3	12.0
265	27.1	24.6	22.3	20.3	18.6	17.3	16.6	15.4	13.7	12.3
270	27.2	24.8	22.5	20.5	18.9	17.5	16.8	15.7	14.0	12.7
275	27.3	24.9	22.6	20.7	19.1	17.8	17.1	16.0	14.3	13.0
280	27.4	25.0	22.8	20.9	19.3	18.0	17.4	16.2	14.6	13.4
285	27.4	25.1	23.0	21.1	19.5	18.3	17.6	16.5	14.9	13.7
290	27.5	25.2	23.1	21.3	19.7	18.5	17.9	16.8	15.2	14.0
295	27.6	25.3	23.2	21.4	19.9	18.7	18.1	17.0	15.5	14.3
300	27.7	25.5	23.4	21.6	20.1	18.9	18.3	17.2	15.7	14.5
305	27.8	25.6	23.5	21.8	20.3	19.1	18.5	17.5	16.0	14.8
310	27.8	25.7	23.6	21.9	20.5	19.3	18.7	17.7	16.2	15.1
315	27.9	25.8	23.8	22.1	20.6	19.5	18.9	17.9	16.5	15.3
320	28.0	25.8	23.9	22.2	20.8	19.7	19.1	18.1	16.7	15.6
325	28.0	25.9	24.0	22.3	21.0	19.9	19.3	18.3	16.9	15.8
330	28.1	26.0	24.1	22.5	21.1	20.1	19.5	18.5	17.1	16.0
335	28.1	26.1	24.2	22.6	21.3	20.2	19.7	18.7	17.3	16.3
340	28.2	26.2	24.3	22.7	21.4	20.4	19.9	18.9	17.5	16.5
345	28.3	26.3	24.4	22.8	21.5	20.6	20.0	19.0	17.7	16.7
350	28.3	26.3	24.5	23.0	21.7	20.7	20.2	19.2	17.9	16.9
355	28.4	26.4	24.6	23.1	21.8	20.9	20.3	19.4	18.1	17.1
360	28.4	26.5	24.7	23.2	21.9	21.0	20.5	19.5	18.3	17.3
365	28.5	26.6	24.8	23.3	22.1	21.1	20.6	19.7	18.4	17.4

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection material only.
Table also applies to beams and columns protected on four sides.

MONOKOTE MK6										
Section Factor up to m ⁻¹	Table 3: I-Section Beams and Columns: Fire Resistance Period: 90 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
35	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
40	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
45	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
50	11.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
55	15.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
60	18.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
65	20.5	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
70	22.4	11.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
75	24.1	14.3	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
80	25.4	16.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
85	26.6	18.2	10.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4
90	27.6	19.8	12.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4
95	28.5	21.2	14.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4
100	29.3	22.3	15.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4
105	30.0	23.4	17.0	11.2	9.4	9.4	9.4	9.4	9.4	9.4
110	30.6	24.3	18.3	12.8	9.4	9.4	9.4	9.4	9.4	9.4
115	31.2	25.2	19.4	14.2	9.5	9.4	9.4	9.4	9.4	9.4
120	31.7	25.9	20.4	15.5	11.0	9.4	9.4	9.4	9.4	9.4
125	32.1	26.6	21.4	16.6	12.4	9.4	9.4	9.4	9.4	9.4
130	32.6	27.3	22.2	17.6	13.6	10.1	9.4	9.4	9.4	9.4
135	32.9	27.8	23.0	18.6	14.7	11.4	9.9	9.4	9.4	9.4
140	33.3	28.3	23.7	19.5	15.7	12.6	11.1	9.4	9.4	9.4
145	33.6	28.8	24.3	20.2	16.7	13.7	12.2	9.8	9.4	9.4
150	33.9	29.3	24.9	21.0	17.6	14.7	13.3	11.0	9.4	9.4
155	34.2	29.7	25.4	21.7	18.4	15.6	14.3	12.0	9.4	9.4
160	34.5	30.1	25.9	22.3	19.1	16.5	15.2	13.0	9.8	9.4
165	34.7	30.4	26.4	22.9	19.8	17.2	16.0	13.9	10.8	9.4
170	34.9	30.8	26.9	23.4	20.4	18.0	16.8	14.7	11.7	9.4
175	35.1	31.1	27.3	23.9	21.0	18.7	17.5	15.5	12.6	10.2
180	35.3	31.4	27.7	24.4	21.6	19.3	18.2	16.2	13.4	11.1
185	35.5	31.7	28.0	24.8	22.1	19.9	18.8	16.9	14.1	11.9
190	35.7	31.9	28.4	25.3	22.6	20.5	19.4	17.5	14.8	12.6
195	35.9	32.2	28.7	25.7	23.1	21.0	19.9	18.1	15.5	13.4
200	36.0	32.4	29.0	26.0	23.5	21.5	20.5	18.7	16.1	14.0
205	36.2	32.6	29.3	26.4	23.9	22.0	21.0	19.2	16.7	14.7
210	36.3	32.8	29.5	26.7	24.3	22.4	21.4	19.7	17.3	15.3
215	36.4	33.0	29.8	27.0	24.7	22.8	21.9	20.2	17.8	15.9
220	36.6	33.2	30.1	27.3	25.0	23.2	22.3	20.6	18.3	16.4
225	36.7	33.4	30.3	27.6	25.4	23.6	22.7	21.0	18.8	16.9
230	36.8	33.6	30.5	27.9	25.7	24.0	23.1	21.5	19.2	17.4
235	36.9	33.7	30.7	28.2	26.0	24.3	23.4	21.8	19.6	17.9
240	37.0	33.9	30.9	28.4	26.3	24.7	23.8	22.2	20.0	18.3
245	37.1	34.0	31.1	28.6	26.6	25.0	24.1	22.6	20.4	18.7
250	37.2	34.2	31.3	28.9	26.8	25.3	24.4	22.9	20.8	19.2
255	37.3	34.3	31.5	29.1	27.1	25.6	24.7	23.2	21.2	19.5
260	37.4	34.4	31.7	29.3	27.3	25.8	25.0	23.5	21.5	19.9
265	37.5	34.6	31.8	29.5	27.6	26.1	25.3	23.8	21.8	20.3
270	37.6	34.7	32.0	29.7	27.8	26.4	25.6	24.1	22.1	20.6
275	37.7	34.8	32.1	29.9	28.0	26.6	25.8	24.4	22.4	20.9
280	37.7	34.9	32.3	30.0	28.2	26.8	26.1	24.6	22.7	21.2
285	37.8	35.0	32.4	30.2	28.4	27.1	26.3	24.9	23.0	21.5
290	37.9	35.1	32.5	30.4	28.6	27.3	26.5	25.1	23.3	21.8
295	37.9	35.2	32.7	30.5	28.8	27.5	26.7	25.4	23.5	22.1
300	38.0	35.3	32.8	30.7	29.0	27.7	26.9	25.6	23.8	22.4
305	38.1	35.4	32.9	30.8	29.1	27.9	27.1	25.8	24.0	22.6
310	38.1	35.5	33.0	31.0	29.3	28.1	27.3	26.0	24.2	22.9
315	38.2	35.6	33.1	31.1	29.4	28.2	27.5	26.2	24.4	23.1
320	38.2	35.7	33.2	31.2	29.6	28.4	27.7	26.4	24.7	23.3
325	38.3	35.7	33.4	31.4	29.7	28.6	27.9	26.6	24.9	23.6
330	38.4	35.8	33.5	31.5	29.9	28.7	28.1	26.8	25.1	23.8
335	38.4	35.9	33.6	31.6	30.0	28.9	28.2	27.0	25.3	24.0
340	38.5	36.0	33.6	31.7	30.2	29.1	28.4	27.1	25.4	24.2
345	38.5	36.0	33.7	31.8	30.3	29.2	28.5	27.3	25.6	24.4
350	38.6	36.1	33.8	31.9	30.4	29.3	28.7	27.4	25.8	24.6
355	38.6	36.2	33.9	32.0	30.5	29.5	28.8	27.6	26.0	24.8
360	38.6	36.2	34.0	32.1	30.7	29.6	29.0	27.7	26.1	24.9
365	38.7	36.3	34.1	32.2	30.8	29.7	29.1	27.9	26.3	25.1

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection material only.
Table also applies to beams and columns protected on four sides.

MONOKOTE MK6										
Section Factor up to m ⁻¹	Table 4: I-Section Beams and Columns: Fire Resistance Period: 120 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
35	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
40	14.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
45	21.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
50	25.5	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
55	28.8	13.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
60	31.4	18.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
65	33.4	21.5	9.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4
70	35.1	24.3	13.5	9.4	9.4	9.4	9.4	9.4	9.4	9.4
75	36.5	26.5	16.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4
80	37.7	28.4	19.3	10.8	9.4	9.4	9.4	9.4	9.4	9.4
85	38.7	30.0	21.6	13.8	9.4	9.4	9.4	9.4	9.4	9.4
90	39.5	31.4	23.5	16.2	9.6	9.4	9.4	9.4	9.4	9.4
95	40.3	32.6	25.2	18.4	12.2	9.4	9.4	9.4	9.4	9.4
100	40.9	33.7	26.6	20.2	14.5	9.4	9.4	9.4	9.4	9.4
105	41.5	34.6	27.9	21.9	16.5	11.8	9.5	9.4	9.4	9.4
110	42.1	35.4	29.1	23.3	18.2	13.8	11.7	9.4	9.4	9.4
115	42.5	36.2	30.1	24.6	19.8	15.7	13.7	10.3	9.4	9.4
120	43.0	36.9	31.0	25.8	21.2	17.3	15.4	12.2	9.4	9.4
125	43.3	37.5	31.8	26.8	22.4	18.8	16.9	13.9	9.4	9.4
130	43.7	38.0	32.6	27.8	23.6	20.1	18.4	15.4	11.1	9.4
135	44.0	38.5	33.3	28.7	24.6	21.3	19.6	16.8	12.6	9.4
140	44.3	39.0	33.9	29.4	25.6	22.4	20.8	18.0	14.1	10.8
145	44.6	39.4	34.5	30.2	26.4	23.4	21.9	19.2	15.3	12.2
150	44.9	39.8	35.0	30.9	27.2	24.3	22.8	20.2	16.5	13.5
155	45.1	40.2	35.5	31.5	28.0	25.2	23.7	21.2	17.6	14.7
160	45.3	40.5	36.0	32.0	28.7	26.0	24.6	22.1	18.6	15.8
165	45.5	40.8	36.4	32.6	29.3	26.7	25.3	22.9	19.6	16.8
170	45.7	41.1	36.8	33.1	29.9	27.4	26.1	23.7	20.4	17.8
175	45.9	41.4	37.2	33.6	30.5	28.0	26.7	24.4	21.2	18.7
180	46.1	41.7	37.6	34.0	31.0	28.6	27.4	25.1	22.0	19.5
185	46.2	41.9	37.9	34.4	31.5	29.2	28.0	25.8	22.7	20.3
190	46.4	42.2	38.2	34.8	31.9	29.7	28.5	26.4	23.4	21.0
195	46.5	42.4	38.5	35.1	32.4	30.2	29.0	26.9	24.0	21.7
200	46.6	42.6	38.8	35.5	32.8	30.7	29.5	27.4	24.6	22.3
205	46.8	42.8	39.0	35.8	33.2	31.1	30.0	27.9	25.1	22.9
210	46.9	43.0	39.3	36.1	33.5	31.5	30.4	28.4	25.7	23.5
215	47.0	43.1	39.5	36.4	33.9	31.9	30.8	28.9	26.2	24.0
220	47.1	43.3	39.7	36.7	34.2	32.3	31.2	29.3	26.6	24.6
225	47.2	43.5	39.9	37.0	34.5	32.7	31.6	29.7	27.1	25.0
230	47.3	43.6	40.1	37.2	34.8	33.0	32.0	30.1	27.5	25.5
235	47.4	43.8	40.3	37.4	35.1	33.3	32.3	30.4	27.9	25.9
240	47.5	43.9	40.5	37.7	35.3	33.6	32.6	30.8	28.3	26.4
245	47.6	44.0	40.7	37.9	35.6	33.9	32.9	31.1	28.6	26.8
250	47.7	44.2	40.9	38.1	35.8	34.2	33.2	31.4	29.0	27.1
255	47.7	44.3	41.0	38.3	36.1	34.5	33.5	31.7	29.3	27.5
260	47.8	44.4	41.2	38.5	36.3	34.7	33.8	32.0	29.6	27.9
265	47.9	44.5	41.3	38.7	36.5	35.0	34.0	32.3	30.0	28.2
270	48.0	44.6	41.5	38.8	36.7	35.2	34.3	32.6	30.2	28.5
275	48.0	44.7	41.6	39.0	36.9	35.4	34.5	32.8	30.5	28.8
280	48.1	44.8	41.7	39.2	37.1	35.6	34.7	33.0	30.8	29.1
285	48.2	44.9	41.9	39.3	37.3	35.8	35.0	33.3	31.1	29.4
290	48.2	45.0	42.0	39.5	37.5	36.0	35.2	33.5	31.3	29.7
295	48.3	45.1	42.1	39.6	37.6	36.2	35.4	33.7	31.6	29.9
300	48.3	45.2	42.2	39.8	37.8	36.4	35.6	33.9	31.8	30.2
305	48.4	45.3	42.3	39.9	38.0	36.6	35.8	34.1	32.0	30.4
310	48.4	45.3	42.4	40.0	38.1	36.8	35.9	34.3	32.2	30.7
315	48.5	45.4	42.5	40.1	38.3	36.9	36.1	34.5	32.4	30.9
320	48.5	45.5	42.6	40.3	38.4	37.1	36.3	34.7	32.6	31.1
325	48.6	45.6	42.7	40.4	38.5	37.3	36.4	34.9	32.8	31.3
330	48.6	45.6	42.8	40.5	38.7	37.4	36.6	35.0	33.0	31.5
335	48.7	45.7	42.9	40.6	38.8	37.6	36.8	35.2	33.2	31.7
340	48.7	45.8	43.0	40.7	38.9	37.7	36.9	35.4	33.4	31.9
345	48.8	45.8	43.1	40.8	39.0	37.8	37.0	35.5	33.5	32.1
350	48.8	45.9	43.1	40.9	39.2	38.0	37.2	35.7	33.7	32.3
355	48.8	45.9	43.2	41.0	39.3	38.1	37.3	35.8	33.9	32.4
360	48.9	46.0	43.3	41.1	39.4	38.2	37.5	36.0	34.0	32.6
365	48.9	46.0	43.4	41.2	39.5	38.3	37.6	36.1	34.2	32.8

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection material only.
Table also applies to beams and columns protected on four sides.

MONOKOTE MK6										
Section Factor up to m ⁻¹	Table 5: I-Section Beams and Columns: Fire Resistance Period: 180 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	30.3	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
35	41.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
40	47.3	23.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
45	51.4	31.5	10.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4
50	54.3	37.3	19.5	9.4	9.4	9.4	9.4	9.4	9.4	9.4
55	56.4	41.6	26.3	11.2	9.4	9.4	9.4	9.4	9.4	9.4
60	58.1	44.8	31.3	18.2	9.4	9.4	9.4	9.4	9.4	9.4
65	59.4	47.3	35.2	23.6	12.8	9.4	9.4	9.4	9.4	9.4
70	60.5	49.4	38.3	27.9	18.2	9.7	9.4	9.4	9.4	9.4
75	61.4	51.0	40.8	31.3	22.6	15.0	11.3	9.4	9.4	9.4
80	62.1	52.4	42.9	34.2	26.2	19.4	16.0	10.2	9.4	9.4
85	62.7	53.6	44.7	36.5	29.2	23.0	19.9	14.5	9.4	9.4
90	63.3	54.7	46.2	38.6	31.8	26.1	23.2	18.2	10.8	9.4
95	63.8	55.6	47.5	40.3	34.0	28.7	26.0	21.3	14.4	9.4
100	64.2	56.3	48.7	41.9	35.9	31.0	28.4	24.0	17.5	12.1
105	64.6	57.0	49.7	43.2	37.6	33.0	30.5	26.3	20.2	15.2
110	64.9	57.6	50.6	44.4	39.0	34.7	32.4	28.4	22.6	17.8
115	65.2	58.2	51.4	45.5	40.4	36.3	34.1	30.2	24.7	20.2
120	65.5	58.7	52.2	46.4	41.5	37.6	35.5	31.8	26.5	22.2
125	65.8	59.2	52.8	47.3	42.6	38.9	36.9	33.3	28.2	24.1
130	66.0	59.6	53.4	48.1	43.6	40.0	38.1	34.6	29.7	25.8
135	66.2	59.9	54.0	48.8	44.4	41.0	39.2	35.8	31.1	27.3
140	66.4	60.3	54.5	49.4	45.2	42.0	40.2	36.9	32.3	28.7
145	66.6	60.6	54.9	50.0	46.0	42.8	41.1	37.9	33.4	29.9
150	66.7	60.9	55.4	50.6	46.6	43.6	41.9	38.8	34.5	31.1
155	66.9	61.2	55.7	51.1	47.3	44.4	42.7	39.6	35.4	32.1
160	67.0	61.4	56.1	51.6	47.8	45.0	43.4	40.4	36.3	33.1
165	67.2	61.7	56.4	52.0	48.4	45.7	44.1	41.1	37.1	34.0
170	67.3	61.9	56.8	52.4	48.9	46.2	44.7	41.8	37.9	34.9
175	67.4	62.1	57.1	52.8	49.3	46.8	45.3	42.4	38.6	35.6
180	67.5	62.3	57.3	53.2	49.8	47.3	45.8	43.0	39.3	36.4
185	67.6	62.5	57.6	53.5	50.2	47.8	46.3	43.6	39.9	37.1
190	67.7	62.6	57.8	53.8	50.6	48.2	46.8	44.1	40.5	37.7
195	67.8	62.8	58.1	54.1	50.9	48.6	47.2	44.6	41.0	38.3
200	67.9	63.0	58.3	54.4	51.3	49.0	47.6	45.0	41.5	38.9
205	68.0	63.1	58.5	54.7	51.6	49.4	48.0	45.4	42.0	39.4
210	68.1	63.2	58.7	54.9	51.9	49.8	48.4	45.9	42.5	39.9
215	68.1	63.4	58.9	55.2	52.2	50.1	48.8	46.2	42.9	40.4
220	68.2	63.5	59.1	55.4	52.5	50.4	49.1	46.6	43.3	40.8
225	68.3	63.6	59.2	55.6	52.7	50.7	49.4	47.0	43.7	41.3
230	68.3	63.7	59.4	55.8	53.0	51.0	49.7	47.3	44.1	41.7
235	68.4	63.8	59.5	56.0	53.2	51.3	50.0	47.6	44.4	42.1
240	68.4	63.9	59.7	56.2	53.4	51.5	50.3	47.9	44.8	42.4
245	68.5	64.0	59.8	56.4	53.6	51.8	50.5	48.2	45.1	42.8
250	68.6	64.1	60.0	56.5	53.9	52.0	50.8	48.5	45.4	43.1
255	68.6	64.2	60.1	56.7	54.1	52.2	51.0	48.7	45.7	43.5
260	68.7	64.3	60.2	56.9	54.2	52.5	51.3	49.0	46.0	43.8
265	68.7	64.4	60.3	57.0	54.4	52.7	51.5	49.2	46.2	44.1
270	68.7	64.5	60.4	57.2	54.6	52.9	51.7	49.4	46.5	44.3
275	68.8	64.5	60.6	57.3	54.8	53.1	51.9	49.7	46.7	44.6
280	68.8	64.6	60.7	57.4	54.9	53.2	52.1	49.9	47.0	44.9
285	68.9	64.7	60.8	57.6	55.1	53.4	52.3	50.1	47.2	45.1
290	68.9	64.8	60.9	57.7	55.2	53.6	52.5	50.3	47.4	45.4
295	68.9	64.8	60.9	57.8	55.4	53.8	52.6	50.5	47.6	45.6
300	69.0	64.9	61.0	57.9	55.5	53.9	52.8	50.6	47.8	45.8
305	69.0	64.9	61.1	58.0	55.6	54.1	53.0	50.8	48.0	46.0
310	69.0	65.0	61.2	58.1	55.8	54.2	53.1	51.0	48.2	46.2
315	69.1	65.1	61.3	58.2	55.9	54.4	53.3	51.1	48.4	46.4
320	69.1	65.1	61.4	58.3	56.0	54.5	53.4	51.3	48.6	46.6
325	69.1	65.2	61.4	58.4	56.1	54.6	53.6	51.4	48.7	46.8
330	69.2	65.2	61.5	58.5	56.2	54.8	53.7	51.6	48.9	47.0
335	69.2	65.3	61.6	58.6	56.3	54.9	53.8	51.7	49.1	47.2
340	69.2	65.3	61.6	58.7	56.4	55.0	54.0	51.9	49.2	47.3
345	69.3	65.4	61.7	58.8	56.5	55.1	54.1	52.0	49.4	47.5
350	69.3	65.4	61.8	58.9	56.6	55.2	54.2	52.1	49.5	47.7
355	69.3	65.5	61.8	58.9	56.7	55.3	54.3	52.3	49.6	47.8
360	69.3	65.5	61.9	59.0	56.8	55.4	54.4	52.4	49.8	48.0
365	69.4	65.5	62.0	59.1	56.9	55.5	54.5	52.5	49.9	48.1

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection material only.
Table also applies to beams and columns protected on four sides.

MONOKOTE MK6										
Section Factor up to m ⁻¹	Table 6: I-Section Beams and Columns: Fire Resistance Period: 240 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	72.3	31.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
35	77.1	48.3	13.9	9.4	9.4	9.4	9.4	9.4	9.4	9.4
40	79.9	57.2	31.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4
45	81.7	62.7	42.2	21.2	9.4	9.4	9.4	9.4	9.4	9.4
50	-	66.6	49.2	32.0	15.1	9.4	9.4	9.4	9.4	9.4
55	-	69.3	54.2	39.5	25.5	12.7	9.4	9.4	9.4	9.4
60	-	71.4	57.9	45.0	33.0	22.2	16.8	9.4	9.4	9.4
65	-	73.1	60.7	49.2	38.6	29.4	24.7	16.4	9.4	9.4
70	-	74.4	63.0	52.5	43.1	34.9	30.7	23.3	12.3	9.4
75	-	75.5	64.9	55.2	46.6	39.3	35.5	28.8	18.8	10.3
80	-	76.4	66.5	57.5	49.5	42.9	39.4	33.2	24.1	16.5
85	-	77.2	67.8	59.3	52.0	45.9	42.7	36.8	28.5	21.5
90	-	77.9	68.9	60.9	54.0	48.5	45.4	39.9	32.1	25.7
95	-	78.5	69.9	62.3	55.8	50.6	47.7	42.5	35.2	29.2
100	-	79.0	70.7	63.5	57.3	52.5	49.8	44.8	37.9	32.2
105	-	79.5	71.5	64.6	58.7	54.1	51.5	46.8	40.2	34.8
110	-	79.9	72.2	65.5	59.9	55.6	53.1	48.5	42.2	37.1
115	-	80.2	72.8	66.3	60.9	56.8	54.5	50.1	44.0	39.2
120	-	80.5	73.3	67.1	61.9	58.0	55.7	51.4	45.6	41.0
125	-	80.8	73.8	67.8	62.8	59.0	56.8	52.7	47.0	42.6
130	-	81.1	74.2	68.4	63.5	60.0	57.8	53.8	48.3	44.1
135	-	81.4	74.6	68.9	64.2	60.8	58.7	54.8	49.5	45.4
140	-	81.6	75.0	69.4	64.9	61.6	59.5	55.7	50.5	46.6
145	-	81.8	75.3	69.9	65.5	62.3	60.3	56.5	51.5	47.7
150	-	82.0	75.7	70.3	66.0	62.9	61.0	57.3	52.4	48.7
155	-	82.2	76.0	70.7	66.5	63.5	61.6	58.0	53.2	49.6
160	-	82.3	76.2	71.1	67.0	64.1	62.2	58.7	54.0	50.4
165	-	82.5	76.5	71.5	67.4	64.6	62.8	59.3	54.7	51.2
170	-	82.6	76.7	71.8	67.8	65.1	63.3	59.9	55.3	51.9
175	-	82.8	76.9	72.1	68.2	65.5	63.8	60.4	55.9	52.6
180	-	82.9	77.1	72.4	68.6	65.9	64.2	60.9	56.5	53.3
185	-	-	77.3	72.6	68.9	66.3	64.6	61.4	57.0	53.9
190	-	-	77.5	72.9	69.2	66.7	65.0	61.8	57.5	54.4
195	-	-	77.7	73.1	69.5	67.0	65.4	62.2	58.0	54.9
200	-	-	77.8	73.3	69.8	67.4	65.7	62.6	58.4	55.4
205	-	-	78.0	73.5	70.0	67.7	66.1	63.0	58.9	55.9
210	-	-	78.1	73.7	70.3	68.0	66.4	63.3	59.3	56.3
215	-	-	78.3	73.9	70.5	68.3	66.7	63.6	59.6	56.7
220	-	-	78.4	74.1	70.7	68.5	67.0	63.9	60.0	57.1
225	-	-	78.5	74.3	71.0	68.8	67.2	64.2	60.3	57.5
230	-	-	78.7	74.4	71.2	69.0	67.5	64.5	60.6	57.9
235	-	-	78.8	74.6	71.3	69.2	67.7	64.8	60.9	58.2
240	-	-	78.9	74.7	71.5	69.4	67.9	65.0	61.2	58.5
245	-	-	79.0	74.9	71.7	69.6	68.2	65.3	61.5	58.8
250	-	-	79.1	75.0	71.9	69.8	68.4	65.5	61.8	59.1
255	-	-	79.2	75.1	72.0	70.0	68.6	65.7	62.0	59.4
260	-	-	79.3	75.3	72.2	70.2	68.8	65.9	62.3	59.7
265	-	-	79.3	75.4	72.3	70.4	69.0	66.1	62.5	59.9
270	-	-	79.4	75.5	72.5	70.5	69.1	66.3	62.7	60.2
275	-	-	79.5	75.6	72.6	70.7	69.3	66.5	62.9	60.4
280	-	-	79.6	75.7	72.7	70.9	69.5	66.7	63.1	60.6
285	-	-	79.7	75.8	72.9	71.0	69.6	66.9	63.3	60.9
290	-	-	79.7	75.9	73.0	71.1	69.8	67.0	63.5	61.1
295	-	-	79.8	76.0	73.1	71.3	69.9	67.2	63.7	61.3
300	-	-	79.9	76.1	73.2	71.4	70.0	67.3	63.9	61.5
305	-	-	79.9	76.2	73.3	71.5	70.2	67.5	64.0	61.6
310	-	-	80.0	76.2	73.4	71.7	70.3	67.6	64.2	61.8
315	-	-	80.0	76.3	73.5	71.8	70.4	67.8	64.4	62.0
320	-	-	80.1	76.4	73.6	71.9	70.6	67.9	64.5	62.2
325	-	-	80.2	76.5	73.7	72.0	70.7	68.0	64.6	62.3
330	-	-	80.2	76.5	73.8	72.1	70.8	68.1	64.8	62.5
335	-	-	80.3	76.6	73.9	72.2	70.9	68.3	64.9	62.6
340	-	-	80.3	76.7	74.0	72.3	71.0	68.4	65.1	62.8
345	-	-	80.4	76.8	74.0	72.4	71.1	68.5	65.2	62.9
350	-	-	80.4	76.8	74.1	72.5	71.2	68.6	65.3	63.1
355	-	-	80.5	76.9	74.2	72.6	71.3	68.7	65.4	63.2
360	-	-	80.5	76.9	74.3	72.7	71.4	68.8	65.5	63.3
365	-	-	80.5	77.0	74.3	72.8	71.5	68.9	65.7	63.4

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection material only.
Table also applies to beams and columns protected on four sides.

MONOKOTE MK6										
Section Factor up to m ⁻¹	Table 1: Hollow Section Columns: Fire Resistance Period: 30 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
35	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
40	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
45	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
50	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
55	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
60	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
65	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
70	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
75	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
80	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
85	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
90	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
95	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
100	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
105	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
110	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
115	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
120	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
125	10.9	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
130	11.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
135	12.2	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
140	12.8	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7
145	13.3	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7
150	13.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
155	14.3	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
160	14.8	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
165	15.2	11.2	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
170	15.6	11.7	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
175	16.0	12.2	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
180	16.4	12.7	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
185	16.7	13.2	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
190	17.1	13.6	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
195	17.4	14.0	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
200	17.7	14.4	11.3	11.2	11.2	11.2	11.2	11.2	11.2	11.2
205	18.0	14.8	11.8	11.3	11.3	11.3	11.3	11.3	11.3	11.3
210	18.3	15.2	12.2	11.3	11.3	11.3	11.3	11.3	11.3	11.3
215	18.6	15.5	12.7	11.4	11.4	11.4	11.4	11.4	11.4	11.4
220	18.9	15.9	13.1	11.4	11.4	11.4	11.4	11.4	11.4	11.4
225	19.2	16.2	13.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
230	19.4	16.5	13.8	11.5	11.5	11.5	11.5	11.5	11.5	11.5
235	19.7	16.9	14.2	11.8	11.6	11.6	11.6	11.6	11.6	11.6
240	19.9	17.2	14.6	12.2	11.6	11.6	11.6	11.6	11.6	11.6
245	20.2	17.5	14.9	12.6	11.7	11.7	11.7	11.7	11.7	11.7
250	20.4	17.7	15.2	13.0	11.7	11.7	11.7	11.7	11.7	11.7
255	20.6	18.0	15.5	13.3	11.7	11.7	11.7	11.7	11.7	11.7
260	20.7	18.2	15.8	13.6	11.7	11.7	11.7	11.7	11.7	11.7
265	20.9	18.3	16.0	13.9	12.1	11.7	11.7	11.7	11.7	11.7
270	21.0	18.5	16.2	14.2	12.4	11.7	11.7	11.7	11.7	11.7
275	21.1	18.7	16.5	14.5	12.7	11.7	11.7	11.7	11.7	11.7
280	21.2	18.9	16.7	14.7	13.0	11.7	11.7	11.7	11.7	11.7
285	21.4	19.0	16.9	15.0	13.3	11.9	11.7	11.7	11.7	11.7
290	21.5	19.2	17.1	15.2	13.6	12.2	11.7	11.7	11.7	11.7
295	21.6	19.4	17.3	15.4	13.8	12.5	11.8	11.7	11.7	11.7
300	21.7	19.5	17.5	15.6	14.1	12.7	12.1	11.7	11.7	11.7
305	21.8	19.6	17.6	15.9	14.3	13.0	12.4	11.7	11.7	11.7
310	21.9	19.8	17.8	16.1	14.6	13.3	12.7	11.7	11.7	11.7
315	22.0	19.9	18.0	16.3	14.8	13.5	13.0	12.0	11.7	11.7
320	22.1	20.0	18.1	16.5	15.0	13.8	13.2	12.3	11.7	11.7
325	22.2	20.2	18.3	16.6	15.2	14.0	13.5	12.5	11.7	11.7
330	22.3	20.3	18.4	16.8	15.4	14.3	13.7	12.8	11.7	11.7
335	22.3	20.4	18.6	17.0	15.6	14.5	13.9	13.0	11.7	11.7
340	22.4	20.5	18.7	17.2	15.8	14.7	14.2	13.3	12.0	11.7
345	22.5	20.6	18.9	17.3	16.0	14.9	14.4	13.5	12.3	11.7
350	22.6	20.7	19.0	17.5	16.2	15.1	14.6	13.7	12.5	11.7
355	22.7	20.8	19.1	17.6	16.4	15.3	14.8	13.9	12.7	11.7
360	22.7	20.9	19.2	17.8	16.5	15.5	15.0	14.2	13.0	12.0
365	22.8	21.0	19.4	17.9	16.7	15.7	15.2	14.4	13.2	12.2

Table applies to fully exposed rectangular and circular hollow columns. Thickness is protection material only.

MONOKOTE MK6										
Section Factor up to m ⁻¹	Table 2: Hollow Section Columns: Fire Resistance Period: 60 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
35	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
40	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
45	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
50	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
55	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
60	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
65	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
70	10.4	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
75	12.5	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
80	14.3	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
85	15.8	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
90	17.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
95	18.4	10.6	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
100	19.4	12.1	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
105	20.4	13.5	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
110	21.3	14.7	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
115	22.1	15.8	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
120	22.8	16.8	11.1	10.5	10.5	10.5	10.5	10.5	10.5	10.5
125	23.5	17.8	12.2	10.5	10.5	10.5	10.5	10.5	10.5	10.5
130	24.2	18.6	13.3	10.6	10.6	10.6	10.6	10.6	10.6	10.6
135	24.8	19.4	14.3	10.6	10.6	10.6	10.6	10.6	10.6	10.6
140	25.4	20.2	15.3	10.8	10.7	10.7	10.7	10.7	10.7	10.7
145	25.9	20.9	16.1	11.8	10.7	10.7	10.7	10.7	10.7	10.7
150	26.4	21.5	16.9	12.8	10.8	10.8	10.8	10.8	10.8	10.8
155	26.9	22.2	17.7	13.7	10.8	10.8	10.8	10.8	10.8	10.8
160	27.4	22.8	18.4	14.5	11.0	10.9	10.9	10.9	10.9	10.9
165	27.8	23.3	19.1	15.3	12.0	10.9	10.9	10.9	10.9	10.9
170	28.2	23.9	19.8	16.1	12.8	11.0	11.0	11.0	11.0	11.0
175	28.6	24.4	20.4	16.8	13.6	11.0	11.0	11.0	11.0	11.0
180	29.0	24.9	21.0	17.5	14.4	11.8	11.0	11.0	11.0	11.0
185	29.4	25.3	21.5	18.1	15.1	12.6	11.4	11.1	11.1	11.1
190	29.8	25.8	22.1	18.7	15.8	13.4	12.2	11.1	11.1	11.1
195	30.1	26.2	22.6	19.3	16.5	14.1	13.0	11.2	11.2	11.2
200	30.5	26.6	23.1	19.9	17.1	14.8	13.7	11.8	11.2	11.2
205	30.8	27.1	23.5	20.4	17.7	15.5	14.4	12.6	11.3	11.3
210	31.1	27.4	24.0	21.0	18.3	16.1	15.0	13.3	11.3	11.3
215	31.4	27.8	24.4	21.5	18.9	16.7	15.7	13.9	11.4	11.4
220	31.8	28.2	24.9	21.9	19.4	17.3	16.3	14.6	12.1	11.4
225	32.1	28.6	25.3	22.4	19.9	17.9	16.9	15.2	12.8	11.5
230	32.4	28.9	25.7	22.9	20.4	18.4	17.5	15.8	13.4	11.5
235	32.6	29.3	26.1	23.3	20.9	19.0	18.0	16.4	14.0	12.1
240	32.9	29.6	26.5	23.7	21.4	19.5	18.5	16.9	14.6	12.8
245	33.2	29.9	26.8	24.1	21.8	20.0	19.0	17.5	15.2	13.4
250	33.5	30.2	27.2	24.5	22.3	20.5	19.5	18.0	15.8	13.9
255	33.6	30.4	27.4	24.8	22.6	20.8	19.9	18.4	16.2	14.5
260	33.7	30.6	27.7	25.1	23.0	21.2	20.3	18.8	16.7	14.9
265	33.9	30.8	27.9	25.4	23.3	21.6	20.7	19.2	17.1	15.4
270	34.0	30.9	28.1	25.6	23.6	21.9	21.1	19.6	17.5	15.8
275	34.1	31.1	28.3	25.9	23.9	22.2	21.4	19.9	17.9	16.3
280	34.2	31.3	28.5	26.1	24.1	22.5	21.7	20.3	18.3	16.7
285	34.3	31.4	28.7	26.4	24.4	22.8	22.0	20.6	18.7	17.1
290	34.4	31.5	28.9	26.6	24.6	23.1	22.3	20.9	19.0	17.5
295	34.5	31.7	29.1	26.8	24.9	23.4	22.6	21.3	19.4	17.8
300	34.6	31.8	29.2	27.0	25.1	23.7	22.9	21.6	19.7	18.2
305	34.7	31.9	29.4	27.2	25.4	23.9	23.2	21.8	20.0	18.5
310	34.8	32.1	29.5	27.4	25.6	24.2	23.4	22.1	20.3	18.8
315	34.9	32.2	29.7	27.6	25.8	24.4	23.7	22.4	20.6	19.2
320	34.9	32.3	29.8	27.7	26.0	24.6	23.9	22.6	20.9	19.5
325	35.0	32.4	30.0	27.9	26.2	24.9	24.2	22.9	21.1	19.8
330	35.1	32.5	30.1	28.1	26.4	25.1	24.4	23.1	21.4	20.0
335	35.2	32.6	30.3	28.2	26.6	25.3	24.6	23.4	21.7	20.3
340	35.2	32.7	30.4	28.4	26.8	25.5	24.8	23.6	21.9	20.6
345	35.3	32.8	30.5	28.6	26.9	25.7	25.0	23.8	22.1	20.8
350	35.4	32.9	30.6	28.7	27.1	25.9	25.2	24.0	22.4	21.1
355	35.5	33.0	30.8	28.8	27.3	26.1	25.4	24.2	22.6	21.3
360	35.5	33.1	30.9	29.0	27.4	26.3	25.6	24.4	22.8	21.6
365	35.6	33.2	31.0	29.1	27.6	26.4	25.8	24.6	23.0	21.8

Table applies to fully exposed rectangular and circular hollow columns. Thickness is protection material only.

MONOKOTE MK6										
Section Factor up to m ⁻¹	Table 3: Hollow Section Columns: Fire Resistance Period: 90 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
35	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
40	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
45	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
50	11.7	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
55	15.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
60	19.1	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
65	21.8	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
70	24.0	12.6	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
75	25.9	15.4	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
80	27.5	17.7	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
85	28.9	19.8	10.9	10.2	10.2	10.2	10.2	10.2	10.2	10.2
90	30.1	21.6	13.3	10.2	10.2	10.2	10.2	10.2	10.2	10.2
95	31.2	23.2	15.3	10.2	10.2	10.2	10.2	10.2	10.2	10.2
100	32.2	24.6	17.2	10.4	10.3	10.3	10.3	10.3	10.3	10.3
105	33.1	25.9	18.8	12.4	10.3	10.3	10.3	10.3	10.3	10.3
110	34.0	27.0	20.3	14.2	10.4	10.4	10.4	10.4	10.4	10.4
115	34.8	28.1	21.7	15.8	10.6	10.4	10.4	10.4	10.4	10.4
120	35.5	29.0	22.9	17.3	12.3	10.5	10.5	10.5	10.5	10.5
125	36.2	30.0	24.0	18.7	13.9	10.5	10.5	10.5	10.5	10.5
130	36.8	30.8	25.1	19.9	15.4	11.4	10.6	10.6	10.6	10.6
135	37.4	31.6	26.1	21.1	16.7	13.0	11.2	10.6	10.6	10.6
140	37.9	32.3	27.0	22.2	18.0	14.4	12.7	10.7	10.7	10.7
145	38.5	33.0	27.8	23.2	19.1	15.7	14.0	11.3	10.7	10.7
150	39.0	33.7	28.6	24.1	20.2	16.9	15.3	12.6	10.8	10.8
155	39.5	34.3	29.4	25.0	21.2	18.0	16.5	13.9	10.8	10.8
160	40.0	34.9	30.1	25.8	22.2	19.1	17.6	15.0	11.4	10.9
165	40.4	35.5	30.8	26.6	23.1	20.1	18.6	16.1	12.6	10.9
170	40.9	36.0	31.4	27.4	23.9	21.0	19.6	17.2	13.7	11.0
175	41.3	36.5	32.0	28.1	24.7	21.9	20.5	18.2	14.8	12.0
180	41.7	37.0	32.6	28.8	25.5	22.8	21.4	19.1	15.8	13.0
185	42.1	37.5	33.2	29.4	26.2	23.6	22.3	20.0	16.7	14.1
190	42.5	38.0	33.7	30.1	26.9	24.4	23.1	20.8	17.6	15.0
195	42.9	38.4	34.3	30.7	27.6	25.1	23.8	21.6	18.5	16.0
200	43.2	38.9	34.8	31.2	28.2	25.8	24.6	22.4	19.3	16.9
205	43.6	39.3	35.3	31.8	28.8	26.5	25.3	23.1	20.1	17.7
210	43.9	39.7	35.8	32.3	29.4	27.1	25.9	23.8	20.9	18.5
215	44.3	40.1	36.2	32.8	30.0	27.8	26.6	24.5	21.6	19.3
220	44.6	40.5	36.7	33.3	30.6	28.4	27.2	25.2	22.3	20.0
225	44.9	40.9	37.1	33.8	31.1	28.9	27.8	25.8	23.0	20.7
230	45.3	41.3	37.5	34.3	31.6	29.5	28.4	26.4	23.6	21.4
235	45.6	41.6	37.9	34.8	32.1	30.1	28.9	27.0	24.2	22.1
240	45.9	42.0	38.3	35.2	32.6	30.6	29.5	27.5	24.9	22.7
245	46.2	42.4	38.7	35.7	33.1	31.1	30.0	28.1	25.4	23.3
250	46.5	42.7	39.1	36.1	33.5	31.6	30.5	28.6	26.0	23.9
255	46.6	42.9	39.4	36.4	33.9	32.0	30.9	29.0	26.4	24.4
260	46.8	43.0	39.6	36.6	34.2	32.3	31.3	29.4	26.9	24.9
265	46.9	43.2	39.8	36.9	34.5	32.6	31.6	29.8	27.3	25.3
270	47.0	43.4	40.0	37.1	34.7	32.9	31.9	30.1	27.7	25.7
275	47.1	43.5	40.2	37.3	35.0	33.3	32.3	30.5	28.0	26.2
280	47.2	43.6	40.3	37.5	35.3	33.5	32.6	30.8	28.4	26.5
285	47.3	43.8	40.5	37.8	35.5	33.8	32.9	31.1	28.7	26.9
290	47.3	43.9	40.7	38.0	35.7	34.1	33.1	31.4	29.1	27.3
295	47.4	44.0	40.8	38.2	36.0	34.4	33.4	31.7	29.4	27.6
300	47.5	44.1	41.0	38.3	36.2	34.6	33.7	32.0	29.7	28.0
305	47.6	44.3	41.1	38.5	36.4	34.8	33.9	32.3	30.0	28.3
310	47.7	44.4	41.3	38.7	36.6	35.1	34.2	32.5	30.3	28.6
315	47.7	44.5	41.4	38.9	36.8	35.3	34.4	32.8	30.6	28.9
320	47.8	44.6	41.6	39.0	37.0	35.5	34.6	33.0	30.8	29.2
325	47.9	44.7	41.7	39.2	37.2	35.7	34.9	33.2	31.1	29.5
330	47.9	44.8	41.8	39.4	37.4	35.9	35.1	33.5	31.3	29.7
335	48.0	44.9	41.9	39.5	37.5	36.1	35.3	33.7	31.6	30.0
340	48.1	45.0	42.1	39.6	37.7	36.3	35.5	33.9	31.8	30.2
345	48.1	45.1	42.2	39.8	37.9	36.5	35.7	34.1	32.0	30.5
350	48.2	45.1	42.3	39.9	38.0	36.7	35.9	34.3	32.3	30.7
355	48.2	45.2	42.4	40.1	38.2	36.9	36.0	34.5	32.5	30.9
360	48.3	45.3	42.5	40.2	38.3	37.0	36.2	34.7	32.7	31.2
365	48.4	45.4	42.6	40.3	38.5	37.2	36.4	34.9	32.9	31.4

Table applies to fully exposed rectangular and circular hollow columns. Thickness is protection material only.

MONOKOTE MK6										
Section Factor up to m ⁻¹	Table 4:Hollow Section Columns: Fire Resistance Period: 120 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
35	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
40	15.3	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
45	22.0	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
50	26.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
55	30.4	14.6	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
60	33.3	19.2	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
65	35.6	22.9	10.2	10.0	10.0	10.0	10.0	10.0	10.0	10.0
70	37.6	26.0	14.4	10.0	10.0	10.0	10.0	10.0	10.0	10.0
75	39.2	28.5	17.9	10.1	10.1	10.1	10.1	10.1	10.1	10.1
80	40.7	30.7	20.9	11.7	10.1	10.1	10.1	10.1	10.1	10.1
85	41.9	32.6	23.4	14.9	10.2	10.2	10.2	10.2	10.2	10.2
90	43.1	34.2	25.6	17.7	10.4	10.2	10.2	10.2	10.2	10.2
95	44.1	35.7	27.6	20.1	13.4	10.2	10.2	10.2	10.2	10.2
100	45.0	37.0	29.3	22.3	15.9	10.4	10.3	10.3	10.3	10.3
105	45.9	38.2	30.9	24.2	18.2	13.0	10.6	10.3	10.3	10.3
110	46.7	39.3	32.3	25.9	20.2	15.4	13.0	10.4	10.4	10.4
115	47.4	40.3	33.6	27.5	22.1	17.5	15.2	11.5	10.4	10.4
120	48.1	41.3	34.7	28.9	23.7	19.4	17.2	13.6	10.5	10.5
125	48.8	42.2	35.8	30.2	25.2	21.1	19.1	15.6	10.5	10.5
130	49.4	43.0	36.8	31.4	26.6	22.7	20.7	17.4	12.5	10.6
135	50.0	43.7	37.8	32.5	27.9	24.2	22.3	19.0	14.3	10.6
140	50.5	44.5	38.7	33.6	29.2	25.5	23.7	20.5	16.0	12.3
145	51.1	45.1	39.5	34.6	30.3	26.8	25.0	22.0	17.6	14.0
150	51.6	45.8	40.3	35.5	31.3	28.0	26.3	23.3	19.0	15.5
155	52.1	46.4	41.0	36.3	32.3	29.1	27.4	24.5	20.4	17.0
160	52.6	47.0	41.8	37.2	33.3	30.1	28.5	25.6	21.6	18.3
165	53.0	47.6	42.4	38.0	34.2	31.1	29.5	26.7	22.8	19.6
170	53.5	48.1	43.1	38.7	35.0	32.1	30.5	27.8	23.9	20.8
175	53.9	48.7	43.7	39.4	35.8	32.9	31.4	28.7	25.0	21.9
180	54.3	49.2	44.3	40.1	36.6	33.8	32.3	29.6	26.0	23.0
185	54.8	49.7	44.9	40.8	37.3	34.6	33.1	30.5	26.9	24.0
190	55.2	50.2	45.4	41.4	38.0	35.4	33.9	31.4	27.8	25.0
195	55.6	50.6	46.0	42.0	38.7	36.1	34.7	32.2	28.7	25.9
200	56.0	51.1	46.5	42.6	39.3	36.8	35.4	32.9	29.5	26.8
205	56.4	51.5	47.0	43.2	39.9	37.5	36.1	33.7	30.3	27.6
210	56.7	52.0	47.5	43.7	40.6	38.2	36.8	34.4	31.0	28.4
215	57.1	52.4	48.0	44.2	41.1	38.8	37.5	35.1	31.8	29.2
220	57.5	52.8	48.5	44.8	41.7	39.4	38.1	35.7	32.5	30.0
225	57.8	53.2	48.9	45.3	42.3	40.0	38.7	36.4	33.2	30.7
230	58.2	53.6	49.4	45.8	42.8	40.6	39.3	37.0	33.8	31.4
235	58.6	54.0	49.8	46.2	43.3	41.1	39.9	37.6	34.5	32.0
240	58.9	54.4	50.2	46.7	43.8	41.7	40.4	38.2	35.1	32.7
245	59.2	54.8	50.7	47.2	44.3	42.2	41.0	38.7	35.7	33.3
250	59.6	55.2	51.1	47.6	44.8	42.7	41.5	39.3	36.2	33.9
255	59.7	55.3	51.3	47.9	45.1	43.1	41.9	39.7	36.7	34.4
260	59.8	55.5	51.5	48.1	45.4	43.4	42.2	40.0	37.1	34.8
265	59.9	55.6	51.6	48.3	45.6	43.7	42.5	40.4	37.4	35.2
270	60.0	55.8	51.8	48.5	45.9	44.0	42.8	40.7	37.8	35.6
275	60.0	55.9	52.0	48.8	46.2	44.3	43.1	41.0	38.2	36.0
280	60.1	56.0	52.2	49.0	46.4	44.5	43.4	41.3	38.5	36.4
285	60.2	56.1	52.3	49.2	46.6	44.8	43.7	41.6	38.8	36.7
290	60.3	56.2	52.5	49.3	46.8	45.1	44.0	41.9	39.1	37.1
295	60.3	56.4	52.6	49.5	47.0	45.3	44.2	42.2	39.4	37.4
300	60.4	56.5	52.8	49.7	47.3	45.5	44.5	42.4	39.7	37.7
305	60.5	56.6	52.9	49.9	47.5	45.8	44.7	42.7	40.0	38.0
310	60.5	56.7	53.0	50.0	47.6	46.0	44.9	42.9	40.3	38.3
315	60.6	56.8	53.2	50.2	47.8	46.2	45.1	43.2	40.5	38.6
320	60.7	56.8	53.3	50.3	48.0	46.4	45.3	43.4	40.8	38.9
325	60.7	56.9	53.4	50.5	48.2	46.6	45.6	43.6	41.0	39.1
330	60.8	57.0	53.5	50.6	48.3	46.8	45.7	43.8	41.3	39.4
335	60.8	57.1	53.6	50.8	48.5	47.0	45.9	44.0	41.5	39.6
340	60.9	57.2	53.7	50.9	48.7	47.1	46.1	44.2	41.7	39.9
345	60.9	57.3	53.8	51.0	48.8	47.3	46.3	44.4	41.9	40.1
350	61.0	57.3	53.9	51.1	49.0	47.5	46.5	44.6	42.1	40.3
355	61.0	57.4	54.0	51.3	49.1	47.6	46.6	44.8	42.3	40.6
360	61.1	57.5	54.1	51.4	49.2	47.8	46.8	45.0	42.5	40.8
365	61.1	57.6	54.2	51.5	49.4	47.9	47.0	45.1	42.7	41.0

Table applies to fully exposed rectangular and circular hollow columns. Thickness is protection material only.

MONOKOTE MK6										
Section Factor up to m ⁻¹	Table 5: Hollow Section Columns: Fire Resistance Period: 180 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	31.2	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
35	42.5	9.8	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
40	49.2	23.9	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
45	53.7	32.9	10.6	9.8	9.8	9.8	9.8	9.8	9.8	9.8
50	57.0	39.2	20.5	9.8	9.8	9.8	9.8	9.8	9.8	9.8
55	59.5	43.9	27.7	11.8	9.9	9.9	9.9	9.9	9.9	9.9
60	61.6	47.5	33.1	19.3	9.9	9.9	9.9	9.9	9.9	9.9
65	63.2	50.4	37.4	25.1	13.6	10.0	10.0	10.0	10.0	10.0
70	64.7	52.8	40.9	29.8	19.5	10.3	10.0	10.0	10.0	10.0
75	66.0	54.9	43.9	33.7	24.3	16.1	12.1	10.1	10.1	10.1
80	67.1	56.6	46.3	36.9	28.3	20.9	17.3	11.0	10.1	10.1
85	68.1	58.2	48.5	39.7	31.7	25.0	21.6	15.8	10.2	10.2
90	69.0	59.6	50.4	42.1	34.7	28.4	25.3	19.8	11.8	10.2
95	69.9	60.8	52.1	44.2	37.2	31.4	28.5	23.3	15.8	10.2
100	70.6	62.0	53.6	46.1	39.5	34.1	31.3	26.4	19.3	13.4
105	71.4	63.0	54.9	47.8	41.5	36.4	33.7	29.1	22.3	16.8
110	72.1	64.0	56.2	49.3	43.3	38.5	36.0	31.5	25.1	19.8
115	72.7	64.9	57.3	50.7	45.0	40.4	38.0	33.6	27.5	22.5
120	73.4	65.7	58.4	52.0	46.5	42.2	39.8	35.6	29.7	24.9
125	74.0	66.6	59.4	53.2	47.9	43.8	41.5	37.4	31.7	27.1
130	74.6	67.3	60.4	54.3	49.2	45.2	43.0	39.1	33.6	29.1
135	75.1	68.0	61.2	55.4	50.4	46.6	44.5	40.6	35.2	31.0
140	75.7	68.7	62.1	56.4	51.6	47.9	45.8	42.0	36.8	32.7
145	76.2	69.4	62.9	57.3	52.6	49.1	47.0	43.3	38.3	34.3
150	76.8	70.0	63.7	58.2	53.6	50.2	48.2	44.6	39.6	35.7
155	77.3	70.7	64.4	59.0	54.6	51.2	49.3	45.8	40.9	37.1
160	77.8	71.3	65.1	59.8	55.5	52.2	50.3	46.9	42.1	38.4
165	78.3	71.8	65.8	60.6	56.4	53.2	51.3	47.9	43.2	39.6
170	78.7	72.4	66.4	61.3	57.2	54.1	52.3	48.9	44.3	40.8
175	79.2	73.0	67.0	62.1	58.0	55.0	53.2	49.8	45.3	41.9
180	79.7	73.5	67.7	62.7	58.7	55.8	54.0	50.7	46.3	42.9
185	80.1	74.0	68.3	63.4	59.5	56.6	54.9	51.6	47.2	43.9
190	80.6	74.5	68.8	64.1	60.2	57.4	55.7	52.4	48.1	44.9
195	81.0	75.1	69.4	64.7	60.9	58.1	56.4	53.2	49.0	45.8
200	81.5	75.6	70.0	65.3	61.5	58.8	57.2	54.0	49.8	46.7
205	81.9	76.0	70.5	65.9	62.2	59.5	57.9	54.8	50.6	47.5
210	82.3	76.5	71.0	66.5	62.8	60.2	58.6	55.5	51.4	48.3
215	82.8	77.0	71.6	67.0	63.4	60.9	59.2	56.2	52.1	49.1
220	-	77.5	72.1	67.6	64.0	61.5	59.9	56.9	52.8	49.8
225	-	77.9	72.6	68.1	64.6	62.1	60.5	57.5	53.5	50.6
230	-	78.4	73.1	68.7	65.2	62.7	61.2	58.2	54.2	51.3
235	-	78.8	73.5	69.2	65.7	63.3	61.8	58.8	54.9	52.0
240	-	79.3	74.0	69.7	66.3	63.9	62.3	59.4	55.5	52.6
245	-	79.7	74.5	70.2	66.8	64.5	62.9	60.0	56.1	53.3
250	-	80.2	75.0	70.7	67.3	65.0	63.5	60.6	56.7	53.9
255	-	80.3	75.1	70.9	67.6	65.3	63.8	60.9	57.1	54.3
260	-	80.4	75.3	71.1	67.8	65.6	64.1	61.2	57.4	54.7
265	-	80.5	75.4	71.3	68.0	65.8	64.4	61.5	57.8	55.1
270	-	80.6	75.6	71.4	68.2	66.1	64.6	61.8	58.1	55.4
275	-	80.7	75.7	71.6	68.4	66.3	64.9	62.1	58.4	55.8
280	-	80.8	75.8	71.8	68.6	66.6	65.1	62.3	58.7	56.1
285	-	80.9	75.9	71.9	68.8	66.8	65.4	62.6	59.0	56.4
290	-	80.9	76.1	72.1	69.0	67.0	65.6	62.8	59.3	56.7
295	-	81.0	76.2	72.2	69.2	67.2	65.8	63.1	59.5	57.0
300	-	81.1	76.3	72.4	69.4	67.4	66.0	63.3	59.8	57.3
305	-	81.2	76.4	72.5	69.5	67.6	66.2	63.5	60.0	57.5
310	-	81.3	76.5	72.7	69.7	67.8	66.4	63.7	60.3	57.8
315	-	81.3	76.6	72.8	69.9	67.9	66.6	63.9	60.5	58.0
320	-	81.4	76.7	72.9	70.0	68.1	66.8	64.1	60.7	58.3
325	-	81.5	76.8	73.0	70.1	68.3	66.9	64.3	60.9	58.5
330	-	81.5	76.9	73.2	70.3	68.4	67.1	64.5	61.1	58.7
335	-	81.6	77.0	73.3	70.4	68.6	67.3	64.7	61.3	59.0
340	-	81.6	77.1	73.4	70.6	68.8	67.4	64.8	61.5	59.2
345	-	81.7	77.1	73.5	70.7	68.9	67.6	65.0	61.7	59.4
350	-	81.8	77.2	73.6	70.8	69.0	67.7	65.2	61.9	59.6
355	-	81.8	77.3	73.7	70.9	69.2	67.9	65.3	62.1	59.8
360	-	81.9	77.4	73.8	71.0	69.3	68.0	65.5	62.2	60.0
365	-	81.9	77.5	73.9	71.1	69.4	68.2	65.6	62.4	60.1

Table applies to fully exposed rectangular and circular hollow columns. Thickness is protection material only.

MONOKOTE MK6										
Section Factor up to m ⁻¹	Table 6: Hollow Section Columns: Fire Resistance Period: 240 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	74.5	32.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
35	79.8	50.0	14.4	9.7	9.7	9.7	9.7	9.7	9.7	9.7
40	-	59.5	33.0	9.7	9.7	9.7	9.7	9.7	9.7	9.7
45	-	65.6	44.1	22.2	9.8	9.8	9.8	9.8	9.8	9.8
50	-	69.9	51.7	33.6	15.9	9.8	9.8	9.8	9.8	9.8
55	-	73.1	57.1	41.7	26.9	13.3	9.9	9.9	9.9	9.9
60	-	75.7	61.3	47.7	35.0	23.6	17.8	9.9	9.9	9.9
65	-	77.8	64.7	52.4	41.1	31.3	26.3	17.4	10.0	10.0
70	-	79.6	67.4	56.2	46.1	37.4	32.9	24.9	13.1	10.0
75	-	81.2	69.8	59.4	50.1	42.3	38.2	30.9	20.3	11.1
80	-	82.6	71.8	62.1	53.5	46.4	42.6	35.8	26.1	17.8
85	-	-	73.5	64.4	56.4	49.8	46.3	40.0	30.9	23.3
90	-	-	75.1	66.4	58.9	52.8	49.5	43.5	35.0	28.0
95	-	-	76.5	68.2	61.1	55.4	52.3	46.6	38.5	32.0
100	-	-	77.8	69.9	63.1	57.7	54.7	49.3	41.6	35.4
105	-	-	79.0	71.3	64.9	59.8	56.9	51.7	44.4	38.5
110	-	-	80.1	72.7	66.5	61.7	58.9	53.9	46.8	41.2
115	-	-	81.1	74.0	68.0	63.4	60.7	55.8	49.0	43.7
120	-	-	82.1	75.1	69.3	65.0	62.4	57.6	51.0	45.9
125	-	-	-	76.2	70.6	66.4	63.9	59.2	52.9	47.9
130	-	-	-	77.3	71.8	67.7	65.3	60.8	54.6	49.8
135	-	-	-	78.2	72.9	69.0	66.6	62.2	56.1	51.5
140	-	-	-	79.2	74.0	70.2	67.9	63.5	57.6	53.1
145	-	-	-	80.0	75.0	71.3	69.0	64.7	59.0	54.6
150	-	-	-	80.9	75.9	72.4	70.1	65.9	60.2	56.0
155	-	-	-	81.7	76.8	73.4	71.2	67.0	61.5	57.3
160	-	-	-	82.5	77.7	74.3	72.2	68.1	62.6	58.5
165	-	-	-	-	78.6	75.3	73.1	69.1	63.7	59.7
170	-	-	-	-	79.4	76.1	74.0	70.0	64.7	60.8
175	-	-	-	-	80.1	77.0	74.9	71.0	65.7	61.8
180	-	-	-	-	80.9	77.8	75.8	71.9	66.7	62.8
185	-	-	-	-	81.6	78.6	76.6	72.7	67.6	63.8
190	-	-	-	-	82.4	79.4	77.4	73.5	68.5	64.8
195	-	-	-	-	-	80.1	78.1	74.3	69.3	65.6
200	-	-	-	-	-	80.8	78.9	75.1	70.1	66.5
205	-	-	-	-	-	81.6	79.6	75.9	70.9	67.4
210	-	-	-	-	-	82.2	80.3	76.6	71.7	68.2
215	-	-	-	-	-	82.9	81.0	77.3	72.4	68.9
220	-	-	-	-	-	-	81.7	78.0	73.2	69.7
225	-	-	-	-	-	-	82.4	78.7	73.9	70.5
230	-	-	-	-	-	-	-	79.3	74.6	71.2
235	-	-	-	-	-	-	-	80.0	75.3	71.9
240	-	-	-	-	-	-	-	80.6	75.9	72.6
245	-	-	-	-	-	-	-	81.2	76.6	73.2
250	-	-	-	-	-	-	-	81.8	77.2	73.9
255	-	-	-	-	-	-	-	82.1	77.5	74.3
260	-	-	-	-	-	-	-	82.4	77.8	74.6
265	-	-	-	-	-	-	-	82.7	78.1	74.9
270	-	-	-	-	-	-	-	82.9	78.4	75.2
275	-	-	-	-	-	-	-	-	78.7	75.5
280	-	-	-	-	-	-	-	-	78.9	75.8
285	-	-	-	-	-	-	-	-	79.2	76.1
290	-	-	-	-	-	-	-	-	79.4	76.3
295	-	-	-	-	-	-	-	-	79.6	76.6
300	-	-	-	-	-	-	-	-	79.8	76.8
305	-	-	-	-	-	-	-	-	80.0	77.1
310	-	-	-	-	-	-	-	-	80.2	77.3
315	-	-	-	-	-	-	-	-	80.4	77.5
320	-	-	-	-	-	-	-	-	80.6	77.7
325	-	-	-	-	-	-	-	-	80.8	77.9
330	-	-	-	-	-	-	-	-	81.0	78.1
335	-	-	-	-	-	-	-	-	81.2	78.3
340	-	-	-	-	-	-	-	-	81.3	78.5
345	-	-	-	-	-	-	-	-	81.5	78.6
350	-	-	-	-	-	-	-	-	81.6	78.8
355	-	-	-	-	-	-	-	-	81.8	79.0
360	-	-	-	-	-	-	-	-	81.9	79.1
365	-	-	-	-	-	-	-	-	82.1	79.3

Table applies to fully exposed rectangular and circular hollow columns. Thickness is protection material only.

MONOKOTE Z106

- 1. Product description**
Portland cement based mixture containing synthetic aggregate
- 2. Manufacturer**
GCP Applied Technologies
Ajax Avenue Slough, Berkshire SL1 4BH
T: 01753 692929
F: 01753 691623
W: www.gcpat.com
- 3. Availability**
GCP Applied Technologies
- 4. Protection technique**
Profile to beams, columns and soffits
- 5. Surface preparation requirements**
Remove mill scale and contaminates. For compatible primers refer to manufacturer
- 6. Nominal density**
360 kg/m³
- 7. Thickness range**
9.4 to 82.9mm
- 8. Fire resistance range**
Up to and including 4 hours
- 9. Appearance**
Sprayed, textured, light grey
- 10. On site use**
For both internal and external applications
- 11. Durability**
Resistant to vermin, mould growth and minor impact and abrasions
- 12. Performance in other fire tests**
No data
- 13. Other applications**
 - a) Thermal insulation
 - b) Acoustic control

MONOKOTE Z106

Section Factor up to m ⁻¹	Table 1: I-Section Beams and Columns: Fire Resistance Period: 30 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
35	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
40	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
45	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
50	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
55	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
60	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
65	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
70	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
75	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
80	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
85	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
90	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
95	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
100	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
105	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
110	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
115	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
120	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
125	9.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
130	10.3	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
135	10.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
140	11.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
145	11.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
150	12.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
155	12.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
160	12.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
165	13.0	9.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
170	13.3	10.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
175	13.6	10.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
180	13.9	10.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
185	14.1	11.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
190	14.3	11.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
195	14.6	11.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
200	14.8	12.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
205	15.0	12.3	9.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4
210	15.1	12.5	10.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4
215	15.3	12.8	10.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
220	15.5	13.0	10.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4
225	15.6	13.2	11.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4
230	15.8	13.4	11.3	9.4	9.4	9.4	9.4	9.4	9.4	9.4
235	15.9	13.6	11.5	9.6	9.4	9.4	9.4	9.4	9.4	9.4
240	16.1	13.8	11.7	9.9	9.4	9.4	9.4	9.4	9.4	9.4
245	16.2	14.0	12.0	10.1	9.4	9.4	9.4	9.4	9.4	9.4
250	16.3	14.2	12.2	10.4	9.4	9.4	9.4	9.4	9.4	9.4
255	16.5	14.4	12.4	10.7	9.4	9.4	9.4	9.4	9.4	9.4
260	16.6	14.5	12.6	10.9	9.4	9.4	9.4	9.4	9.4	9.4
265	16.7	14.7	12.8	11.1	9.7	9.4	9.4	9.4	9.4	9.4
270	16.8	14.8	13.0	11.4	9.9	9.4	9.4	9.4	9.4	9.4
275	16.9	15.0	13.2	11.6	10.2	9.4	9.4	9.4	9.4	9.4
280	17.0	15.1	13.3	11.8	10.4	9.4	9.4	9.4	9.4	9.4
285	17.1	15.2	13.5	12.0	10.6	9.5	9.4	9.4	9.4	9.4
290	17.2	15.4	13.7	12.2	10.8	9.7	9.4	9.4	9.4	9.4
295	17.3	15.5	13.8	12.3	11.1	10.0	9.5	9.4	9.4	9.4
300	17.4	15.6	14.0	12.5	11.3	10.2	9.7	9.4	9.4	9.4
305	17.4	15.7	14.1	12.7	11.5	10.4	9.9	9.4	9.4	9.4
310	17.5	15.8	14.2	12.9	11.6	10.6	10.1	9.4	9.4	9.4
315	17.6	15.9	14.4	13.0	11.8	10.8	10.4	9.6	9.4	9.4
320	17.7	16.0	14.5	13.2	12.0	11.0	10.6	9.8	9.4	9.4
325	17.7	16.1	14.6	13.3	12.2	11.2	10.8	10.0	9.4	9.4
330	17.8	16.2	14.7	13.5	12.3	11.4	11.0	10.2	9.4	9.4
335	17.9	16.3	14.9	13.6	12.5	11.6	11.1	10.4	9.4	9.4
340	17.9	16.4	15.0	13.7	12.6	11.8	11.3	10.6	9.6	9.4
345	18.0	16.5	15.1	13.9	12.8	11.9	11.5	10.8	9.8	9.4
350	18.1	16.6	15.2	14.0	12.9	12.1	11.7	11.0	10.0	9.4
355	18.1	16.7	15.3	14.1	13.1	12.2	11.8	11.2	10.2	9.4
360	18.2	16.7	15.4	14.2	13.2	12.4	12.0	11.3	10.4	9.6
365	18.2	16.8	15.5	14.3	13.4	12.5	12.1	11.5	10.5	9.8

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection material only.

Table also applies to beams and columns protected on four sides.

MONOKOTE Z106

Section Factor up to m ⁻¹	Table 2: I-Section Beams and Columns: Fire Resistance Period: 60 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
35	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
40	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
45	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
50	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
55	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
60	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
65	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
70	9.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
75	11.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
80	13.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
85	14.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
90	15.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
95	16.8	9.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
100	17.7	11.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
105	18.5	12.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
110	19.2	13.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
115	19.8	14.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
120	20.4	15.0	9.9	9.4	9.4	9.4	9.4	9.4	9.4	9.4
125	20.9	15.8	10.9	9.4	9.4	9.4	9.4	9.4	9.4	9.4
130	21.4	16.5	11.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4
135	21.8	17.1	12.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4
140	22.3	17.7	13.4	9.5	9.4	9.4	9.4	9.4	9.4	9.4
145	22.6	18.2	14.1	10.3	9.4	9.4	9.4	9.4	9.4	9.4
150	23.0	18.7	14.7	11.1	9.4	9.4	9.4	9.4	9.4	9.4
155	23.3	19.2	15.3	11.8	9.4	9.4	9.4	9.4	9.4	9.4
160	23.6	19.6	15.9	12.5	9.5	9.4	9.4	9.4	9.4	9.4
165	23.9	20.0	16.4	13.1	10.3	9.4	9.4	9.4	9.4	9.4
170	24.1	20.4	16.9	13.7	10.9	9.4	9.4	9.4	9.4	9.4
175	24.4	20.7	17.3	14.3	11.6	9.4	9.4	9.4	9.4	9.4
180	24.6	21.1	17.8	14.8	12.2	10.0	9.4	9.4	9.4	9.4
185	24.8	21.4	18.2	15.3	12.8	10.6	9.6	9.4	9.4	9.4
190	25.0	21.7	18.5	15.7	13.3	11.2	10.3	9.4	9.4	9.4
195	25.2	21.9	18.9	16.2	13.8	11.8	10.8	9.4	9.4	9.4
200	25.4	22.2	19.2	16.6	14.3	12.3	11.4	9.9	9.4	9.4
205	25.6	22.5	19.5	17.0	14.7	12.8	11.9	10.4	9.4	9.4
210	25.7	22.7	19.8	17.3	15.1	13.3	12.4	11.0	9.4	9.4
215	25.9	22.9	20.1	17.7	15.5	13.8	12.9	11.5	9.4	9.4
220	26.0	23.1	20.4	18.0	15.9	14.2	13.4	12.0	9.9	9.4
225	26.2	23.3	20.6	18.3	16.3	14.6	13.8	12.4	10.4	9.4
230	26.3	23.5	20.9	18.6	16.6	15.0	14.2	12.8	10.9	9.4
235	26.4	23.7	21.1	18.9	16.9	15.4	14.6	13.3	11.4	9.8
240	26.6	23.9	21.3	19.1	17.2	15.7	14.9	13.7	11.8	10.3
245	26.7	24.0	21.5	19.4	17.5	16.0	15.3	14.0	12.2	10.7
250	26.8	24.2	21.7	19.6	17.8	16.4	15.6	14.4	12.6	11.2
255	26.9	24.3	21.9	19.9	18.1	16.7	16.0	14.7	13.0	11.6
260	27.0	24.5	22.1	20.1	18.4	17.0	16.3	15.1	13.3	12.0
265	27.1	24.6	22.3	20.3	18.6	17.3	16.6	15.4	13.7	12.3
270	27.2	24.8	22.5	20.5	18.9	17.5	16.8	15.7	14.0	12.7
275	27.3	24.9	22.6	20.7	19.1	17.8	17.1	16.0	14.3	13.0
280	27.4	25.0	22.8	20.9	19.3	18.0	17.4	16.2	14.6	13.4
285	27.4	25.1	23.0	21.1	19.5	18.3	17.6	16.5	14.9	13.7
290	27.5	25.2	23.1	21.3	19.7	18.5	17.9	16.8	15.2	14.0
295	27.6	25.3	23.2	21.4	19.9	18.7	18.1	17.0	15.5	14.3
300	27.7	25.5	23.4	21.6	20.1	18.9	18.3	17.2	15.7	14.5
305	27.8	25.6	23.5	21.8	20.3	19.1	18.5	17.5	16.0	14.8
310	27.8	25.7	23.6	21.9	20.5	19.3	18.7	17.7	16.2	15.1
315	27.9	25.8	23.8	22.1	20.6	19.5	18.9	17.9	16.5	15.3
320	28.0	25.8	23.9	22.2	20.8	19.7	19.1	18.1	16.7	15.6
325	28.0	25.9	24.0	22.3	21.0	19.9	19.3	18.3	16.9	15.8
330	28.1	26.0	24.1	22.5	21.1	20.1	19.5	18.5	17.1	16.0
335	28.1	26.1	24.2	22.6	21.3	20.2	19.7	18.7	17.3	16.3
340	28.2	26.2	24.3	22.7	21.4	20.4	19.9	18.9	17.5	16.5
345	28.3	26.3	24.4	22.8	21.5	20.6	20.0	19.0	17.7	16.7
350	28.3	26.3	24.5	23.0	21.7	20.7	20.2	19.2	17.9	16.9
355	28.4	26.4	24.6	23.1	21.8	20.9	20.3	19.4	18.1	17.1
360	28.4	26.5	24.7	23.2	21.9	21.0	20.5	19.5	18.3	17.3
365	28.5	26.6	24.8	23.3	22.1	21.1	20.6	19.7	18.4	17.4

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection material only.

Table also applies to beams and columns protected on four sides.

MONOKOTE Z106

Section Factor up to m ⁻¹	Table 3: I-Section Beams and Columns: Fire Resistance Period: 90 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
35	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
40	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
45	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
50	11.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
55	15.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
60	18.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
65	20.5	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
70	22.4	11.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
75	24.1	14.3	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
80	25.4	16.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
85	26.6	18.2	10.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4
90	27.6	19.8	12.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4
95	28.5	21.2	14.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4
100	29.3	22.3	15.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4
105	30.0	23.4	17.0	11.2	9.4	9.4	9.4	9.4	9.4	9.4
110	30.6	24.3	18.3	12.8	9.4	9.4	9.4	9.4	9.4	9.4
115	31.2	25.2	19.4	14.2	9.5	9.4	9.4	9.4	9.4	9.4
120	31.7	25.9	20.4	15.5	11.0	9.4	9.4	9.4	9.4	9.4
125	32.1	26.6	21.4	16.6	12.4	9.4	9.4	9.4	9.4	9.4
130	32.6	27.3	22.2	17.6	13.6	10.1	9.4	9.4	9.4	9.4
135	32.9	27.8	23.0	18.6	14.7	11.4	9.9	9.4	9.4	9.4
140	33.3	28.3	23.7	19.5	15.7	12.6	11.1	9.4	9.4	9.4
145	33.6	28.8	24.3	20.2	16.7	13.7	12.2	9.8	9.4	9.4
150	33.9	29.3	24.9	21.0	17.6	14.7	13.3	11.0	9.4	9.4
155	34.2	29.7	25.4	21.7	18.4	15.6	14.3	12.0	9.4	9.4
160	34.5	30.1	25.9	22.3	19.1	16.5	15.2	13.0	9.8	9.4
165	34.7	30.4	26.4	22.9	19.8	17.2	16.0	13.9	10.8	9.4
170	34.9	30.8	26.9	23.4	20.4	18.0	16.8	14.7	11.7	9.4
175	35.1	31.1	27.3	23.9	21.0	18.7	17.5	15.5	12.6	10.2
180	35.3	31.4	27.7	24.4	21.6	19.3	18.2	16.2	13.4	11.1
185	35.5	31.7	28.0	24.8	22.1	19.9	18.8	16.9	14.1	11.9
190	35.7	31.9	28.4	25.3	22.6	20.5	19.4	17.5	14.8	12.6
195	35.9	32.2	28.7	25.7	23.1	21.0	19.9	18.1	15.5	13.4
200	36.0	32.4	29.0	26.0	23.5	21.5	20.5	18.7	16.1	14.0
205	36.2	32.6	29.3	26.4	23.9	22.0	21.0	19.2	16.7	14.7
210	36.3	32.8	29.5	26.7	24.3	22.4	21.4	19.7	17.3	15.3
215	36.4	33.0	29.8	27.0	24.7	22.8	21.9	20.2	17.8	15.9
220	36.6	33.2	30.1	27.3	25.0	23.2	22.3	20.6	18.3	16.4
225	36.7	33.4	30.3	27.6	25.4	23.6	22.7	21.0	18.8	16.9
230	36.8	33.6	30.5	27.9	25.7	24.0	23.1	21.5	19.2	17.4
235	36.9	33.7	30.7	28.2	26.0	24.3	23.4	21.8	19.6	17.9
240	37.0	33.9	30.9	28.4	26.3	24.7	23.8	22.2	20.0	18.3
245	37.1	34.0	31.1	28.6	26.6	25.0	24.1	22.6	20.4	18.7
250	37.2	34.2	31.3	28.9	26.8	25.3	24.4	22.9	20.8	19.2
255	37.3	34.3	31.5	29.1	27.1	25.6	24.7	23.2	21.2	19.5
260	37.4	34.4	31.7	29.3	27.3	25.8	25.0	23.5	21.5	19.9
265	37.5	34.6	31.8	29.5	27.6	26.1	25.3	23.8	21.8	20.3
270	37.6	34.7	32.0	29.7	27.8	26.4	25.6	24.1	22.1	20.6
275	37.7	34.8	32.1	29.9	28.0	26.6	25.8	24.4	22.4	20.9
280	37.7	34.9	32.3	30.0	28.2	26.8	26.1	24.6	22.7	21.2
285	37.8	35.0	32.4	30.2	28.4	27.1	26.3	24.9	23.0	21.5
290	37.9	35.1	32.5	30.4	28.6	27.3	26.5	25.1	23.3	21.8
295	37.9	35.2	32.7	30.5	28.8	27.5	26.7	25.4	23.5	22.1
300	38.0	35.3	32.8	30.7	29.0	27.7	26.9	25.6	23.8	22.4
305	38.1	35.4	32.9	30.8	29.1	27.9	27.1	25.8	24.0	22.6
310	38.1	35.5	33.0	31.0	29.3	28.1	27.3	26.0	24.2	22.9
315	38.2	35.6	33.1	31.1	29.4	28.2	27.5	26.2	24.4	23.1
320	38.2	35.7	33.2	31.2	29.6	28.4	27.7	26.4	24.7	23.3
325	38.3	35.7	33.4	31.4	29.7	28.6	27.9	26.6	24.9	23.6
330	38.4	35.8	33.5	31.5	29.9	28.7	28.1	26.8	25.1	23.8
335	38.4	35.9	33.6	31.6	30.0	28.9	28.2	27.0	25.3	24.0
340	38.5	36.0	33.6	31.7	30.2	29.1	28.4	27.1	25.4	24.2
345	38.5	36.0	33.7	31.8	30.3	29.2	28.5	27.3	25.6	24.4
350	38.6	36.1	33.8	31.9	30.4	29.3	28.7	27.4	25.8	24.6
355	38.6	36.2	33.9	32.0	30.5	29.5	28.8	27.6	26.0	24.8
360	38.6	36.2	34.0	32.1	30.7	29.6	29.0	27.7	26.1	24.9
365	38.7	36.3	34.1	32.2	30.8	29.7	29.1	27.9	26.3	25.1

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection material only.

Table also applies to beams and columns protected on four sides.

MONOKOTE Z106

Section Factor up to m ⁻¹	Table 4: I-Section Beams and Columns: Fire Resistance Period: 120 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
35	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
40	14.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
45	21.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
50	25.5	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
55	28.8	13.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
60	31.4	18.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
65	33.4	21.5	9.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4
70	35.1	24.3	13.5	9.4	9.4	9.4	9.4	9.4	9.4	9.4
75	36.5	26.5	16.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4
80	37.7	28.4	19.3	10.8	9.4	9.4	9.4	9.4	9.4	9.4
85	38.7	30.0	21.6	13.8	9.4	9.4	9.4	9.4	9.4	9.4
90	39.5	31.4	23.5	16.2	9.6	9.4	9.4	9.4	9.4	9.4
95	40.3	32.6	25.2	18.4	12.2	9.4	9.4	9.4	9.4	9.4
100	40.9	33.7	26.6	20.2	14.5	9.4	9.4	9.4	9.4	9.4
105	41.5	34.6	27.9	21.9	16.5	11.8	9.5	9.4	9.4	9.4
110	42.1	35.4	29.1	23.3	18.2	13.8	11.7	9.4	9.4	9.4
115	42.5	36.2	30.1	24.6	19.8	15.7	13.7	10.3	9.4	9.4
120	43.0	36.9	31.0	25.8	21.2	17.3	15.4	12.2	9.4	9.4
125	43.3	37.5	31.8	26.8	22.4	18.8	16.9	13.9	9.4	9.4
130	43.7	38.0	32.6	27.8	23.6	20.1	18.4	15.4	11.1	9.4
135	44.0	38.5	33.3	28.7	24.6	21.3	19.6	16.8	12.6	9.4
140	44.3	39.0	33.9	29.4	25.6	22.4	20.8	18.0	14.1	10.8
145	44.6	39.4	34.5	30.2	26.4	23.4	21.9	19.2	15.3	12.2
150	44.9	39.8	35.0	30.9	27.2	24.3	22.8	20.2	16.5	13.5
155	45.1	40.2	35.5	31.5	28.0	25.2	23.7	21.2	17.6	14.7
160	45.3	40.5	36.0	32.0	28.7	26.0	24.6	22.1	18.6	15.8
165	45.5	40.8	36.4	32.6	29.3	26.7	25.3	22.9	19.6	16.8
170	45.7	41.1	36.8	33.1	29.9	27.4	26.1	23.7	20.4	17.8
175	45.9	41.4	37.2	33.6	30.5	28.0	26.7	24.4	21.2	18.7
180	46.1	41.7	37.6	34.0	31.0	28.6	27.4	25.1	22.0	19.5
185	46.2	41.9	37.9	34.4	31.5	29.2	28.0	25.8	22.7	20.3
190	46.4	42.2	38.2	34.8	31.9	29.7	28.5	26.4	23.4	21.0
195	46.5	42.4	38.5	35.1	32.4	30.2	29.0	26.9	24.0	21.7
200	46.6	42.6	38.8	35.5	32.8	30.7	29.5	27.4	24.6	22.3
205	46.8	42.8	39.0	35.8	33.2	31.1	30.0	27.9	25.1	22.9
210	46.9	43.0	39.3	36.1	33.5	31.5	30.4	28.4	25.7	23.5
215	47.0	43.1	39.5	36.4	33.9	31.9	30.8	28.9	26.2	24.0
220	47.1	43.3	39.7	36.7	34.2	32.3	31.2	29.3	26.6	24.6
225	47.2	43.5	39.9	37.0	34.5	32.7	31.6	29.7	27.1	25.0
230	47.3	43.6	40.1	37.2	34.8	33.0	32.0	30.1	27.5	25.5
235	47.4	43.8	40.3	37.4	35.1	33.3	32.3	30.4	27.9	25.9
240	47.5	43.9	40.5	37.7	35.3	33.6	32.6	30.8	28.3	26.4
245	47.6	44.0	40.7	37.9	35.6	33.9	32.9	31.1	28.6	26.8
250	47.7	44.2	40.9	38.1	35.8	34.2	33.2	31.4	29.0	27.1
255	47.7	44.3	41.0	38.3	36.1	34.5	33.5	31.7	29.3	27.5
260	47.8	44.4	41.2	38.5	36.3	34.7	33.8	32.0	29.6	27.9
265	47.9	44.5	41.3	38.7	36.5	35.0	34.0	32.3	30.0	28.2
270	48.0	44.6	41.5	38.8	36.7	35.2	34.3	32.6	30.2	28.5
275	48.0	44.7	41.6	39.0	36.9	35.4	34.5	32.8	30.5	28.8
280	48.1	44.8	41.7	39.2	37.1	35.6	34.7	33.0	30.8	29.1
285	48.2	44.9	41.9	39.3	37.3	35.8	35.0	33.3	31.1	29.4
290	48.2	45.0	42.0	39.5	37.5	36.0	35.2	33.5	31.3	29.7
295	48.3	45.1	42.1	39.6	37.6	36.2	35.4	33.7	31.6	29.9
300	48.3	45.2	42.2	39.8	37.8	36.4	35.6	33.9	31.8	30.2
305	48.4	45.3	42.3	39.9	38.0	36.6	35.8	34.1	32.0	30.4
310	48.4	45.3	42.4	40.0	38.1	36.8	35.9	34.3	32.2	30.7
315	48.5	45.4	42.5	40.1	38.3	36.9	36.1	34.5	32.4	30.9
320	48.5	45.5	42.6	40.3	38.4	37.1	36.3	34.7	32.6	31.1
325	48.6	45.6	42.7	40.4	38.5	37.3	36.4	34.9	32.8	31.3
330	48.6	45.6	42.8	40.5	38.7	37.4	36.6	35.0	33.0	31.5
335	48.7	45.7	42.9	40.6	38.8	37.6	36.8	35.2	33.2	31.7
340	48.7	45.8	43.0	40.7	38.9	37.7	36.9	35.4	33.4	31.9
345	48.8	45.8	43.1	40.8	39.0	37.8	37.0	35.5	33.5	32.1
350	48.8	45.9	43.1	40.9	39.2	38.0	37.2	35.7	33.7	32.3
355	48.8	45.9	43.2	41.0	39.3	38.1	37.3	35.8	33.9	32.4
360	48.9	46.0	43.3	41.1	39.4	38.2	37.5	36.0	34.0	32.6
365	48.9	46.0	43.4	41.2	39.5	38.3	37.6	36.1	34.2	32.8

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection material only.

Table also applies to beams and columns protected on four sides.

MONOKOTE Z106

Section Factor up to m ⁻¹	Table 5: I-Section Beams and Columns: Fire Resistance Period: 180 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	30.3	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
35	41.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
40	47.3	23.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
45	51.4	31.5	10.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4
50	54.3	37.3	19.5	9.4	9.4	9.4	9.4	9.4	9.4	9.4
55	56.4	41.6	26.3	11.2	9.4	9.4	9.4	9.4	9.4	9.4
60	58.1	44.8	31.3	18.2	9.4	9.4	9.4	9.4	9.4	9.4
65	59.4	47.3	35.2	23.6	12.8	9.4	9.4	9.4	9.4	9.4
70	60.5	49.4	38.3	27.9	18.2	9.7	9.4	9.4	9.4	9.4
75	61.4	51.0	40.8	31.3	22.6	15.0	11.3	9.4	9.4	9.4
80	62.1	52.4	42.9	34.2	26.2	19.4	16.0	10.2	9.4	9.4
85	62.7	53.6	44.7	36.5	29.2	23.0	19.9	14.5	9.4	9.4
90	63.3	54.7	46.2	38.6	31.8	26.1	23.2	18.2	10.8	9.4
95	63.8	55.6	47.5	40.3	34.0	28.7	26.0	21.3	14.4	9.4
100	64.2	56.3	48.7	41.9	35.9	31.0	28.4	24.0	17.5	12.1
105	64.6	57.0	49.7	43.2	37.6	33.0	30.5	26.3	20.2	15.2
110	64.9	57.6	50.6	44.4	39.0	34.7	32.4	28.4	22.6	17.8
115	65.2	58.2	51.4	45.5	40.4	36.3	34.1	30.2	24.7	20.2
120	65.5	58.7	52.2	46.4	41.5	37.6	35.5	31.8	26.5	22.2
125	65.8	59.2	52.8	47.3	42.6	38.9	36.9	33.3	28.2	24.1
130	66.0	59.6	53.4	48.1	43.6	40.0	38.1	34.6	29.7	25.8
135	66.2	59.9	54.0	48.8	44.4	41.0	39.2	35.8	31.1	27.3
140	66.4	60.3	54.5	49.4	45.2	42.0	40.2	36.9	32.3	28.7
145	66.6	60.6	54.9	50.0	46.0	42.8	41.1	37.9	33.4	29.9
150	66.7	60.9	55.4	50.6	46.6	43.6	41.9	38.8	34.5	31.1
155	66.9	61.2	55.7	51.1	47.3	44.4	42.7	39.6	35.4	32.1
160	67.0	61.4	56.1	51.6	47.8	45.0	43.4	40.4	36.3	33.1
165	67.2	61.7	56.4	52.0	48.4	45.7	44.1	41.1	37.1	34.0
170	67.3	61.9	56.8	52.4	48.9	46.2	44.7	41.8	37.9	34.9
175	67.4	62.1	57.1	52.8	49.3	46.8	45.3	42.4	38.6	35.6
180	67.5	62.3	57.3	53.2	49.8	47.3	45.8	43.0	39.3	36.4
185	67.6	62.5	57.6	53.5	50.2	47.8	46.3	43.6	39.9	37.1
190	67.7	62.6	57.8	53.8	50.6	48.2	46.8	44.1	40.5	37.7
195	67.8	62.8	58.1	54.1	50.9	48.6	47.2	44.6	41.0	38.3
200	67.9	63.0	58.3	54.4	51.3	49.0	47.6	45.0	41.5	38.9
205	68.0	63.1	58.5	54.7	51.6	49.4	48.0	45.4	42.0	39.4
210	68.1	63.2	58.7	54.9	51.9	49.8	48.4	45.9	42.5	39.9
215	68.1	63.4	58.9	55.2	52.2	50.1	48.8	46.2	42.9	40.4
220	68.2	63.5	59.1	55.4	52.5	50.4	49.1	46.6	43.3	40.8
225	68.3	63.6	59.2	55.6	52.7	50.7	49.4	47.0	43.7	41.3
230	68.3	63.7	59.4	55.8	53.0	51.0	49.7	47.3	44.1	41.7
235	68.4	63.8	59.5	56.0	53.2	51.3	50.0	47.6	44.4	42.1
240	68.4	63.9	59.7	56.2	53.4	51.5	50.3	47.9	44.8	42.4
245	68.5	64.0	59.8	56.4	53.6	51.8	50.5	48.2	45.1	42.8
250	68.6	64.1	60.0	56.5	53.9	52.0	50.8	48.5	45.4	43.1
255	68.6	64.2	60.1	56.7	54.1	52.2	51.0	48.7	45.7	43.5
260	68.7	64.3	60.2	56.9	54.2	52.5	51.3	49.0	46.0	43.8
265	68.7	64.4	60.3	57.0	54.4	52.7	51.5	49.2	46.2	44.1
270	68.7	64.5	60.4	57.2	54.6	52.9	51.7	49.4	46.5	44.3
275	68.8	64.5	60.6	57.3	54.8	53.1	51.9	49.7	46.7	44.6
280	68.8	64.6	60.7	57.4	54.9	53.2	52.1	49.9	47.0	44.9
285	68.9	64.7	60.8	57.6	55.1	53.4	52.3	50.1	47.2	45.1
290	68.9	64.8	60.9	57.7	55.2	53.6	52.5	50.3	47.4	45.4
295	68.9	64.8	60.9	57.8	55.4	53.8	52.6	50.5	47.6	45.6
300	69.0	64.9	61.0	57.9	55.5	53.9	52.8	50.6	47.8	45.8
305	69.0	64.9	61.1	58.0	55.6	54.1	53.0	50.8	48.0	46.0
310	69.0	65.0	61.2	58.1	55.8	54.2	53.1	51.0	48.2	46.2
315	69.1	65.1	61.3	58.2	55.9	54.4	53.3	51.1	48.4	46.4
320	69.1	65.1	61.4	58.3	56.0	54.5	53.4	51.3	48.6	46.6
325	69.1	65.2	61.4	58.4	56.1	54.6	53.6	51.4	48.7	46.8
330	69.2	65.2	61.5	58.5	56.2	54.8	53.7	51.6	48.9	47.0
335	69.2	65.3	61.6	58.6	56.3	54.9	53.8	51.7	49.1	47.2
340	69.2	65.3	61.6	58.7	56.4	55.0	54.0	51.9	49.2	47.3
345	69.3	65.4	61.7	58.8	56.5	55.1	54.1	52.0	49.4	47.5
350	69.3	65.4	61.8	58.9	56.6	55.2	54.2	52.1	49.5	47.7
355	69.3	65.5	61.8	58.9	56.7	55.3	54.3	52.3	49.6	47.8
360	69.3	65.5	61.9	59.0	56.8	55.4	54.4	52.4	49.8	48.0
365	69.4	65.5	62.0	59.1	56.9	55.5	54.5	52.5	49.9	48.1

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection material only.

Table also applies to beams and columns protected on four sides.

MONOKOTE Z106

Section Factor up to m ⁻¹	Table 6: I-Section Beams and Columns: Fire Resistance Period: 240 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	72.3	31.8	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
35	77.1	48.3	13.9	9.4	9.4	9.4	9.4	9.4	9.4	9.4
40	79.9	57.2	31.7	9.4	9.4	9.4	9.4	9.4	9.4	9.4
45	81.7	62.7	42.2	21.2	9.4	9.4	9.4	9.4	9.4	9.4
50	-	66.6	49.2	32.0	15.1	9.4	9.4	9.4	9.4	9.4
55	-	69.3	54.2	39.5	25.5	12.7	9.4	9.4	9.4	9.4
60	-	71.4	57.9	45.0	33.0	22.2	16.8	9.4	9.4	9.4
65	-	73.1	60.7	49.2	38.6	29.4	24.7	16.4	9.4	9.4
70	-	74.4	63.0	52.5	43.1	34.9	30.7	23.3	12.3	9.4
75	-	75.5	64.9	55.2	46.6	39.3	35.5	28.8	18.8	10.3
80	-	76.4	66.5	57.5	49.5	42.9	39.4	33.2	24.1	16.5
85	-	77.2	67.8	59.3	52.0	45.9	42.7	36.8	28.5	21.5
90	-	77.9	68.9	60.9	54.0	48.5	45.4	39.9	32.1	25.7
95	-	78.5	69.9	62.3	55.8	50.6	47.7	42.5	35.2	29.2
100	-	79.0	70.7	63.5	57.3	52.5	49.8	44.8	37.9	32.2
105	-	79.5	71.5	64.6	58.7	54.1	51.5	46.8	40.2	34.8
110	-	79.9	72.2	65.5	59.9	55.6	53.1	48.5	42.2	37.1
115	-	80.2	72.8	66.3	60.9	56.8	54.5	50.1	44.0	39.2
120	-	80.5	73.3	67.1	61.9	58.0	55.7	51.4	45.6	41.0
125	-	80.8	73.8	67.8	62.8	59.0	56.8	52.7	47.0	42.6
130	-	81.1	74.2	68.4	63.5	60.0	57.8	53.8	48.3	44.1
135	-	81.4	74.6	68.9	64.2	60.8	58.7	54.8	49.5	45.4
140	-	81.6	75.0	69.4	64.9	61.6	59.5	55.7	50.5	46.6
145	-	81.8	75.3	69.9	65.5	62.3	60.3	56.5	51.5	47.7
150	-	82.0	75.7	70.3	66.0	62.9	61.0	57.3	52.4	48.7
155	-	82.2	76.0	70.7	66.5	63.5	61.6	58.0	53.2	49.6
160	-	82.3	76.2	71.1	67.0	64.1	62.2	58.7	54.0	50.4
165	-	82.5	76.5	71.5	67.4	64.6	62.8	59.3	54.7	51.2
170	-	82.6	76.7	71.8	67.8	65.1	63.3	59.9	55.3	51.9
175	-	82.8	76.9	72.1	68.2	65.5	63.8	60.4	55.9	52.6
180	-	82.9	77.1	72.4	68.6	65.9	64.2	60.9	56.5	53.3
185	-	-	77.3	72.6	68.9	66.3	64.6	61.4	57.0	53.9
190	-	-	77.5	72.9	69.2	66.7	65.0	61.8	57.5	54.4
195	-	-	77.7	73.1	69.5	67.0	65.4	62.2	58.0	54.9
200	-	-	77.8	73.3	69.8	67.4	65.7	62.6	58.4	55.4
205	-	-	78.0	73.5	70.0	67.7	66.1	63.0	58.9	55.9
210	-	-	78.1	73.7	70.3	68.0	66.4	63.3	59.3	56.3
215	-	-	78.3	73.9	70.5	68.3	66.7	63.6	59.6	56.7
220	-	-	78.4	74.1	70.7	68.5	67.0	63.9	60.0	57.1
225	-	-	78.5	74.3	71.0	68.8	67.2	64.2	60.3	57.5
230	-	-	78.7	74.4	71.2	69.0	67.5	64.5	60.6	57.9
235	-	-	78.8	74.6	71.3	69.2	67.7	64.8	60.9	58.2
240	-	-	78.9	74.7	71.5	69.4	67.9	65.0	61.2	58.5
245	-	-	79.0	74.9	71.7	69.6	68.2	65.3	61.5	58.8
250	-	-	79.1	75.0	71.9	69.8	68.4	65.5	61.8	59.1
255	-	-	79.2	75.1	72.0	70.0	68.6	65.7	62.0	59.4
260	-	-	79.3	75.3	72.2	70.2	68.8	65.9	62.3	59.7
265	-	-	79.3	75.4	72.3	70.4	69.0	66.1	62.5	59.9
270	-	-	79.4	75.5	72.5	70.5	69.1	66.3	62.7	60.2
275	-	-	79.5	75.6	72.6	70.7	69.3	66.5	62.9	60.4
280	-	-	79.6	75.7	72.7	70.9	69.5	66.7	63.1	60.6
285	-	-	79.7	75.8	72.9	71.0	69.6	66.9	63.3	60.9
290	-	-	79.7	75.9	73.0	71.1	69.8	67.0	63.5	61.1
295	-	-	79.8	76.0	73.1	71.3	69.9	67.2	63.7	61.3
300	-	-	79.9	76.1	73.2	71.4	70.0	67.3	63.9	61.5
305	-	-	79.9	76.2	73.3	71.5	70.2	67.5	64.0	61.6
310	-	-	80.0	76.2	73.4	71.7	70.3	67.6	64.2	61.8
315	-	-	80.0	76.3	73.5	71.8	70.4	67.8	64.4	62.0
320	-	-	80.1	76.4	73.6	71.9	70.6	67.9	64.5	62.2
325	-	-	80.2	76.5	73.7	72.0	70.7	68.0	64.6	62.3
330	-	-	80.2	76.5	73.8	72.1	70.8	68.1	64.8	62.5
335	-	-	80.3	76.6	73.9	72.2	70.9	68.3	64.9	62.6
340	-	-	80.3	76.7	74.0	72.3	71.0	68.4	65.1	62.8
345	-	-	80.4	76.8	74.0	72.4	71.1	68.5	65.2	62.9
350	-	-	80.4	76.8	74.1	72.5	71.2	68.6	65.3	63.1
355	-	-	80.5	76.9	74.2	72.6	71.3	68.7	65.4	63.2
360	-	-	80.5	76.9	74.3	72.7	71.4	68.8	65.5	63.3
365	-	-	80.5	77.0	74.3	72.8	71.5	68.9	65.7	63.4

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection material only.

Table also applies to beams and columns protected on four sides.

MONOKOTE Z106										
Section Factor up to m ⁻¹	Table 1: Hollow Section Columns: Fire Resistance Period: 30 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
35	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
40	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
45	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
50	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
55	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
60	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
65	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
70	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
75	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
80	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
85	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
90	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
95	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
100	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
105	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
110	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
115	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
120	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
125	10.9	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
130	11.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
135	12.2	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
140	12.8	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7
145	13.3	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7
150	13.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
155	14.3	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
160	14.8	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
165	15.2	11.2	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
170	15.6	11.7	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
175	16.0	12.2	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
180	16.4	12.7	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
185	16.7	13.2	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
190	17.1	13.6	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
195	17.4	14.0	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
200	17.7	14.4	11.3	11.2	11.2	11.2	11.2	11.2	11.2	11.2
205	18.0	14.8	11.8	11.3	11.3	11.3	11.3	11.3	11.3	11.3
210	18.3	15.2	12.2	11.3	11.3	11.3	11.3	11.3	11.3	11.3
215	18.6	15.5	12.7	11.4	11.4	11.4	11.4	11.4	11.4	11.4
220	18.9	15.9	13.1	11.4	11.4	11.4	11.4	11.4	11.4	11.4
225	19.2	16.2	13.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
230	19.4	16.5	13.8	11.5	11.5	11.5	11.5	11.5	11.5	11.5
235	19.7	16.9	14.2	11.8	11.6	11.6	11.6	11.6	11.6	11.6
240	19.9	17.2	14.6	12.2	11.6	11.6	11.6	11.6	11.6	11.6
245	20.2	17.5	14.9	12.6	11.7	11.7	11.7	11.7	11.7	11.7
250	20.4	17.7	15.2	13.0	11.7	11.7	11.7	11.7	11.7	11.7
255	20.6	18.0	15.5	13.3	11.7	11.7	11.7	11.7	11.7	11.7
260	20.7	18.2	15.8	13.6	11.7	11.7	11.7	11.7	11.7	11.7
265	20.9	18.3	16.0	13.9	12.1	11.7	11.7	11.7	11.7	11.7
270	21.0	18.5	16.2	14.2	12.4	11.7	11.7	11.7	11.7	11.7
275	21.1	18.7	16.5	14.5	12.7	11.7	11.7	11.7	11.7	11.7
280	21.2	18.9	16.7	14.7	13.0	11.7	11.7	11.7	11.7	11.7
285	21.4	19.0	16.9	15.0	13.3	11.9	11.7	11.7	11.7	11.7
290	21.5	19.2	17.1	15.2	13.6	12.2	11.7	11.7	11.7	11.7
295	21.6	19.4	17.3	15.4	13.8	12.5	11.8	11.7	11.7	11.7
300	21.7	19.5	17.5	15.6	14.1	12.7	12.1	11.7	11.7	11.7
305	21.8	19.6	17.6	15.9	14.3	13.0	12.4	11.7	11.7	11.7
310	21.9	19.8	17.8	16.1	14.6	13.3	12.7	11.7	11.7	11.7
315	22.0	19.9	18.0	16.3	14.8	13.5	13.0	12.0	11.7	11.7
320	22.1	20.0	18.1	16.5	15.0	13.8	13.2	12.3	11.7	11.7
325	22.2	20.2	18.3	16.6	15.2	14.0	13.5	12.5	11.7	11.7
330	22.3	20.3	18.4	16.8	15.4	14.3	13.7	12.8	11.7	11.7
335	22.3	20.4	18.6	17.0	15.6	14.5	13.9	13.0	11.7	11.7
340	22.4	20.5	18.7	17.2	15.8	14.7	14.2	13.3	12.0	11.7
345	22.5	20.6	18.9	17.3	16.0	14.9	14.4	13.5	12.3	11.7
350	22.6	20.7	19.0	17.5	16.2	15.1	14.6	13.7	12.5	11.7
355	22.7	20.8	19.1	17.6	16.4	15.3	14.8	13.9	12.7	11.7
360	22.7	20.9	19.2	17.8	16.5	15.5	15.0	14.2	13.0	12.0
365	22.8	21.0	19.4	17.9	16.7	15.7	15.2	14.4	13.2	12.2

Table applies to fully exposed rectangular and circular hollow columns. Thickness is protection material only.

MONOKOTE Z106										
Section Factor up to m ⁻¹	Table 2: Hollow Section Columns: Fire Resistance Period: 60 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
35	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
40	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
45	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
50	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
55	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
60	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
65	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
70	10.4	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
75	12.5	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
80	14.3	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
85	15.8	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
90	17.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
95	18.4	10.6	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
100	19.4	12.1	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
105	20.4	13.5	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
110	21.3	14.7	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
115	22.1	15.8	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
120	22.8	16.8	11.1	10.5	10.5	10.5	10.5	10.5	10.5	10.5
125	23.5	17.8	12.2	10.5	10.5	10.5	10.5	10.5	10.5	10.5
130	24.2	18.6	13.3	10.6	10.6	10.6	10.6	10.6	10.6	10.6
135	24.8	19.4	14.3	10.6	10.6	10.6	10.6	10.6	10.6	10.6
140	25.4	20.2	15.3	10.8	10.7	10.7	10.7	10.7	10.7	10.7
145	25.9	20.9	16.1	11.8	10.7	10.7	10.7	10.7	10.7	10.7
150	26.4	21.5	16.9	12.8	10.8	10.8	10.8	10.8	10.8	10.8
155	26.9	22.2	17.7	13.7	10.8	10.8	10.8	10.8	10.8	10.8
160	27.4	22.8	18.4	14.5	11.0	10.9	10.9	10.9	10.9	10.9
165	27.8	23.3	19.1	15.3	12.0	10.9	10.9	10.9	10.9	10.9
170	28.2	23.9	19.8	16.1	12.8	11.0	11.0	11.0	11.0	11.0
175	28.6	24.4	20.4	16.8	13.6	11.0	11.0	11.0	11.0	11.0
180	29.0	24.9	21.0	17.5	14.4	11.8	11.0	11.0	11.0	11.0
185	29.4	25.3	21.5	18.1	15.1	12.6	11.4	11.1	11.1	11.1
190	29.8	25.8	22.1	18.7	15.8	13.4	12.2	11.1	11.1	11.1
195	30.1	26.2	22.6	19.3	16.5	14.1	13.0	11.2	11.2	11.2
200	30.5	26.6	23.1	19.9	17.1	14.8	13.7	11.8	11.2	11.2
205	30.8	27.1	23.5	20.4	17.7	15.5	14.4	12.6	11.3	11.3
210	31.1	27.4	24.0	21.0	18.3	16.1	15.0	13.3	11.3	11.3
215	31.4	27.8	24.4	21.5	18.9	16.7	15.7	13.9	11.4	11.4
220	31.8	28.2	24.9	21.9	19.4	17.3	16.3	14.6	12.1	11.4
225	32.1	28.6	25.3	22.4	19.9	17.9	16.9	15.2	12.8	11.5
230	32.4	28.9	25.7	22.9	20.4	18.4	17.5	15.8	13.4	11.5
235	32.6	29.3	26.1	23.3	20.9	19.0	18.0	16.4	14.0	12.1
240	32.9	29.6	26.5	23.7	21.4	19.5	18.5	16.9	14.6	12.8
245	33.2	29.9	26.8	24.1	21.8	20.0	19.0	17.5	15.2	13.4
250	33.5	30.2	27.2	24.5	22.3	20.5	19.5	18.0	15.8	13.9
255	33.6	30.4	27.4	24.8	22.6	20.8	19.9	18.4	16.2	14.5
260	33.7	30.6	27.7	25.1	23.0	21.2	20.3	18.8	16.7	14.9
265	33.9	30.8	27.9	25.4	23.3	21.6	20.7	19.2	17.1	15.4
270	34.0	30.9	28.1	25.6	23.6	21.9	21.1	19.6	17.5	15.8
275	34.1	31.1	28.3	25.9	23.9	22.2	21.4	19.9	17.9	16.3
280	34.2	31.3	28.5	26.1	24.1	22.5	21.7	20.3	18.3	16.7
285	34.3	31.4	28.7	26.4	24.4	22.8	22.0	20.6	18.7	17.1
290	34.4	31.5	28.9	26.6	24.6	23.1	22.3	20.9	19.0	17.5
295	34.5	31.7	29.1	26.8	24.9	23.4	22.6	21.3	19.4	17.8
300	34.6	31.8	29.2	27.0	25.1	23.7	22.9	21.6	19.7	18.2
305	34.7	31.9	29.4	27.2	25.4	23.9	23.2	21.8	20.0	18.5
310	34.8	32.1	29.5	27.4	25.6	24.2	23.4	22.1	20.3	18.8
315	34.9	32.2	29.7	27.6	25.8	24.4	23.7	22.4	20.6	19.2
320	34.9	32.3	29.8	27.7	26.0	24.6	23.9	22.6	20.9	19.5
325	35.0	32.4	30.0	27.9	26.2	24.9	24.2	22.9	21.1	19.8
330	35.1	32.5	30.1	28.1	26.4	25.1	24.4	23.1	21.4	20.0
335	35.2	32.6	30.3	28.2	26.6	25.3	24.6	23.4	21.7	20.3
340	35.2	32.7	30.4	28.4	26.8	25.5	24.8	23.6	21.9	20.6
345	35.3	32.8	30.5	28.6	26.9	25.7	25.0	23.8	22.1	20.8
350	35.4	32.9	30.6	28.7	27.1	25.9	25.2	24.0	22.4	21.1
355	35.5	33.0	30.8	28.8	27.3	26.1	25.4	24.2	22.6	21.3
360	35.5	33.1	30.9	29.0	27.4	26.3	25.6	24.4	22.8	21.6
365	35.6	33.2	31.0	29.1	27.6	26.4	25.8	24.6	23.0	21.8

Table applies to fully exposed rectangular and circular hollow columns. Thickness is protection material only.

MONOKOTE Z106										
Section Factor up to m ⁻¹	Table 3: Hollow Section Columns: Fire Resistance Period: 90 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
35	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
40	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
45	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
50	11.7	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
55	15.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
60	19.1	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
65	21.8	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
70	24.0	12.6	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
75	25.9	15.4	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
80	27.5	17.7	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
85	28.9	19.8	10.9	10.2	10.2	10.2	10.2	10.2	10.2	10.2
90	30.1	21.6	13.3	10.2	10.2	10.2	10.2	10.2	10.2	10.2
95	31.2	23.2	15.3	10.2	10.2	10.2	10.2	10.2	10.2	10.2
100	32.2	24.6	17.2	10.4	10.3	10.3	10.3	10.3	10.3	10.3
105	33.1	25.9	18.8	12.4	10.3	10.3	10.3	10.3	10.3	10.3
110	34.0	27.0	20.3	14.2	10.4	10.4	10.4	10.4	10.4	10.4
115	34.8	28.1	21.7	15.8	10.6	10.4	10.4	10.4	10.4	10.4
120	35.5	29.0	22.9	17.3	12.3	10.5	10.5	10.5	10.5	10.5
125	36.2	30.0	24.0	18.7	13.9	10.5	10.5	10.5	10.5	10.5
130	36.8	30.8	25.1	19.9	15.4	11.4	10.6	10.6	10.6	10.6
135	37.4	31.6	26.1	21.1	16.7	13.0	11.2	10.6	10.6	10.6
140	37.9	32.3	27.0	22.2	18.0	14.4	12.7	10.7	10.7	10.7
145	38.5	33.0	27.8	23.2	19.1	15.7	14.0	11.3	10.7	10.7
150	39.0	33.7	28.6	24.1	20.2	16.9	15.3	12.6	10.8	10.8
155	39.5	34.3	29.4	25.0	21.2	18.0	16.5	13.9	10.8	10.8
160	40.0	34.9	30.1	25.8	22.2	19.1	17.6	15.0	11.4	10.9
165	40.4	35.5	30.8	26.6	23.1	20.1	18.6	16.1	12.6	10.9
170	40.9	36.0	31.4	27.4	23.9	21.0	19.6	17.2	13.7	11.0
175	41.3	36.5	32.0	28.1	24.7	21.9	20.5	18.2	14.8	12.0
180	41.7	37.0	32.6	28.8	25.5	22.8	21.4	19.1	15.8	13.0
185	42.1	37.5	33.2	29.4	26.2	23.6	22.3	20.0	16.7	14.1
190	42.5	38.0	33.7	30.1	26.9	24.4	23.1	20.8	17.6	15.0
195	42.9	38.4	34.3	30.7	27.6	25.1	23.8	21.6	18.5	16.0
200	43.2	38.9	34.8	31.2	28.2	25.8	24.6	22.4	19.3	16.9
205	43.6	39.3	35.3	31.8	28.8	26.5	25.3	23.1	20.1	17.7
210	43.9	39.7	35.8	32.3	29.4	27.1	25.9	23.8	20.9	18.5
215	44.3	40.1	36.2	32.8	30.0	27.8	26.6	24.5	21.6	19.3
220	44.6	40.5	36.7	33.3	30.6	28.4	27.2	25.2	22.3	20.0
225	44.9	40.9	37.1	33.8	31.1	28.9	27.8	25.8	23.0	20.7
230	45.3	41.3	37.5	34.3	31.6	29.5	28.4	26.4	23.6	21.4
235	45.6	41.6	37.9	34.8	32.1	30.1	28.9	27.0	24.2	22.1
240	45.9	42.0	38.3	35.2	32.6	30.6	29.5	27.5	24.9	22.7
245	46.2	42.4	38.7	35.7	33.1	31.1	30.0	28.1	25.4	23.3
250	46.5	42.7	39.1	36.1	33.5	31.6	30.5	28.6	26.0	23.9
255	46.6	42.9	39.4	36.4	33.9	32.0	30.9	29.0	26.4	24.4
260	46.8	43.0	39.6	36.6	34.2	32.3	31.3	29.4	26.9	24.9
265	46.9	43.2	39.8	36.9	34.5	32.6	31.6	29.8	27.3	25.3
270	47.0	43.4	40.0	37.1	34.7	32.9	31.9	30.1	27.7	25.7
275	47.1	43.5	40.2	37.3	35.0	33.3	32.3	30.5	28.0	26.2
280	47.2	43.6	40.3	37.5	35.3	33.5	32.6	30.8	28.4	26.5
285	47.3	43.8	40.5	37.8	35.5	33.8	32.9	31.1	28.7	26.9
290	47.3	43.9	40.7	38.0	35.7	34.1	33.1	31.4	29.1	27.3
295	47.4	44.0	40.8	38.2	36.0	34.4	33.4	31.7	29.4	27.6
300	47.5	44.1	41.0	38.3	36.2	34.6	33.7	32.0	29.7	28.0
305	47.6	44.3	41.1	38.5	36.4	34.8	33.9	32.3	30.0	28.3
310	47.7	44.4	41.3	38.7	36.6	35.1	34.2	32.5	30.3	28.6
315	47.7	44.5	41.4	38.9	36.8	35.3	34.4	32.8	30.6	28.9
320	47.8	44.6	41.6	39.0	37.0	35.5	34.6	33.0	30.8	29.2
325	47.9	44.7	41.7	39.2	37.2	35.7	34.9	33.2	31.1	29.5
330	47.9	44.8	41.8	39.4	37.4	35.9	35.1	33.5	31.3	29.7
335	48.0	44.9	41.9	39.5	37.5	36.1	35.3	33.7	31.6	30.0
340	48.1	45.0	42.1	39.6	37.7	36.3	35.5	33.9	31.8	30.2
345	48.1	45.1	42.2	39.8	37.9	36.5	35.7	34.1	32.0	30.5
350	48.2	45.1	42.3	39.9	38.0	36.7	35.9	34.3	32.3	30.7
355	48.2	45.2	42.4	40.1	38.2	36.9	36.0	34.5	32.5	30.9
360	48.3	45.3	42.5	40.2	38.3	37.0	36.2	34.7	32.7	31.2
365	48.4	45.4	42.6	40.3	38.5	37.2	36.4	34.9	32.9	31.4

Table applies to fully exposed rectangular and circular hollow columns. Thickness is protection material only.

MONOKOTE Z106										
Section Factor up to m ⁻¹	Table 4:Hollow Section Columns: Fire Resistance Period: 120 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
35	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
40	15.3	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
45	22.0	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
50	26.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
55	30.4	14.6	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
60	33.3	19.2	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
65	35.6	22.9	10.2	10.0	10.0	10.0	10.0	10.0	10.0	10.0
70	37.6	26.0	14.4	10.0	10.0	10.0	10.0	10.0	10.0	10.0
75	39.2	28.5	17.9	10.1	10.1	10.1	10.1	10.1	10.1	10.1
80	40.7	30.7	20.9	11.7	10.1	10.1	10.1	10.1	10.1	10.1
85	41.9	32.6	23.4	14.9	10.2	10.2	10.2	10.2	10.2	10.2
90	43.1	34.2	25.6	17.7	10.4	10.2	10.2	10.2	10.2	10.2
95	44.1	35.7	27.6	20.1	13.4	10.2	10.2	10.2	10.2	10.2
100	45.0	37.0	29.3	22.3	15.9	10.4	10.3	10.3	10.3	10.3
105	45.9	38.2	30.9	24.2	18.2	13.0	10.6	10.3	10.3	10.3
110	46.7	39.3	32.3	25.9	20.2	15.4	13.0	10.4	10.4	10.4
115	47.4	40.3	33.6	27.5	22.1	17.5	15.2	11.5	10.4	10.4
120	48.1	41.3	34.7	28.9	23.7	19.4	17.2	13.6	10.5	10.5
125	48.8	42.2	35.8	30.2	25.2	21.1	19.1	15.6	10.5	10.5
130	49.4	43.0	36.8	31.4	26.6	22.7	20.7	17.4	12.5	10.6
135	50.0	43.7	37.8	32.5	27.9	24.2	22.3	19.0	14.3	10.6
140	50.5	44.5	38.7	33.6	29.2	25.5	23.7	20.5	16.0	12.3
145	51.1	45.1	39.5	34.6	30.3	26.8	25.0	22.0	17.6	14.0
150	51.6	45.8	40.3	35.5	31.3	28.0	26.3	23.3	19.0	15.5
155	52.1	46.4	41.0	36.3	32.3	29.1	27.4	24.5	20.4	17.0
160	52.6	47.0	41.8	37.2	33.3	30.1	28.5	25.6	21.6	18.3
165	53.0	47.6	42.4	38.0	34.2	31.1	29.5	26.7	22.8	19.6
170	53.5	48.1	43.1	38.7	35.0	32.1	30.5	27.8	23.9	20.8
175	53.9	48.7	43.7	39.4	35.8	32.9	31.4	28.7	25.0	21.9
180	54.3	49.2	44.3	40.1	36.6	33.8	32.3	29.6	26.0	23.0
185	54.8	49.7	44.9	40.8	37.3	34.6	33.1	30.5	26.9	24.0
190	55.2	50.2	45.4	41.4	38.0	35.4	33.9	31.4	27.8	25.0
195	55.6	50.6	46.0	42.0	38.7	36.1	34.7	32.2	28.7	25.9
200	56.0	51.1	46.5	42.6	39.3	36.8	35.4	32.9	29.5	26.8
205	56.4	51.5	47.0	43.2	39.9	37.5	36.1	33.7	30.3	27.6
210	56.7	52.0	47.5	43.7	40.6	38.2	36.8	34.4	31.0	28.4
215	57.1	52.4	48.0	44.2	41.1	38.8	37.5	35.1	31.8	29.2
220	57.5	52.8	48.5	44.8	41.7	39.4	38.1	35.7	32.5	30.0
225	57.8	53.2	48.9	45.3	42.3	40.0	38.7	36.4	33.2	30.7
230	58.2	53.6	49.4	45.8	42.8	40.6	39.3	37.0	33.8	31.4
235	58.6	54.0	49.8	46.2	43.3	41.1	39.9	37.6	34.5	32.0
240	58.9	54.4	50.2	46.7	43.8	41.7	40.4	38.2	35.1	32.7
245	59.2	54.8	50.7	47.2	44.3	42.2	41.0	38.7	35.7	33.3
250	59.6	55.2	51.1	47.6	44.8	42.7	41.5	39.3	36.2	33.9
255	59.7	55.3	51.3	47.9	45.1	43.1	41.9	39.7	36.7	34.4
260	59.8	55.5	51.5	48.1	45.4	43.4	42.2	40.0	37.1	34.8
265	59.9	55.6	51.6	48.3	45.6	43.7	42.5	40.4	37.4	35.2
270	60.0	55.8	51.8	48.5	45.9	44.0	42.8	40.7	37.8	35.6
275	60.0	55.9	52.0	48.8	46.2	44.3	43.1	41.0	38.2	36.0
280	60.1	56.0	52.2	49.0	46.4	44.5	43.4	41.3	38.5	36.4
285	60.2	56.1	52.3	49.2	46.6	44.8	43.7	41.6	38.8	36.7
290	60.3	56.2	52.5	49.3	46.8	45.1	44.0	41.9	39.1	37.1
295	60.3	56.4	52.6	49.5	47.0	45.3	44.2	42.2	39.4	37.4
300	60.4	56.5	52.8	49.7	47.3	45.5	44.5	42.4	39.7	37.7
305	60.5	56.6	52.9	49.9	47.5	45.8	44.7	42.7	40.0	38.0
310	60.5	56.7	53.0	50.0	47.6	46.0	44.9	42.9	40.3	38.3
315	60.6	56.8	53.2	50.2	47.8	46.2	45.1	43.2	40.5	38.6
320	60.7	56.8	53.3	50.3	48.0	46.4	45.3	43.4	40.8	38.9
325	60.7	56.9	53.4	50.5	48.2	46.6	45.6	43.6	41.0	39.1
330	60.8	57.0	53.5	50.6	48.3	46.8	45.7	43.8	41.3	39.4
335	60.8	57.1	53.6	50.8	48.5	47.0	45.9	44.0	41.5	39.6
340	60.9	57.2	53.7	50.9	48.7	47.1	46.1	44.2	41.7	39.9
345	60.9	57.3	53.8	51.0	48.8	47.3	46.3	44.4	41.9	40.1
350	61.0	57.3	53.9	51.1	49.0	47.5	46.5	44.6	42.1	40.3
355	61.0	57.4	54.0	51.3	49.1	47.6	46.6	44.8	42.3	40.6
360	61.1	57.5	54.1	51.4	49.2	47.8	46.8	45.0	42.5	40.8
365	61.1	57.6	54.2	51.5	49.4	47.9	47.0	45.1	42.7	41.0

Table applies to fully exposed rectangular and circular hollow columns. Thickness is protection material only.

MONOKOTE Z106										
Section Factor up to m ⁻¹	Table 5: Hollow Section Columns: Fire Resistance Period: 180 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	31.2	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
35	42.5	9.8	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
40	49.2	23.9	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
45	53.7	32.9	10.6	9.8	9.8	9.8	9.8	9.8	9.8	9.8
50	57.0	39.2	20.5	9.8	9.8	9.8	9.8	9.8	9.8	9.8
55	59.5	43.9	27.7	11.8	9.9	9.9	9.9	9.9	9.9	9.9
60	61.6	47.5	33.1	19.3	9.9	9.9	9.9	9.9	9.9	9.9
65	63.2	50.4	37.4	25.1	13.6	10.0	10.0	10.0	10.0	10.0
70	64.7	52.8	40.9	29.8	19.5	10.3	10.0	10.0	10.0	10.0
75	66.0	54.9	43.9	33.7	24.3	16.1	12.1	10.1	10.1	10.1
80	67.1	56.6	46.3	36.9	28.3	20.9	17.3	11.0	10.1	10.1
85	68.1	58.2	48.5	39.7	31.7	25.0	21.6	15.8	10.2	10.2
90	69.0	59.6	50.4	42.1	34.7	28.4	25.3	19.8	11.8	10.2
95	69.9	60.8	52.1	44.2	37.2	31.4	28.5	23.3	15.8	10.2
100	70.6	62.0	53.6	46.1	39.5	34.1	31.3	26.4	19.3	13.4
105	71.4	63.0	54.9	47.8	41.5	36.4	33.7	29.1	22.3	16.8
110	72.1	64.0	56.2	49.3	43.3	38.5	36.0	31.5	25.1	19.8
115	72.7	64.9	57.3	50.7	45.0	40.4	38.0	33.6	27.5	22.5
120	73.4	65.7	58.4	52.0	46.5	42.2	39.8	35.6	29.7	24.9
125	74.0	66.6	59.4	53.2	47.9	43.8	41.5	37.4	31.7	27.1
130	74.6	67.3	60.4	54.3	49.2	45.2	43.0	39.1	33.6	29.1
135	75.1	68.0	61.2	55.4	50.4	46.6	44.5	40.6	35.2	31.0
140	75.7	68.7	62.1	56.4	51.6	47.9	45.8	42.0	36.8	32.7
145	76.2	69.4	62.9	57.3	52.6	49.1	47.0	43.3	38.3	34.3
150	76.8	70.0	63.7	58.2	53.6	50.2	48.2	44.6	39.6	35.7
155	77.3	70.7	64.4	59.0	54.6	51.2	49.3	45.8	40.9	37.1
160	77.8	71.3	65.1	59.8	55.5	52.2	50.3	46.9	42.1	38.4
165	78.3	71.8	65.8	60.6	56.4	53.2	51.3	47.9	43.2	39.6
170	78.7	72.4	66.4	61.3	57.2	54.1	52.3	48.9	44.3	40.8
175	79.2	73.0	67.0	62.1	58.0	55.0	53.2	49.8	45.3	41.9
180	79.7	73.5	67.7	62.7	58.7	55.8	54.0	50.7	46.3	42.9
185	80.1	74.0	68.3	63.4	59.5	56.6	54.9	51.6	47.2	43.9
190	80.6	74.5	68.8	64.1	60.2	57.4	55.7	52.4	48.1	44.9
195	81.0	75.1	69.4	64.7	60.9	58.1	56.4	53.2	49.0	45.8
200	81.5	75.6	70.0	65.3	61.5	58.8	57.2	54.0	49.8	46.7
205	81.9	76.0	70.5	65.9	62.2	59.5	57.9	54.8	50.6	47.5
210	82.3	76.5	71.0	66.5	62.8	60.2	58.6	55.5	51.4	48.3
215	82.8	77.0	71.6	67.0	63.4	60.9	59.2	56.2	52.1	49.1
220	-	77.5	72.1	67.6	64.0	61.5	59.9	56.9	52.8	49.8
225	-	77.9	72.6	68.1	64.6	62.1	60.5	57.5	53.5	50.6
230	-	78.4	73.1	68.7	65.2	62.7	61.2	58.2	54.2	51.3
235	-	78.8	73.5	69.2	65.7	63.3	61.8	58.8	54.9	52.0
240	-	79.3	74.0	69.7	66.3	63.9	62.3	59.4	55.5	52.6
245	-	79.7	74.5	70.2	66.8	64.5	62.9	60.0	56.1	53.3
250	-	80.2	75.0	70.7	67.3	65.0	63.5	60.6	56.7	53.9
255	-	80.3	75.1	70.9	67.6	65.3	63.8	60.9	57.1	54.3
260	-	80.4	75.3	71.1	67.8	65.6	64.1	61.2	57.4	54.7
265	-	80.5	75.4	71.3	68.0	65.8	64.4	61.5	57.8	55.1
270	-	80.6	75.6	71.4	68.2	66.1	64.6	61.8	58.1	55.4
275	-	80.7	75.7	71.6	68.4	66.3	64.9	62.1	58.4	55.8
280	-	80.8	75.8	71.8	68.6	66.6	65.1	62.3	58.7	56.1
285	-	80.9	75.9	71.9	68.8	66.8	65.4	62.6	59.0	56.4
290	-	80.9	76.1	72.1	69.0	67.0	65.6	62.8	59.3	56.7
295	-	81.0	76.2	72.2	69.2	67.2	65.8	63.1	59.5	57.0
300	-	81.1	76.3	72.4	69.4	67.4	66.0	63.3	59.8	57.3
305	-	81.2	76.4	72.5	69.5	67.6	66.2	63.5	60.0	57.5
310	-	81.3	76.5	72.7	69.7	67.8	66.4	63.7	60.3	57.8
315	-	81.3	76.6	72.8	69.9	67.9	66.6	63.9	60.5	58.0
320	-	81.4	76.7	72.9	70.0	68.1	66.8	64.1	60.7	58.3
325	-	81.5	76.8	73.0	70.1	68.3	66.9	64.3	60.9	58.5
330	-	81.5	76.9	73.2	70.3	68.4	67.1	64.5	61.1	58.7
335	-	81.6	77.0	73.3	70.4	68.6	67.3	64.7	61.3	59.0
340	-	81.6	77.1	73.4	70.6	68.8	67.4	64.8	61.5	59.2
345	-	81.7	77.1	73.5	70.7	68.9	67.6	65.0	61.7	59.4
350	-	81.8	77.2	73.6	70.8	69.0	67.7	65.2	61.9	59.6
355	-	81.8	77.3	73.7	70.9	69.2	67.9	65.3	62.1	59.8
360	-	81.9	77.4	73.8	71.0	69.3	68.0	65.5	62.2	60.0
365	-	81.9	77.5	73.9	71.1	69.4	68.2	65.6	62.4	60.1

Table applies to fully exposed rectangular and circular hollow columns. Thickness is protection material only.

MONOKOTE Z106										
Section Factor up to m ⁻¹	Table 6: Hollow Section Columns: Fire Resistance Period: 240 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
30	74.5	32.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
35	79.8	50.0	14.4	9.7	9.7	9.7	9.7	9.7	9.7	9.7
40	-	59.5	33.0	9.7	9.7	9.7	9.7	9.7	9.7	9.7
45	-	65.6	44.1	22.2	9.8	9.8	9.8	9.8	9.8	9.8
50	-	69.9	51.7	33.6	15.9	9.8	9.8	9.8	9.8	9.8
55	-	73.1	57.1	41.7	26.9	13.3	9.9	9.9	9.9	9.9
60	-	75.7	61.3	47.7	35.0	23.6	17.8	9.9	9.9	9.9
65	-	77.8	64.7	52.4	41.1	31.3	26.3	17.4	10.0	10.0
70	-	79.6	67.4	56.2	46.1	37.4	32.9	24.9	13.1	10.0
75	-	81.2	69.8	59.4	50.1	42.3	38.2	30.9	20.3	11.1
80	-	82.6	71.8	62.1	53.5	46.4	42.6	35.8	26.1	17.8
85	-	-	73.5	64.4	56.4	49.8	46.3	40.0	30.9	23.3
90	-	-	75.1	66.4	58.9	52.8	49.5	43.5	35.0	28.0
95	-	-	76.5	68.2	61.1	55.4	52.3	46.6	38.5	32.0
100	-	-	77.8	69.9	63.1	57.7	54.7	49.3	41.6	35.4
105	-	-	79.0	71.3	64.9	59.8	56.9	51.7	44.4	38.5
110	-	-	80.1	72.7	66.5	61.7	58.9	53.9	46.8	41.2
115	-	-	81.1	74.0	68.0	63.4	60.7	55.8	49.0	43.7
120	-	-	82.1	75.1	69.3	65.0	62.4	57.6	51.0	45.9
125	-	-	-	76.2	70.6	66.4	63.9	59.2	52.9	47.9
130	-	-	-	77.3	71.8	67.7	65.3	60.8	54.6	49.8
135	-	-	-	78.2	72.9	69.0	66.6	62.2	56.1	51.5
140	-	-	-	79.2	74.0	70.2	67.9	63.5	57.6	53.1
145	-	-	-	80.0	75.0	71.3	69.0	64.7	59.0	54.6
150	-	-	-	80.9	75.9	72.4	70.1	65.9	60.2	56.0
155	-	-	-	81.7	76.8	73.4	71.2	67.0	61.5	57.3
160	-	-	-	82.5	77.7	74.3	72.2	68.1	62.6	58.5
165	-	-	-	-	78.6	75.3	73.1	69.1	63.7	59.7
170	-	-	-	-	79.4	76.1	74.0	70.0	64.7	60.8
175	-	-	-	-	80.1	77.0	74.9	71.0	65.7	61.8
180	-	-	-	-	80.9	77.8	75.8	71.9	66.7	62.8
185	-	-	-	-	81.6	78.6	76.6	72.7	67.6	63.8
190	-	-	-	-	82.4	79.4	77.4	73.5	68.5	64.8
195	-	-	-	-	-	80.1	78.1	74.3	69.3	65.6
200	-	-	-	-	-	80.8	78.9	75.1	70.1	66.5
205	-	-	-	-	-	81.6	79.6	75.9	70.9	67.4
210	-	-	-	-	-	82.2	80.3	76.6	71.7	68.2
215	-	-	-	-	-	82.9	81.0	77.3	72.4	68.9
220	-	-	-	-	-	-	81.7	78.0	73.2	69.7
225	-	-	-	-	-	-	82.4	78.7	73.9	70.5
230	-	-	-	-	-	-	-	79.3	74.6	71.2
235	-	-	-	-	-	-	-	80.0	75.3	71.9
240	-	-	-	-	-	-	-	80.6	75.9	72.6
245	-	-	-	-	-	-	-	81.2	76.6	73.2
250	-	-	-	-	-	-	-	81.9	77.2	73.9
255	-	-	-	-	-	-	-	82.1	77.5	74.3
260	-	-	-	-	-	-	-	82.4	77.8	74.6
265	-	-	-	-	-	-	-	82.7	78.1	74.9
270	-	-	-	-	-	-	-	82.9	78.4	75.2
275	-	-	-	-	-	-	-	-	78.7	75.5
280	-	-	-	-	-	-	-	-	78.9	75.8
285	-	-	-	-	-	-	-	-	79.2	76.1
290	-	-	-	-	-	-	-	-	79.4	76.3
295	-	-	-	-	-	-	-	-	79.6	76.6
300	-	-	-	-	-	-	-	-	79.8	76.8
305	-	-	-	-	-	-	-	-	80.0	77.1
310	-	-	-	-	-	-	-	-	80.2	77.3
315	-	-	-	-	-	-	-	-	80.4	77.5
320	-	-	-	-	-	-	-	-	80.6	77.7
325	-	-	-	-	-	-	-	-	80.8	77.9
330	-	-	-	-	-	-	-	-	81.0	78.1
335	-	-	-	-	-	-	-	-	81.2	78.3
340	-	-	-	-	-	-	-	-	81.3	78.5
345	-	-	-	-	-	-	-	-	81.5	78.6
350	-	-	-	-	-	-	-	-	81.6	78.8
355	-	-	-	-	-	-	-	-	81.8	79.0
360	-	-	-	-	-	-	-	-	81.9	79.1
365	-	-	-	-	-	-	-	-	82.1	79.3

Table applies to fully exposed rectangular and circular hollow columns. Thickness is protection material only.

MONOKOTE Z146

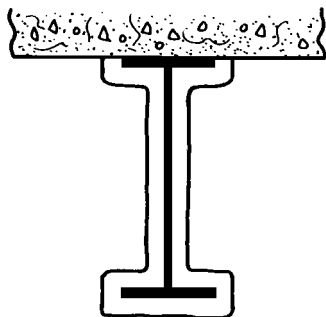
- 1. Product description**
Portland cement based mixture containing synthetic aggregate
- 2. Manufacturer**
GCP Applied Technologies
Ajax Avenue Slough, Berkshire SL1 4BH
T: 01753 692929
F: 01753 691623
W: www.gcpat.com
- 3. Availability**
GCP Applied Technologies
- 4. Protection technique**
Profile and box
- 5. Application technique**
Supply and installation by Team One approved contractors
- 6. Surface preparation**
Remove mill scale and contaminates. For compatible primers refer to manufacturer
- 7. Additional mechanical fixing**
None required for profile. Expanded metal lath for box
- 8. Nominal density**
675 kg/m³
- 9. Thickness range**
6 to 46 mm
- 10. Fire resistance range**
Up to and including 4 hours
- 11. Constraints for fire resistance**
 - a) Minimum thickness - 6 mm
 - b) Maximum thickness - 46 mm
- 12. Appearance**
Sprayed, textured, light grey
- 13. On site use**
For both internal and external applications
- 14. Durability**
Resistant to vermin, mould growth and minor impact and abrasions
- 15. Performance in other BS fire tests**
No data
- 16. Other applications**
None

MONOKOTE Z146

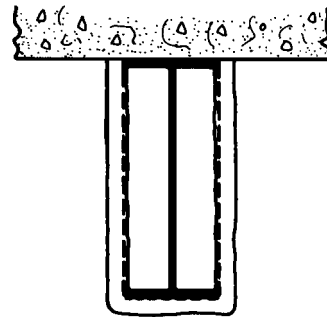
Critical Temperature 620°C						
Hp/A up to	Dry thickness in mm to provide fire resistance (mins) of					
	30	60	90	120	180	240
30	5	8	10	13	18	24
50	6	9	13	16	22	29
70	7	10	14	18	25	32
90	7	11	15	19	26	34
110	8	12	15	19	27	35
130	8	12	16	20	28	36
150	8	12	16	20	29	37
170	8	12	17	21	29	38
190	8	12	17	21	30	38
210	8	13	17	21	30	38
230	8	13	17	21	30	39
250	8	13	17	22	30	39
270	8	13	17	22	31	39
290	9	13	17	22	31	40
310	9	13	18	22	31	40

Linear interpolation is permissible between values of Hp/A

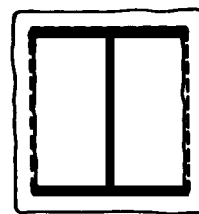
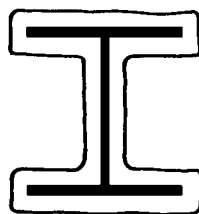
The data provided complies with the principles in Sections 3 and 4 of this Yellow Book



PROFILE



BOX



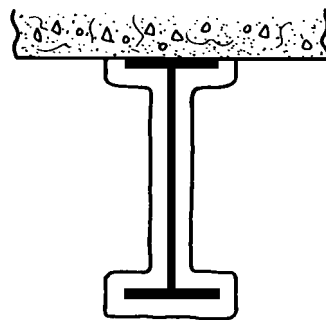
STEELGUARD CM4703

6. **Product description**
Modified vermiculite cement for internal and external structural steelwork with decorative topseal range.
7. **Manufacturer**
PPG INDUSTRIES (UK) LIMITED
Micro House, Station Approach, Wood Street North, Alfreton, DE55 7JR
T: 01773 837300
F: 01773 837302 W: www.ppgmc.com
8. **Availability**
Details from manufacturer
9. **Protection technique**
Profile to beams, columns and soffits
10. **Application technique**
Factory prepared pre-packed, mixed with water on site and sprayed through either mechanical piston or rotor stator type as detailed by manufacturer.
11. **Steel preparation requirements**
Abrasive blast to Sa 2½ ISO 8501-1 and apply the specified PPG primer. Steelguard CM 4703 may be applied directly to bare steel for internal dry C1 environments only. The surface must be dry and free of dust, salts, grease and other contaminants immediately before coating. If the steel is already primed, check compatibility with PPG. Compatible primers may require the application of either a bonding coat or Steelguard CM 4706 prior to Steelguard CM 4703 being applied – please refer to PPG for guidance.
Steelguard CM 4703 has a pH value of 12 at application which could react with certain primers such as Alkyd based. Steel coated with an alkyd or unknown primer must be treated with Steelguard CM 4706 emulsion primer sealer prior to the application of Steelguard CM 4703.
12. **Additional mechanical fixing**
In certain cases the Steelguard CM4703 must be combined with mesh reinforcement – please refer to manufacturers technical data sheet for more details.
13. **Nominal dry density**
725 to 775 kg/m³
14. **Thickness range**
10 - 56mm
15. **Fire resistance range**
 - (a) Up to 4 hours
 - (b) Hp/A: 30 - 310 Profile
16. **Constraints for fire resistance**
 - (a) Minimum dry thickness 10mm
 - (b) Maximum unreinforced dry thickness 60mm
17. **Appearance**
Light grey textured finish. Surface decorative finishes may be used
18. **On site use**
Internal and external
19. **Durability**
Excellent weathering resistance up to C5M environments (ISO 12944) when correctly specified.
20. **Performance in other BS and EN fire tests**
Steelguard CM 4703 has been fully tested on structural steel beams and columns for up to 4 hours fire resistance in accordance with British Standard 476 Part 21 1987. The product is rated 'non combustible' to BS 476 Part 4 1984 and complies with the performance requirements of 'Class O' as defined in the UK building regulations. Steelguard CM 4703 has also been tested and assessed to several national fire test standards. Please contact PPG for details.
21. **Other applications**
N/A

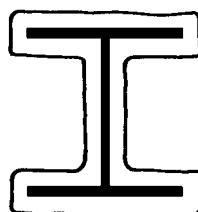
STEELGUARD CM4703

I BEAMS & COLUMNS						
Critical Temperature 540°C						
Section Factor	Thickness in (mm) to provide fire resistance of					
	30 mins	60 mins	90 mins	120 mins	180 mins	240 mins
30	10	10	10	12	17	23
35	10	10	11	15	21	27
40	10	10	11	15	21	27
45	10	10	13	16	24	31
50	10	10	13	16	24	31
55	10	10	14	18	26	34
60	10	10	14	18	26	34
65	10	11	15	19	28	36
70	10	11	15	19	28	36
75	10	12	16	21	30	38
80	10	12	16	21	30	38
85	10	12	17	22	31	40
90	10	12	17	22	31	40
95	10	13	18	23	32	42
100	10	13	18	23	32	42
105	10	13	18	23	33	44
110	10	13	18	23	33	44
115	10	14	19	24	34	45
120	10	14	19	24	34	45
125	10	14	19	25	35	46
130	10	14	19	25	35	46
135	10	14	20	25	36	47
140	10	14	20	25	36	47
145	10	15	20	26	37	48
150	10	15	20	26	37	48
155	10	15	21	26	38	49
160	10	15	21	26	38	49
165	10	15	21	27	38	50
170	10	15	21	27	38	50

I BEAMS & COLUMNS						
Critical Temperature 540°C						
Section Factor	Thickness in (mm) to provide fire resistance of					
	30 mins	60 mins	90 mins	120 mins	180 mins	240 mins
175	10	15	21	27	39	50
180	10	15	21	27	39	50
185	10	16	21	27	39	51
190	10	16	21	27	39	51
195	10	16	22	28	40	52
200	10	16	22	28	40	52
205	10	16	22	28	40	52
210	10	16	22	28	40	52
215	10	16	22	28	41	53
220	10	16	22	28	41	53
225	10	16	22	29	41	53
230	10	16	22	29	41	53
235	10	16	23	29	41	54
240	10	16	23	29	41	54
245	10	16	23	29	42	54
250	10	16	23	29	42	54
255	10	17	23	29	42	55
260	10	17	23	29	42	55
265	10	17	23	29	42	55
270	10	17	23	29	42	55
275	10	17	23	30	43	55
280	10	17	23	30	43	55
285	10	17	23	30	43	56
290	10	17	23	30	43	56
295	11	17	24	30	43	56
300	11	17	24	30	43	56
305	11	17	24	30	43	56
310	11	17	24	30	43	56



PROFILE



STEELGUARD CM4703

I BEAMS						
Section Factor A/V m ⁻¹	Critical temperature 600°C					
	Thickness in (mm) to provide fire resistance of					
	30 mins	60 mins	90 mins	120 mins	180 mins	240 mins
30	10	10	10	12	18	23
35	10	10	11	15	21	27
40	10	10	11	15	21	27
45	10	10	13	16	23	30
50	10	10	13	16	23	30
55	10	10	14	18	25	33
60	10	10	14	18	25	33
65	10	11	15	19	27	35
70	10	11	15	19	27	35
75	10	11	16	20	29	37
80	10	11	16	20	29	37
85	10	12	16	21	30	39
90	10	12	16	21	30	39
95	10	12	17	22	31	40
100	10	12	17	22	31	40
105	10	13	17	22	32	42
110	10	13	17	22	32	42
115	10	13	18	23	33	43
120	10	13	18	23	33	43
125	10	13	18	23	34	44
130	10	13	18	23	34	44
135	10	13	19	24	34	45
140	10	13	19	24	34	45
145	10	14	19	24	35	45
150	10	14	19	24	35	45
155	10	14	19	25	35	46
160	10	14	19	25	35	46
165	10	14	20	25	36	47
170	10	14	20	25	36	47

I BEAMS						
Section Factor A/V m ⁻¹	Critical temperature 600°C					
	Thickness in (mm) to provide fire resistance of					
	30 mins	60 mins	90 mins	120 mins	180 mins	240 mins
175	10	14	20	25	36	47
180	10	14	20	25	36	47
185	10	14	20	26	37	48
190	10	14	20	26	37	48
195	10	15	20	26	37	48
200	10	15	20	26	37	48
205	10	15	20	26	38	49
210	10	15	20	26	38	49
215	10	15	21	26	38	49
220	10	15	21	26	38	49
225	10	15	21	27	38	50
230	10	15	21	27	38	50
235	10	15	21	27	38	50
240	10	15	21	27	38	50
245	10	15	21	27	39	50
250	10	15	21	27	39	50
255	10	15	21	27	39	51
260	10	15	21	27	39	51
265	10	15	21	27	39	51
270	10	15	21	27	39	51
275	10	15	21	27	39	51
280	10	15	21	27	39	51
285	10	16	22	28	39	52
290	10	16	22	28	39	52
295	10	16	22	28	40	52
300	10	16	22	28	40	52
305	10	16	22	28	40	52
310	10	16	22	28	40	52

Note

1. Interpolation of loading requirements for A/V values between those stated above is acceptable. For A/V values outside this range consult PPG.
2. The section factor A/V of a steel member is calculated by dividing the area of steel section exposed to fire (in square metres) by its entire volume (in cubic metres)
3. Consult PPG for advice on A/V for both standard & non-standard steel section sizes.

The data provided complies with the principles of the ASFP/BCF/ICF industry Guidance and Sections 3 and 4 of this Yellow Book

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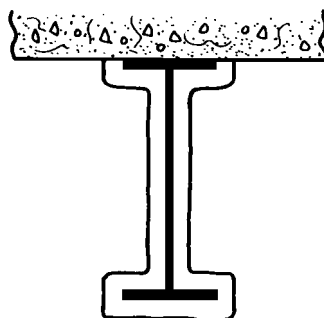
STEELGUARD CM4704

1. **Product description**
Modified vermiculite cement for internal and external structural steelwork with decorative topseal range.
2. **Manufacturer**
PPG INDUSTRIES (UK) LIMITED
Micro House, Station Approach, Wood Street North, Alfreton, DE55 7JR
T: 01773 837300
F: 01773 837302 W: www.ppgmc.com
3. **Availability**
Details from manufacturer
4. **Protection technique**
Profile to beams, columns and soffits
5. **Application technique**
Factory prepared pre-packed, mixed with water on site and sprayed through either mechanical piston or rotor stator type as detailed by manufacturer.
6. **Steel preparation requirements**
Abrasive blast to Sa 2½ ISO 8501-1 and apply the specified PPG primer. Steelguard CM 4704 may be applied directly to bare steel for internal dry C1 environments. The surface must be dry and free of dust, salts, grease and other contaminants immediately before coating. If the steel is already primed, check compatibility with PPG. Compatible primers may require the application of either a bonding coat or Steelguard CM 4706 prior to Steelguard CM 4704 being applied – please refer to PPG for guidance.
Steelguard CM 4704 has a pH value of 12 at application which could react with certain primers such as Alkyd based. Steel coated with an alkyd or unknown primer must be treated with Steelguard CM 4706 emulsion primer sealer prior to the application of Steelguard CM 4704.
7. **Additional mechanical fixing**
In certain cases the Steelguard CM4703 must be combined with mesh reinforcement – please refer to manufacturers technical data sheet for more details.
8. **Nominal dry density**
350 to 400 kg/m³
9. **Thickness range**
10 - 76mm
10. **Fire resistance range**
(a) Up to 4 hours
(b) Hp/A: 30 - 310 Profile
11. **Constraints for fire resistance**
(a) Minimum dry thickness 10mm
(b) Maximum unreinforced dry thickness 60mm
12. **Appearance**
Grey textured finish. Surface decorative finishes may be used
13. **On site use**
Internal (C1 or C2 as detailed in ISO 12944)
14. **Durability**
Robust coating for internal C1 & C2 environments when correctly specified
15. **Performance in BS**
Steelguard CM 4704 has been fully tested on structural steel beams and columns for up to 4 hours fire resistance in accordance with British Standard 476 Part 21 1987. The product is rated 'non combustible' to BS 476 Part 4 1984
and complies with the performance requirements of 'Class O' as defined in the UK building regulations. Steelguard CM 4704 has also been tested and assessed to several national fire test standards. Please PPG for details.
16. **Other applications**
N/A

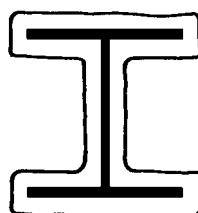
STEELGUARD CM4704

Section Factor A/V m ⁻¹	I BEAMS & COLUMNS					
	Critical Temperature of 540°C					
	Thickness in (mm) to provide fire resistance of					
	30 mins	60 mins	90 mins	120 mins	180 mins	240 mins
30	10	10	11	11	16	22
35	10	10	11	14	20	27
40	10	10	11	14	20	27
45	10	10	13	16	24	31
50	10	10	13	16	24	31
55	10	10	14	18	27	36
60	10	10	14	18	27	36
65	10	11	16	20	30	39
70	10	11	16	20	30	39
75	10	12	17	22	32	43
80	10	12	17	22	32	43
85	10	13	18	24	35	45
90	10	13	18	24	35	45
95	10	13	19	25	37	48
100	10	13	19	25	37	48
105	10	14	20	26	38	51
110	10	14	20	26	38	51
115	10	15	21	27	40	53
120	10	15	21	27	40	53
125	10	15	22	28	42	55
130	10	15	22	28	42	55
135	10	16	22	28	43	57
140	10	16	22	28	43	57
145	10	16	23	30	44	59
150	10	16	23	30	44	59
155	10	17	24	31	46	60
160	10	17	24	31	46	60
165	10	17	24	32	47	62
170	10	17	24	32	47	62

Section Factor A/V m ⁻¹	I BEAMS & COLUMNS					
	Critical Temperature of 540°C					
	Thickness in (mm) to provide fire resistance of					
	30 mins	60 mins	90 mins	120 mins	180 mins	240 mins
175	10	17	25	33	48	63
180	10	17	25	33	48	63
185	10	18	25	33	49	65
190	10	18	25	33	49	65
195	10	18	26	34	50	66
200	10	18	26	34	50	66
205	10	18	26	35	51	67
210	10	18	26	35	51	67
215	11	19	27	35	52	68
220	11	19	27	35	52	68
225	11	19	27	36	52	69
230	11	19	27	36	52	69
235	11	19	28	36	53	70
240	11	19	28	36	53	70
245	11	19	28	37	54	71
250	11	19	28	37	54	71
255	11	20	28	37	54	72
260	11	20	28	37	54	72
265	11	20	29	37	55	73
270	11	20	29	37	55	73
275	11	20	29	38	56	73
280	11	20	29	38	56	73
285	11	20	29	38	56	74
290	11	20	29	38	56	74
295	11	20	30	39	57	75
300	11	20	30	39	57	75
305	11	21	30	39	57	76
310	11	21	30	39	57	76



PROFILE



STEELGUARD CM4704

		I BEAMS					
		Critical Temperature of 600°C					
Section Factor A/V m ⁻¹	Thickness in (mm) to provide fire resistance of						
	30 mins	60 mins	90 mins	120 mins	180 mins	240 mins	
	30	10	10	10	10	15	20
35	10	10	10	13	19	25	
40	10	10	10	13	19	25	
45	10	10	11	15	22	30	
50	10	10	11	15	22	30	
55	10	10	13	17	25	34	
60	10	10	13	17	25	34	
65	10	10	14	19	28	37	
70	10	10	14	19	28	37	
75	10	10	15	20	30	40	
80	10	10	15	20	30	40	
85	10	11	16	22	32	43	
90	10	11	16	22	32	43	
95	10	11	17	23	34	46	
100	10	11	17	23	34	46	
105	10	12	18	24	36	49	
110	10	12	18	24	36	49	
115	10	12	19	25	38	51	
120	10	12	19	25	38	51	
125	10	13	20	26	40	53	
130	10	13	20	26	40	53	
135	10	14	20	27	41	55	
140	10	14	20	27	41	55	
145	10	14	21	28	42	57	
150	10	14	21	28	42	57	
155	10	14	22	29	44	58	
160	10	14	22	29	44	58	
165	10	15	22	30	45	60	
170	10	15	22	30	45	60	

		I BEAMS					
		Critical Temperature of 600°C					
Section Factor A/V m ⁻¹	Thickness in (mm) to provide fire resistance of						
	30 mins	60 mins	90 mins	120 mins	180 mins	240 mins	
	175	10	15	23	30	46	61
180	10	15	23	30	46	61	
185	10	15	23	31	47	63	
190	10	15	23	31	47	63	
195	10	15	24	32	48	64	
200	10	15	24	32	48	64	
205	10	16	24	32	49	65	
210	10	16	24	32	49	65	
215	10	16	24	33	50	66	
220	10	16	24	33	50	66	
225	10	16	25	33	50	67	
230	10	16	25	33	50	67	
235	10	17	25	34	51	68	
240	10	17	25	34	51	68	
245	10	17	26	34	52	69	
250	10	17	26	34	52	69	
255	10	17	26	35	52	70	
260	10	17	26	35	52	70	
265	10	17	26	35	53	71	
270	10	17	26	35	53	71	
275	10	17	26	36	54	72	
280	10	17	26	36	54	72	
285	10	18	27	36	54	73	
290	10	18	27	36	54	73	
295	10	18	27	36	55	73	
300	10	18	27	36	55	73	
305	10	18	27	37	55	74	
310	10	18	27	37	55	74	

Note

1. Interpolation of loading requirements for A/V values between those stated above is acceptable. For A/V values outside this range consult PPG.
2. The section factor A/V of a steel member is calculated by dividing the area of steel section exposed to fire (in square metres) by its entire volume (in cubic metres)
3. Consult PPG for advice on A/V for both standard & non-standard steel section sizes.

The data provided complies with the principles of the ASFP/BCF/ICF industry Guidance and Sections 3 and 4 of this Yellow Book

VERMIPLASTER BD

- 1. Product description**
Fire Protection Mortar manufactured from calcium sulphate
- 2. Manufacturer**
Protección Pasiva, Plg. Industrial Ctra. de la Isla, c/Aljibe, 19, 41703 Dos Hermanas (Sevilla), Espana.
Distributed in the UK and Ireland by – FPCL Group, 1-3 Highway Point, Torrington Avenue, Coventry, CV4 9AQ
- 3. Availability**
Stock Item
- 4. Protection technique**
Profile to beams and columns
- 5. Application technique**
Spray and trowel.
- 6. Steel preparation requirements**
Clean steel of grease and rust. To improve its adherence, Vermicol can be used. Vermicol is an acrylic copolymer emulsion used to improve the adherence of VERMIPLASTER BD to the substrate. It is diluted in the mixing water during the application of the mortars through the spray system.
- 7. Additional mechanical fixing**
None within the scope of the tables
- 8. Nominal dry density**
350Kg/m³
- 9. Thickness range**
5 - 24mm
- 10. Fire resistance range**
Vermiplaster BD mortar to achieve up to 2 hours fire protection
- 11. Constraints for fire resistance**
(a) Minimum dry thickness 5mm
(b) Maximum unreinforced dry thickness 24mm
- 12. Appearance**
White rough or smooth finish
- 13. On site use**
Yes
- 14. Durability**
For internal / semi external conditions only (with topseal)
- 15. Performance in other BS fire tests**
No data.
- 16. Other applications**
Concrete and the underside of Rib decking

VERMIPLASTER BD

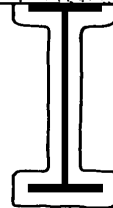
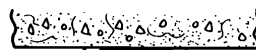
Universal Beams 3 sided exposure (supporting slab) Critical temperature of 620 Degrees C				
Hp/A m ⁻¹	Profiled protection thickness [mm]			
	30 min	60 min	90 min	120 min
40	5.00	5.00	7.30	10.40
50	5.00	5.00	7.30	10.40
60	5.00	5.00	7.30	10.40
70	5.00	5.00	7.30	10.40
80	5.00	5.00	8.10	11.60
90	5.00	5.30	8.90	12.70
100	5.00	5.70	9.60	13.80
110	5.00	6.20	10.30	14.70
120	5.00	6.50	10.90	15.60
130	5.00	6.90	11.50	16.40
140	5.00	7.20	12.10	17.20
150	5.00	7.60	12.50	17.90
160	5.00	7.80	13.00	18.50
170	5.00	8.00	13.40	19.00
180	5.00	8.20	13.70	19.50
190	5.00	8.40	14.00	19.90
200	5.00	8.60	14.50	20.30
210	5.00	8.70	14.60	20.50
220	5.00	8.80	14.70	20.70
230	5.00	8.90	14.80	20.90
240	5.00	8.90	14.80	21.00
250	5.00	8.90	14.80	21.00
260	5.00	8.90	14.80	21.00
270	5.00	8.90	14.80	21.00
280	5.00	8.90	14.80	21.00
290	5.00	8.90	14.80	21.00
300	5.00	8.90	14.80	21.00
310	5.00	8.90	14.80	21.00
320	5.00	8.90	14.80	21.00

Linear interpolation is permissible between values of Hp/A

Universal Columns - 4 sided exposure Universal Beams - 4 sided exposure (without slab) Critical temperature of 550 degrees C				
Hp/A m ⁻¹	Profiled protection thickness [mm]			
	30 min	60 min	90 min	120 min
40	5.00	5.20	8.70	12.30
50	5.00	5.20	8.70	12.30
60	5.00	5.20	8.70	12.30
70	5.00	5.20	8.70	12.30
80	5.00	5.80	9.60	13.70
90	5.00	6.40	10.60	15.00
100	5.00	6.90	11.40	16.20
110	5.00	7.40	12.20	17.30
120	5.00	7.80	12.90	18.30
130	5.00	8.30	13.60	19.30
140	5.00	8.60	14.20	20.10
150	5.00	9.00	14.80	20.90
160	5.00	9.30	15.30	21.60
170	5.00	9.60	15.70	22.20
180	5.00	9.80	16.10	22.70
190	5.00	10.00	16.40	23.20
200	5.00	10.10	16.70	23.50
210	5.00	10.30	16.90	23.80
220	5.00	10.40	17.10	24.00
230	5.00	10.50	17.20	24.10
240	5.00	10.50	17.20	24.10
250	5.00	10.50	17.20	24.10
260	5.00	10.50	17.20	24.10
270	5.00	10.50	17.20	24.10
280	5.00	10.50	17.20	24.10
290	5.00	10.50	17.20	24.10
300	5.00	10.50	17.20	24.10
310	5.00	10.50	17.20	24.10
320	5.00	10.50	17.20	24.10

Linear interpolation is permissible between values of Hp/A

This product is certified by a 3rd Party Certification body accredited to ISO Guide 65
The data provided complies with the principles in Sections 3 and 4 of this Yellow Book



PROFILE

