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Authorised and notified according
to Article 29 of the Regulation (EU)
No 305/2011 of the European
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European Technical Assessment ETA-22/0203 of 2025/01/31

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:

Kingspan K-Stop® High Temperature Board & Kingspan K-Stop® HighTemp Adhesive

Product family to which the above construction product belongs:

Fire protective board

Manufacturer:

Kingspan Insulation Ltd
Harvey Rd
Basildon
SS13 1QJ
United Kingdom

Manufacturing plant:

A/003

This European Technical Assessment contains:

20 pages including 2 annexes which form an integral part of the document

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:

European Assessment Document no. EAD 350142-00-1106 Fire protective board, slab and mat products and kits

This version replaces:

ETA-22/0203 dated 2022/04/28

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II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of the product

Technical description of the product

Kingspan K-Stop® High Temperature Board & Kingspan K-Stop® HighTemp Adhesive system consist of the Kingspan K-Stop® High Temperature Board, which is a mineral wool fire protective board and the Kingspan K-Stop® HighTemp Adhesive which is a water based inorganic adhesive.

Dimensions and density

Dimensions and density of the board is given in table 1.

	Nominal value	Tolerance
Density	160 kg/m ³	+/- 10 %
Length	600 mm	< ± 12 mm
	900 mm	< ± 18 mm
Width	1200	< ± 18 mm
Thickness	20 – 60 mm	≤ - 1 mm; ≤ + 3 mm

The boards are CE marked according to EN 13162.

The boards are fastened with Kingspan K-Stop® HighTemp Adhesive or with welding pins, designated CHP fixings in the design charts or with spiral screw fixings, also referred to as “pigtailed”.

The pins are steel pins, Ø2,7 mm, length corresponding to the thickness of the fire protective board. The washer are steel washers, Ø31 mm diameter and thickness 0,5 mm. They are spot welded to the bare steel at approximately 300 mm centres.

The Pigtailed are spiral screw fixings made from Ø 1,6 mm galvanized steel spring wire with a head nominally Ø 17 mm diameter and tapered to Ø 8 mm diameter at the tail. The lengths of the pigtailed are as follows:

- 40 mm long screws for insulation thickness up to 20 mm
- 55 mm long screws for insulation thickness up to 35 mm
- 90 mm long screws for insulation thickness up to 45 mm
- 110 mm long screws for insulation thickness up to 65 mm

The fasteners themselves are not covered by this ETA and cannot be CE marked on the basis of it.

The Kingspan K-Stop® HighTemp Adhesive is a water based inorganic adhesive and sealant and is designed to withstand temperatures greater than 1.200 °C. It is applied

to the substrate in a single layer with 5 x 5mm toothed trowel leaving a uniform continuous toothed bed of Kingspan K-Stop® HighTemp Adhesive.

Ancillary products

The is ETA covers the board adhered with the Kingspan K-Stop® HighTemp Adhesive alone. Ancillary products referred to in this ETA, as a part of installation provisions or in the framework of determining performances (e.g., fire resistance test), are not covered by this ETA and cannot be CE marked on the basis of it.

2 Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD)

The intended use of the system is internal use designated as type Z₂ in EAD 350142-00-1106.

The system is intended to protect elements to be used in type 4 applications in accordance with EAD 350142-00-1106; Load bearing steel elements as specified in annex 1 of this ETA.

Annex 2 shows a list of the uses for which fire resistance assessment was carried out. This ETA covers assemblies installed in accordance with the provisions given in Annex 2.

The provisions made in this European Technical Assessment are based on an assumed intended working life of the system of 10 years.

The Kingspan K-Stop® HighTemp Adhesive is considered to have a significantly longer working life than indicated above.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

Characteristic

Assessment of characteristic

3.2 Safety in case of fire (BWR2)

Reaction to fire

Kingspan K-Stop® High Temperature Board is classified as Euroclass A1 in accordance with EN 13501-1 and Commission Delegated Regulation 2016/364

Welding pins and pigtails are made from steel classified as Euroclass A1 in accordance with EN 13501-1 and Commission Delegated Regulation 2016/364

Resistance to fire

The design charts for determining the resistance to fire performance according to EN 13501-2 is presented in

Annex 2 for fastening with Kingspan K-Stop® HighTemp Adhesive

Annex 3 for fastening with welding pins and with pigtails

Durability and serviceability

Z₂

3.3 Hygiene, health and the environment (BWR3)

Content, emission and/or release of dangerous substances

No performance assessed

Water permeability

No performance assessed

3.4 Safety in use (BWR 4)

Flexural strength

No performance assessed

Dimensional stability

No performance assessed

Pull through resistance of welding pins

Test	Maximum load, N
1	364
2	322
3	367
4	293
5	386
Average	346

Pull through resistance of pigtails

Test	Maximum load, N
1	173
2	130
3	138
4	147
5	136
Average	144,8

Characteristic**Assessment of characteristic**

Shear load resistance of welding pins

Test	Maximum load, N
1	238
2	255
3	299
4	261
5	204
Average	251,4

Shear load resistance of pigtailed

Test	Maximum load, N
1	82
2	150
3	176
4	105
5	178
Average	138,2

Resistance to soft body impact

No performance assessed

Resistance to hard body impact

No performance assessed

Resistance to eccentric load

No performance assessed

Adhesive: Durability and serviceability; resistance to freeze/thaw

Viscosity at 23°C after 2,5 min. 2 728 000 mPas
 Viscosity after 3 cycles at -5 °C after 2,5 min. at 23°C 2 276 000 mPas

Mechanical resistance and stability of adhesive

Peel resistance

0,33 N/mm approx. Cohesion 30 % Adhesion 70 %

Shear resistance

1,4 N/mm² failure in substrate

Viscosity

Viscosity at 23°C after 2,5 min. 2 728 000 mPas

Adhesion

0,008 N/mm² failure in substrate

Pull-out resistance of welding pins

Test	Maximum load, N
1	17
2	15
3	15
4	16
5	16
Average	15,8

Pull-out resistance of pigtailed

Test	Maximum load, N
1	109
2	116
3	146
4	116
5	107
Average	118,8

Characteristic

Assessment of characteristic

3.5 Protection against noise (BWR 5)

No performance assessed

3.6 Energy economy and heat retention (BRW 6)

Thermal conductivity

The λ_D -value of the board is 0,035 W/mK

Water vapour permeability

No performance assessed

4 Attestation and verification of constancy of performance (AVCP)


4.1 AVCP system

According to the decision 99/454/EC of the European Commission¹, as amended, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is 1.

5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

Issued in Copenhagen on 2025-01-31 by



Thomas Bruun
Managing Director, ETA-Danmark

Annex 1 Specification

Classification

The system described in this annex has been tested and evaluated according to EN 13381-4 and classified in accordance with EN 13501-2.

The assessment of the required thickness of Kingspan K-Stop® High Temperature Boards multilayer system for the relevant resistance to fire period, at the design temperature within the range of 350 °C to 750 °C and in function of the section factor of the steel element, is given in below.

The design charts in annex 2 applies to mechanical fastening with either CHP welding pins or with Pigtail fasteners.

Installation requirements

The system installation should be carried out in accordance with the manufacturer's instructions and the provisions given in this ETA.

Structural steel elements

The supporting structure consists of load-bearing steel elements with the following characteristics:

- 'I' shaped beam and column sections.
- Columns and beams with protection all round.
- Rectangular and circular hollow columns with protection all round.
- Structural steel grades (S designation) in accordance with EN 10025 6, excluding S185.
- Section factors as given in the tables in annex 2
- Three-sided fire exposure for beams and columns.

Fire protective boards

Kingspan K-Stop® High Temperature Boards and Kingspan K-Stop® HighTemp Adhesive shall be as described in section 1 of this ETA.

Annex 2

Design charts with fastening with Kingspan K-Stop® HighTemp Adhesive

Kingspan K-Stop® High Temperature Board and Kingspan K-Stop® HighTemp Adhesive										
Section Factor up to m ²	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
45	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
50	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
55	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
60	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
65	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
70	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
75	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
80	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
85	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
90	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
95	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
100	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
105	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
110	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
115	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
120	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
125	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
130	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
135	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
140	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
145	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
150	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
155	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
160	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
165	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
170	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
175	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
180	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
185	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
190	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
195	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
200	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
205	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
210	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
215	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
220	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
225	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
230	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
235	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
240	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
245	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
250	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
255	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
260	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
265	17.5	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
270	17.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
275	18.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
280	18.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
285	18.7	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
290	19.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
295	19.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
300	19.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
305	19.9	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
310	20.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
315	20.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
320	20.7	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
325	21.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
330	21.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
335	21.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
340	21.9	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
345	22.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3

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

Table also applies to columns and beams with protection all round.

Table also applies to rectangular and circular columns with protection all round.

Kingspan K-Stop [®] High Temperature Board and Kingspan K-Stop [®] HighTemp Adhesive										
Section Factor up to m ⁻¹	Table 2: I-Section Beams and Columns: Fire Resistance Period: 45 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
45	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
50	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
55	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
60	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
65	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
70	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
75	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
80	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
85	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
90	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
95	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
100	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
105	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
110	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
115	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
120	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
125	17.5	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
130	18.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
135	18.9	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
140	19.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
145	20.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
150	21.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
155	21.7	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
160	22.4	17.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
165	23.1	18.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
170	23.7	18.9	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
175	24.4	19.5	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
180	25.1	20.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
185	25.7	20.5	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
190	26.4	21.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
195	27.1	21.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
200	27.7	22.1	17.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3
205	28.3	22.6	18.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3
210	29.0	23.0	18.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3
215	29.6	23.5	18.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3
220	30.3	24.0	19.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3
225	30.9	24.5	19.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3
230	31.5	24.9	20.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3
235	32.1	25.4	20.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
240	32.7	25.8	20.7	17.3	17.3	17.3	17.3	17.3	17.3	17.3
245	33.3	26.3	21.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3
250	34.0	26.7	21.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3
255	34.6	27.2	21.7	17.5	17.3	17.3	17.3	17.3	17.3	17.3
260	35.2	27.6	22.0	17.8	17.3	17.3	17.3	17.3	17.3	17.3
265	35.7	28.0	22.4	18.1	17.3	17.3	17.3	17.3	17.3	17.3
270	36.3	28.4	22.7	18.3	17.3	17.3	17.3	17.3	17.3	17.3
275	36.9	28.9	23.0	18.6	17.3	17.3	17.3	17.3	17.3	17.3
280	37.5	29.3	23.3	18.8	17.3	17.3	17.3	17.3	17.3	17.3
285	38.1	29.7	23.6	19.1	17.3	17.3	17.3	17.3	17.3	17.3
290	38.7	30.1	23.9	19.3	17.3	17.3	17.3	17.3	17.3	17.3
295	-	30.5	24.2	19.6	17.3	17.3	17.3	17.3	17.3	17.3
300	-	30.9	24.5	19.8	17.3	17.3	17.3	17.3	17.3	17.3
305	-	31.2	24.8	20.1	17.3	17.3	17.3	17.3	17.3	17.3
310	-	31.6	25.1	20.3	17.3	17.3	17.3	17.3	17.3	17.3
315	-	32.0	25.4	20.5	17.3	17.3	17.3	17.3	17.3	17.3
320	-	32.4	25.7	20.7	17.3	17.3	17.3	17.3	17.3	17.3
325	-	32.7	25.9	21.0	17.3	17.3	17.3	17.3	17.3	17.3
330	-	33.1	26.2	21.2	17.3	17.3	17.3	17.3	17.3	17.3
335	-	33.5	26.5	21.4	17.4	17.3	17.3	17.3	17.3	17.3
340	-	33.8	26.7	21.6	17.6	17.3	17.3	17.3	17.3	17.3
345	-	34.2	27.0	21.8	17.8	17.3	17.3	17.3	17.3	17.3

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection only.
Table also applies to columns and beams with protection all round.
Table also applies to rectangular and circular columns with protection all round

Kingspan K-Stop [®] High Temperature Board and Kingspan K-Stop [®] HighTemp Adhesive										
Section Factor up to m ⁻¹	Table 3: 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
45	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
50	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
55	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
60	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
65	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
70	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
75	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
80	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
85	18.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
90	19.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
95	20.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
100	21.5	17.9	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
105	22.7	18.9	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
110	23.7	19.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
115	24.8	20.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
120	25.9	21.7	18.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3
125	27.0	22.6	18.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3
130	28.0	23.5	19.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3
135	29.1	24.4	20.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3
140	30.1	25.3	21.1	17.6	17.3	17.3	17.3	17.3	17.3	17.3
145	31.2	26.1	21.9	18.2	17.3	17.3	17.3	17.3	17.3	17.3
150	32.2	27.0	22.6	18.9	17.3	17.3	17.3	17.3	17.3	17.3
155	33.2	27.8	23.3	19.5	17.3	17.3	17.3	17.3	17.3	17.3
160	34.3	28.6	24.0	20.1	17.3	17.3	17.3	17.3	17.3	17.3
165	35.3	29.4	24.7	20.7	17.3	17.3	17.3	17.3	17.3	17.3
170	36.3	30.2	25.3	21.3	17.8	17.3	17.3	17.3	17.3	17.3
175	37.3	31.0	26.0	21.8	18.3	17.3	17.3	17.3	17.3	17.3
180	38.2	31.8	26.6	22.4	18.8	17.3	17.3	17.3	17.3	17.3
185	-	32.6	27.2	22.9	19.2	17.3	17.3	17.3	17.3	17.3
190	-	33.3	27.9	23.4	19.7	17.3	17.3	17.3	17.3	17.3
195	-	34.1	28.5	24.0	20.2	17.3	17.3	17.3	17.3	17.3
200	-	34.8	29.1	24.5	20.6	17.3	17.3	17.3	17.3	17.3
205	-	35.5	29.7	24.9	21.0	17.5	17.3	17.3	17.3	17.3
210	-	36.3	30.2	25.4	21.4	17.9	17.3	17.3	17.3	17.3
215	-	37.0	30.8	25.9	21.8	18.2	17.3	17.3	17.3	17.3
220	-	37.7	31.3	26.4	22.2	18.6	17.3	17.3	17.3	17.3
225	-	38.4	31.9	26.8	22.6	18.9	17.5	17.3	17.3	17.3
230	-	39.0	32.4	27.3	23.0	19.3	17.8	17.3	17.3	17.3
235	-	-	33.0	27.7	23.4	19.6	18.2	17.3	17.3	17.3
240	-	-	33.5	28.1	23.7	19.9	18.5	17.3	17.3	17.3
245	-	-	34.0	28.5	24.1	20.2	18.7	17.3	17.3	17.3
250	-	-	34.5	28.9	24.4	20.5	19.0	17.3	17.3	17.3
255	-	-	35.0	29.3	24.8	20.8	19.3	17.4	17.3	17.3
260	-	-	35.5	29.7	25.1	21.1	19.6	17.6	17.3	17.3
265	-	-	35.9	30.1	25.4	21.4	19.9	17.9	17.3	17.3
270	-	-	36.4	30.5	25.8	21.7	20.1	18.1	17.3	17.3
275	-	-	36.9	30.9	26.1	21.9	20.4	18.4	17.3	17.3
280	-	-	37.3	31.2	26.4	22.2	20.6	18.6	17.3	17.3
285	-	-	37.8	31.6	26.7	22.4	20.9	18.8	17.3	17.3
290	-	-	38.2	31.9	27.0	22.7	21.1	19.0	17.3	17.3
295	-	-	38.6	32.3	27.2	22.9	21.3	19.3	17.3	17.3
300	-	-	-	32.6	27.5	23.2	21.6	19.5	17.3	17.3
305	-	-	-	33.0	27.8	23.4	21.8	19.7	17.3	17.3
310	-	-	-	33.3	28.1	23.6	22.0	19.9	17.3	17.3
315	-	-	-	33.6	28.3	23.9	22.2	20.1	17.3	17.3
320	-	-	-	33.9	28.6	24.1	22.4	20.3	17.3	17.3
325	-	-	-	34.2	28.9	24.3	22.6	20.5	17.3	17.3
330	-	-	-	34.5	29.1	24.5	22.8	20.6	17.3	17.3
335	-	-	-	34.8	29.4	24.7	23.0	20.8	17.3	17.3
340	-	-	-	35.1	29.6	24.9	23.2	21.0	17.4	17.3
345	-	-	-	35.4	29.8	25.1	23.4	21.2	17.6	17.3

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection only.
Table also applies to columns and beams with protection all round.
Table also applies to rectangular and circular columns with protection all round

Kingspan K-Stop [®] High Temperature Board and Kingspan K-Stop [®] HighTemp Adhesive										
Section Factor up to m ⁻¹	Table 4: 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
45	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
50	18.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
55	20.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
60	22.0	19.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
65	23.9	20.8	17.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3
70	25.9	22.6	19.5	17.3	17.3	17.3	17.3	17.3	17.3	17.3
75	27.8	24.3	21.1	18.1	17.3	17.3	17.3	17.3	17.3	17.3
80	29.7	26.0	22.7	19.6	17.3	17.3	17.3	17.3	17.3	17.3
85	31.5	27.7	24.2	21.0	18.0	17.3	17.3	17.3	17.3	17.3
90	33.4	29.4	25.7	22.4	19.3	17.3	17.3	17.3	17.3	17.3
95	35.2	31.0	27.2	23.7	20.5	17.4	17.3	17.3	17.3	17.3
100	37.1	32.6	28.6	25.0	21.7	18.5	17.3	17.3	17.3	17.3
105	38.9	34.2	30.0	26.3	22.9	19.6	18.3	17.3	17.3	17.3
110	-	35.8	31.4	27.5	24.0	20.6	19.3	17.4	17.3	17.3
115	-	37.3	32.7	28.7	25.1	21.6	20.2	18.4	17.3	17.3
120	-	38.8	34.1	29.9	26.2	22.6	21.2	19.3	17.3	17.3
125	-	-	35.4	31.0	27.2	23.5	22.1	20.1	17.3	17.3
130	-	-	36.6	32.2	28.2	24.4	22.9	20.9	17.5	17.3
135	-	-	37.9	33.2	29.1	25.3	23.8	21.7	18.3	17.3
140	-	-	-	34.3	30.1	26.1	24.6	22.5	19.0	17.3
145	-	-	-	35.3	31.0	26.9	25.4	23.2	19.6	17.3
150	-	-	-	36.3	31.9	27.7	26.1	24.0	20.3	17.3
155	-	-	-	37.3	32.7	28.5	26.9	24.7	20.9	17.3
160	-	-	-	38.3	33.6	29.3	27.6	25.3	21.5	17.5
165	-	-	-	-	34.4	30.0	28.3	26.0	22.1	18.0
170	-	-	-	-	35.2	30.7	28.9	26.6	22.7	18.5
175	-	-	-	-	36.0	31.4	29.6	27.2	23.2	19.0
180	-	-	-	-	36.7	32.0	30.2	27.8	23.8	19.5
185	-	-	-	-	37.5	32.7	30.8	28.4	24.3	20.0
190	-	-	-	-	38.2	33.3	31.4	28.9	24.8	20.4
195	-	-	-	-	38.9	33.9	32.0	29.5	25.3	20.8
200	-	-	-	-	-	34.5	32.5	30.0	25.7	21.3
205	-	-	-	-	-	35.1	33.1	30.5	26.2	21.7
210	-	-	-	-	-	35.6	33.6	31.0	26.6	22.0
215	-	-	-	-	-	36.2	34.1	31.5	27.1	22.4
220	-	-	-	-	-	36.7	34.6	31.9	27.5	22.8
225	-	-	-	-	-	37.2	35.1	32.4	27.9	23.2
230	-	-	-	-	-	37.7	35.6	32.8	28.3	23.5
235	-	-	-	-	-	38.2	36.1	33.3	28.6	23.8
240	-	-	-	-	-	38.7	36.5	33.7	29.0	24.2
245	-	-	-	-	-	-	37.0	34.1	29.4	24.5
250	-	-	-	-	-	-	37.4	34.5	29.7	24.8
255	-	-	-	-	-	-	37.8	34.9	30.1	25.1
260	-	-	-	-	-	-	38.2	35.3	30.4	25.4
265	-	-	-	-	-	-	38.6	35.6	30.7	25.7
270	-	-	-	-	-	-	39.0	36.0	31.0	26.0
275	-	-	-	-	-	-	-	36.4	31.4	26.2
280	-	-	-	-	-	-	-	36.7	31.7	26.5
285	-	-	-	-	-	-	-	37.0	32.0	26.8
290	-	-	-	-	-	-	-	37.4	32.2	27.0
295	-	-	-	-	-	-	-	37.7	32.5	27.3
300	-	-	-	-	-	-	-	38.0	32.8	27.5
305	-	-	-	-	-	-	-	38.3	33.1	27.7
310	-	-	-	-	-	-	-	38.6	33.3	28.0
315	-	-	-	-	-	-	-	38.9	33.6	28.2
320	-	-	-	-	-	-	-	-	33.8	28.4
325	-	-	-	-	-	-	-	-	34.1	28.6
330	-	-	-	-	-	-	-	-	34.3	28.8
335	-	-	-	-	-	-	-	-	34.5	29.0
340	-	-	-	-	-	-	-	-	34.8	29.2
345	-	-	-	-	-	-	-	-	35.0	29.4

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection only.
Table also applies to columns and beams with protection all round.
Table also applies to rectangular and circular columns with protection all round

Kingspan K-Stop[®] High Temperature Board and Kingspan K-Stop[®] HighTemp Adhesive

Section Factor up to m ⁻¹	Table 5: 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
45	23.4	20.7	17.9	17.3	17.3	17.3	17.3	17.3	17.3	17.3
50	26.2	23.3	20.5	17.7	17.3	17.3	17.3	17.3	17.3	17.3
55	28.9	25.9	22.9	20.1	17.3	17.3	17.3	17.3	17.3	17.3
60	31.6	28.4	25.3	22.4	19.5	17.3	17.3	17.3	17.3	17.3
65	34.3	30.9	27.6	24.6	21.6	18.6	17.3	17.3	17.3	17.3
70	37.0	33.4	29.9	26.7	23.6	20.5	19.2	17.4	17.3	17.3
75	-	35.8	32.2	28.8	25.5	22.3	21.0	19.1	17.3	17.3
80	-	38.2	34.3	30.8	27.4	24.0	22.7	20.8	17.5	17.3
85	-	-	36.5	32.7	29.2	25.7	24.3	22.4	18.9	17.3
90	-	-	38.5	34.6	31.0	27.3	25.8	23.9	20.3	17.3
95	-	-	-	36.5	32.6	28.9	27.4	25.3	21.7	17.6
100	-	-	-	38.3	34.3	30.4	28.8	26.7	22.9	18.8
105	-	-	-	-	35.9	31.8	30.2	28.0	24.2	19.9
110	-	-	-	-	37.4	33.2	31.5	29.3	25.3	21.0
115	-	-	-	-	38.9	34.6	32.8	30.5	26.5	22.0
120	-	-	-	-	-	35.9	34.1	31.7	27.5	23.0
125	-	-	-	-	-	37.1	35.3	32.8	28.6	23.9
130	-	-	-	-	-	38.3	36.4	33.9	29.6	24.8
135	-	-	-	-	-	-	37.5	35.0	30.5	25.7
140	-	-	-	-	-	-	38.6	36.0	31.4	26.5
145	-	-	-	-	-	-	-	37.0	32.3	27.3
150	-	-	-	-	-	-	-	37.9	33.2	28.1
155	-	-	-	-	-	-	-	38.8	34.0	28.8
160	-	-	-	-	-	-	-	-	34.8	29.5
165	-	-	-	-	-	-	-	-	35.6	30.2
170	-	-	-	-	-	-	-	-	36.3	30.8
175	-	-	-	-	-	-	-	-	37.0	31.5
180	-	-	-	-	-	-	-	-	37.7	32.1
185	-	-	-	-	-	-	-	-	38.4	32.7
190	-	-	-	-	-	-	-	-	39.0	33.3
195	-	-	-	-	-	-	-	-	-	33.8
200	-	-	-	-	-	-	-	-	-	34.4
205	-	-	-	-	-	-	-	-	-	34.9
210	-	-	-	-	-	-	-	-	-	35.4
215	-	-	-	-	-	-	-	-	-	35.9
220	-	-	-	-	-	-	-	-	-	36.4
225	-	-	-	-	-	-	-	-	-	36.8
230	-	-	-	-	-	-	-	-	-	37.3
235	-	-	-	-	-	-	-	-	-	37.7
240	-	-	-	-	-	-	-	-	-	38.1
245	-	-	-	-	-	-	-	-	-	38.5
250	-	-	-	-	-	-	-	-	-	38.9
255	-	-	-	-	-	-	-	-	-	-
260	-	-	-	-	-	-	-	-	-	-
265	-	-	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-	-	-
275	-	-	-	-	-	-	-	-	-	-
280	-	-	-	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-	-	-

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection only.
 Table also applies to columns and beams with protection all round.
 Table also applies to rectangular and circular columns with protection all round

Annex 3

Design charts for fastening with CHP welding pins and Pigtails

Kingspan K-Stop® High Temperature Board with CHP Fittings

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
45	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
50	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
55	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
60	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
65	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
70	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
75	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
80	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
85	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
90	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
95	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
100	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
105	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
110	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
115	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
120	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
125	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
130	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
135	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
140	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
145	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
150	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
155	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
160	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
165	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
170	17.5	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
175	18.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
180	18.7	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
185	19.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
190	19.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
195	20.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
200	20.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
205	21.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
210	21.7	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
215	22.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
220	22.5	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
225	22.8	17.5	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
230	23.2	17.9	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
235	23.5	18.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
240	23.9	18.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
245	24.2	18.9	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
250	24.5	19.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
255	24.8	19.5	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
260	25.0	19.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
265	25.3	20.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
270	25.6	20.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
275	25.8	20.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
280	26.1	20.9	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
285	26.3	21.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
290	26.5	21.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
295	26.7	21.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
300	26.9	21.8	17.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3
305	27.1	22.0	17.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3
310	27.3	22.2	18.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3
315	27.5	22.4	18.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3
320	27.7	22.6	18.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3
325	27.9	22.8	18.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3
330	28.1	23.0	18.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3
335	28.2	23.1	19.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3
340	28.4	23.3	19.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3
345	28.6	23.5	19.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3

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

Table also applies to columns and beams with protection all round.

Table also applies to circular and rectangular hollow columns with protection all round.

Kingspan K-Stop® High Temperature Board with CHP Fittings

Section Factor up to m ⁻¹	Table 2: I-Section Beams and Columns: Fire Resistance Period: 45 Minutes									
	Thickness (mm) Required for a Design Temperature of									
	350°C	400°C	450°C	500°C	550°C	600°C	620°C	650°C	700°C	750°C
45	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
50	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
55	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
60	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
65	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
70	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
75	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
80	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
85	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
90	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
95	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
100	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
105	17.7	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
110	19.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
115	20.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
120	22.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
125	23.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
130	24.6	18.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
135	25.6	19.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
140	26.6	20.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
145	27.5	21.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
150	28.4	22.0	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
155	29.2	22.8	17.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3
160	29.9	23.6	18.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3
165	30.6	24.4	19.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3
170	31.3	25.0	19.9	17.3	17.3	17.3	17.3	17.3	17.3	17.3
175	31.9	25.7	20.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3
180	32.5	26.3	21.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3
185	33.1	26.9	21.9	17.3	17.3	17.3	17.3	17.3	17.3	17.3
190	33.6	27.4	22.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3
195	34.1	28.0	23.0	17.6	17.3	17.3	17.3	17.3	17.3	17.3
200	34.6	28.5	23.5	18.2	17.3	17.3	17.3	17.3	17.3	17.3
205	35.0	28.9	24.0	18.7	17.3	17.3	17.3	17.3	17.3	17.3
210	35.4	29.4	24.4	19.2	17.3	17.3	17.3	17.3	17.3	17.3
215	35.8	29.8	24.9	19.6	17.3	17.3	17.3	17.3	17.3	17.3
220	36.2	30.2	25.3	20.1	17.3	17.3	17.3	17.3	17.3	17.3
225	36.6	30.6	25.7	20.5	17.3	17.3	17.3	17.3	17.3	17.3
230	37.0	31.0	26.1	20.9	17.3	17.3	17.3	17.3	17.3	17.3
235	37.3	31.3	26.5	21.3	17.3	17.3	17.3	17.3	17.3	17.3
240	37.6	31.6	26.8	21.6	17.3	17.3	17.3	17.3	17.3	17.3
245	37.9	32.0	27.1	22.0	17.3	17.3	17.3	17.3	17.3	17.3
250	38.2	32.3	27.5	22.3	17.7	17.3	17.3	17.3	17.3	17.3
255	38.5	32.6	27.8	22.6	18.0	17.3	17.3	17.3	17.3	17.3
260	38.8	32.9	28.1	22.9	18.3	17.3	17.3	17.3	17.3	17.3
265	39.1	33.1	28.4	23.2	18.7	17.3	17.3	17.3	17.3	17.3
270	39.3	33.4	28.6	23.5	18.9	17.3	17.3	17.3	17.3	17.3
275	39.6	33.7	28.9	23.8	19.2	17.3	17.3	17.3	17.3	17.3
280	39.8	33.9	29.1	24.1	19.5	17.3	17.3	17.3	17.3	17.3
285	40.0	34.1	29.4	24.3	19.8	17.3	17.3	17.3	17.3	17.3
290	40.3	34.4	29.6	24.6	20.0	17.3	17.3	17.3	17.3	17.3
295	40.5	34.6	29.9	24.8	20.3	17.3	17.3	17.3	17.3	17.3
300	40.7	34.8	30.1	25.0	20.5	17.3	17.3	17.3	17.3	17.3
305	40.9	35.0	30.3	25.2	20.7	17.3	17.3	17.3	17.3	17.3
310	41.1	35.2	30.5	25.5	21.0	17.3	17.3	17.3	17.3	17.3
315	41.3	35.4	30.7	25.7	21.2	17.3	17.3	17.3	17.3	17.3
320	41.5	35.6	30.9	25.9	21.4	17.3	17.3	17.3	17.3	17.3
325	41.6	35.8	31.1	26.1	21.6	17.3	17.3	17.3	17.3	17.3
330	41.8	35.9	31.3	26.2	21.8	17.3	17.3	17.3	17.3	17.3
335	42.0	36.1	31.4	26.4	22.0	17.5	17.3	17.3	17.3	17.3
340	42.1	36.3	31.6	26.6	22.1	17.7	17.3	17.3	17.3	17.3
345	42.3	36.4	31.8	26.8	22.3	17.9	17.3	17.3	17.3	17.3

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

Table also applies to columns and beams with protection all round.

Table also applies to circular and rectangular hollow columns with protection all round.

Kingspan K-Stop® High Temperature Board with CHP Fittings

Section Factor up to m ⁻¹	Table 3: 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
45	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
50	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
55	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
60	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
65	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
70	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
75	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
80	20.5	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
85	23.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
90	25.7	17.7	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
95	27.9	20.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
100	29.8	22.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
105	31.6	24.1	17.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3
110	33.2	25.8	19.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3
115	34.7	27.4	21.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
120	36.0	28.8	22.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3
125	37.3	30.1	24.2	17.6	17.3	17.3	17.3	17.3	17.3	17.3
130	38.4	31.3	25.4	18.9	17.3	17.3	17.3	17.3	17.3	17.3
135	39.5	32.4	26.6	20.1	17.3	17.3	17.3	17.3	17.3	17.3
140	40.4	33.4	27.7	21.3	17.3	17.3	17.3	17.3	17.3	17.3
145	41.4	34.3	28.6	22.3	17.3	17.3	17.3	17.3	17.3	17.3
150	42.2	35.2	29.6	23.3	17.6	17.3	17.3	17.3	17.3	17.3
155	43.0	36.1	30.4	24.2	18.5	17.3	17.3	17.3	17.3	17.3
160	43.7	36.8	31.2	25.0	19.4	17.3	17.3	17.3	17.3	17.3
165	44.4	37.5	32.0	25.8	20.2	17.3	17.3	17.3	17.3	17.3
170	45.1	38.2	32.7	26.6	21.0	17.3	17.3	17.3	17.3	17.3
175	45.7	38.9	33.4	27.2	21.7	17.3	17.3	17.3	17.3	17.3
180	46.3	39.5	34.0	27.9	22.4	17.3	17.3	17.3	17.3	17.3
185	46.9	40.0	34.6	28.5	23.1	17.4	17.3	17.3	17.3	17.3
190	47.4	40.6	35.1	29.1	23.7	18.1	17.3	17.3	17.3	17.3
195	47.9	41.1	35.7	29.7	24.2	18.7	17.3	17.3	17.3	17.3
200	48.3	41.6	36.2	30.2	24.8	19.2	17.7	17.3	17.3	17.3
205	48.8	42.0	36.6	30.7	25.3	19.8	18.2	17.3	17.3	17.3
210	49.2	42.5	37.1	31.1	25.8	20.3	18.7	17.3	17.3	17.3
215	49.6	42.9	37.5	31.6	26.3	20.8	19.2	17.3	17.3	17.3
220	50.0	43.3	37.9	32.0	26.7	21.2	19.7	17.3	17.3	17.3
225	50.4	43.7	38.3	32.4	27.1	21.7	20.1	17.3	17.3	17.3
230	50.7	44.0	38.7	32.8	27.5	22.1	20.6	17.3	17.3	17.3
235	51.1	44.4	39.1	33.2	27.9	22.5	21.0	17.6	17.3	17.3
240	51.4	44.7	39.4	33.5	28.3	22.9	21.4	18.0	17.3	17.3
245	51.7	45.0	39.7	33.9	28.6	23.2	21.7	18.4	17.3	17.3
250	52.0	45.3	40.0	34.2	29.0	23.6	22.1	18.8	17.3	17.3
255	52.3	45.6	40.3	34.5	29.3	23.9	22.4	19.1	17.3	17.3
260	52.6	45.9	40.6	34.8	29.6	24.2	22.8	19.5	17.3	17.3
265	52.8	46.2	40.9	35.1	29.9	24.6	23.1	19.8	17.3	17.3
270	53.1	46.4	41.2	35.4	30.2	24.9	23.4	20.1	17.3	17.3
275	53.3	46.7	41.4	35.6	30.4	25.1	23.7	20.4	17.3	17.3
280	53.6	46.9	41.7	35.9	30.7	25.4	23.9	20.7	17.3	17.3
285	53.8	47.2	41.9	36.1	31.0	25.7	24.2	20.9	17.3	17.3
290	54.0	47.4	42.2	36.4	31.2	25.9	24.5	21.2	17.3	17.3
295	54.2	47.6	42.4	36.6	31.5	26.2	24.7	21.5	17.3	17.3
300	54.4	47.8	42.6	36.8	31.7	26.4	25.0	21.7	17.3	17.3
305	54.6	48.0	42.8	37.0	31.9	26.6	25.2	21.9	17.4	17.3
310	54.8	48.2	43.0	37.2	32.1	26.9	25.4	22.2	17.6	17.3
315	55.0	48.4	43.2	37.4	32.3	27.1	25.6	22.4	17.8	17.3
320	55.2	48.6	43.4	37.6	32.5	27.3	25.8	22.6	18.1	17.3
325	55.4	48.8	43.6	37.8	32.7	27.5	26.0	22.8	18.3	17.3
330	55.5	48.9	43.7	38.0	32.9	27.7	26.2	23.0	18.5	17.3
335	55.7	49.1	43.9	38.2	33.1	27.9	26.4	23.2	18.7	17.3
340	55.9	49.3	44.1	38.3	33.3	28.1	26.6	23.4	18.9	17.3
345	56.0	49.4	44.2	38.5	33.4	28.2	26.8	23.6	19.1	17.3

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

Table also applies to columns and beams with protection all round.

Table also applies to circular and rectangular hollow columns with protection all round.

Kingspan K-Stop[®] High Temperature Board with CHP Fittings

Section Factor up to m ⁻¹	Table 4: 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
45	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
50	20.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
55	27.1	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
60	32.8	22.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
65	37.6	27.9	19.6	17.3	17.3	17.3	17.3	17.3	17.3	17.3
70	41.7	32.3	24.4	17.3	17.3	17.3	17.3	17.3	17.3	17.3
75	45.3	36.1	28.5	19.4	17.3	17.3	17.3	17.3	17.3	17.3
80	48.4	39.4	32.0	23.2	17.3	17.3	17.3	17.3	17.3	17.3
85	51.1	42.3	35.1	26.5	18.4	17.3	17.3	17.3	17.3	17.3
90	53.5	44.8	37.8	29.3	21.5	17.3	17.3	17.3	17.3	17.3
95	55.7	47.1	40.2	31.9	24.2	17.3	17.3	17.3	17.3	17.3
100	57.6	49.1	42.3	34.1	26.6	18.5	17.3	17.3	17.3	17.3
105	-	51.0	44.2	36.1	28.7	20.8	18.6	17.3	17.3	17.3
110	-	52.6	45.9	37.9	30.6	22.8	20.7	17.3	17.3	17.3
115	-	54.1	47.5	39.6	32.4	24.7	22.5	17.6	17.3	17.3
120	-	55.5	48.9	41.1	33.9	26.3	24.2	19.4	17.3	17.3
125	-	56.7	50.2	42.4	35.4	27.8	25.8	20.9	17.3	17.3
130	-	57.9	51.4	43.7	36.7	29.2	27.2	22.4	17.3	17.3
135	-	-	52.5	44.8	37.9	30.5	28.5	23.7	17.3	17.3
140	-	-	53.5	45.9	39.0	31.6	29.7	25.0	18.3	17.3
145	-	-	54.4	46.9	40.0	32.7	30.7	26.1	19.5	17.3
150	-	-	55.3	47.8	40.9	33.7	31.8	27.1	20.6	17.3
155	-	-	56.1	48.6	41.8	34.6	32.7	28.1	21.6	17.3
160	-	-	56.9	49.4	42.6	35.5	33.6	29.0	22.6	17.3
165	-	-	57.6	50.1	43.4	36.3	34.4	29.8	23.5	17.3
170	-	-	58.3	50.8	44.1	37.0	35.1	30.6	24.3	17.3
175	-	-	-	51.5	44.8	37.7	35.9	31.4	25.1	18.0
180	-	-	-	52.1	45.4	38.4	36.5	32.1	25.8	18.7
185	-	-	-	52.7	46.0	39.0	37.2	32.7	26.5	19.4
190	-	-	-	53.2	46.6	39.6	37.8	33.3	27.1	20.1
195	-	-	-	53.7	47.1	40.2	38.3	33.9	27.7	20.8
200	-	-	-	54.2	47.6	40.7	38.9	34.4	28.3	21.4
205	-	-	-	54.7	48.1	41.2	39.4	35.0	28.8	21.9
210	-	-	-	55.1	48.6	41.7	39.8	35.5	29.3	22.5
215	-	-	-	55.5	49.0	42.1	40.3	35.9	29.8	23.0
220	-	-	-	55.9	49.4	42.5	40.7	36.4	30.3	23.5
225	-	-	-	56.3	49.8	42.9	41.1	36.8	30.7	23.9
230	-	-	-	56.7	50.2	43.3	41.5	37.2	31.1	24.4
235	-	-	-	57.0	50.5	43.7	41.9	37.6	31.5	24.8
240	-	-	-	57.3	50.9	44.0	42.3	37.9	31.9	25.2
245	-	-	-	57.7	51.2	44.4	42.6	38.3	32.3	25.6
250	-	-	-	58.0	51.5	44.7	42.9	38.6	32.6	25.9
255	-	-	-	58.3	51.8	45.0	43.2	38.9	33.0	26.3
260	-	-	-	58.5	52.1	45.3	43.5	39.3	33.3	26.6
265	-	-	-	-	52.4	45.6	43.8	39.5	33.6	26.9
270	-	-	-	-	52.6	45.9	44.1	39.8	33.9	27.2
275	-	-	-	-	52.9	46.1	44.4	40.1	34.2	27.5
280	-	-	-	-	53.1	46.4	44.6	40.4	34.4	27.8
285	-	-	-	-	53.4	46.6	44.9	40.6	34.7	28.1
290	-	-	-	-	53.6	46.9	45.1	40.9	35.0	28.4
295	-	-	-	-	53.8	47.1	45.3	41.1	35.2	28.6
300	-	-	-	-	54.0	47.3	45.6	41.3	35.4	28.9
305	-	-	-	-	54.2	47.5	45.8	41.5	35.7	29.1
310	-	-	-	-	54.4	47.7	46.0	41.8	35.9	29.3
315	-	-	-	-	54.6	47.9	46.2	42.0	36.1	29.5
320	-	-	-	-	54.8	48.1	46.4	42.2	36.3	29.8
325	-	-	-	-	55.0	48.3	46.6	42.3	36.5	30.0
330	-	-	-	-	55.2	48.5	46.7	42.5	36.7	30.2
335	-	-	-	-	55.3	48.7	46.9	42.7	36.9	30.4
340	-	-	-	-	55.5	48.8	47.1	42.9	37.1	30.6
345	-	-	-	-	55.6	49.0	47.2	43.1	37.2	30.7

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

Table also applies to columns and beams with protection all round.

Table also applies to circular and rectangular hollow columns with protection all round.

Kingspan K-Stop[®] High Temperature Board with CHP Fittings

Section Factor up to m ⁻¹	Table 5: 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
45	40.0	27.8	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
50	48.5	37.1	27.2	17.3	17.3	17.3	17.3	17.3	17.3	17.3
55	55.3	44.5	35.4	23.8	17.3	17.3	17.3	17.3	17.3	17.3
60	-	50.6	41.9	31.0	20.4	17.3	17.3	17.3	17.3	17.3
65	-	55.6	47.3	36.8	26.8	17.3	17.3	17.3	17.3	17.3
70	-	-	51.9	41.7	32.1	21.4	18.4	17.3	17.3	17.3
75	-	-	55.7	45.9	36.5	26.2	23.4	17.3	17.3	17.3
80	-	-	-	49.4	40.3	30.3	27.6	20.9	17.3	17.3
85	-	-	-	52.4	43.6	33.8	31.2	24.7	17.3	17.3
90	-	-	-	55.1	46.4	36.8	34.3	27.9	18.9	17.3
95	-	-	-	57.5	48.9	39.5	37.0	30.8	21.9	17.3
100	-	-	-	-	51.1	41.8	39.4	33.3	24.6	17.3
105	-	-	-	-	53.1	43.9	41.5	35.5	27.0	17.3
110	-	-	-	-	54.8	45.8	43.4	37.5	29.1	19.4
115	-	-	-	-	56.4	47.5	45.1	39.3	31.0	21.4
120	-	-	-	-	57.9	49.0	46.7	40.9	32.7	23.3
125	-	-	-	-	-	50.4	48.1	42.3	34.2	24.9
130	-	-	-	-	-	51.6	49.4	43.7	35.6	26.4
135	-	-	-	-	-	52.8	50.6	44.9	36.9	27.8
140	-	-	-	-	-	53.9	51.6	46.0	38.1	29.0
145	-	-	-	-	-	54.8	52.6	47.0	39.2	30.2
150	-	-	-	-	-	55.7	53.6	48.0	40.2	31.3
155	-	-	-	-	-	56.6	54.4	48.9	41.1	32.3
160	-	-	-	-	-	57.4	55.2	49.7	42.0	33.2
165	-	-	-	-	-	58.1	56.0	50.5	42.8	34.0
170	-	-	-	-	-	-	56.7	51.2	43.6	34.8
175	-	-	-	-	-	-	57.3	51.8	44.3	35.6
180	-	-	-	-	-	-	57.9	52.5	44.9	36.3
185	-	-	-	-	-	-	58.5	53.1	45.5	36.9
190	-	-	-	-	-	-	-	53.6	46.1	37.6
195	-	-	-	-	-	-	-	54.2	46.7	38.1
200	-	-	-	-	-	-	-	54.7	47.2	38.7
205	-	-	-	-	-	-	-	55.1	47.7	39.2
210	-	-	-	-	-	-	-	55.6	48.2	39.7
215	-	-	-	-	-	-	-	56.0	48.6	40.2
220	-	-	-	-	-	-	-	56.4	49.0	40.6
225	-	-	-	-	-	-	-	56.8	49.4	41.0
230	-	-	-	-	-	-	-	57.2	49.8	41.4
235	-	-	-	-	-	-	-	57.5	50.2	41.8
240	-	-	-	-	-	-	-	57.8	50.5	42.2
245	-	-	-	-	-	-	-	58.2	50.9	42.6
250	-	-	-	-	-	-	-	58.5	51.2	42.9
255	-	-	-	-	-	-	-	-	51.5	43.2
260	-	-	-	-	-	-	-	-	51.8	43.5
265	-	-	-	-	-	-	-	-	52.1	43.8
270	-	-	-	-	-	-	-	-	52.3	44.1
275	-	-	-	-	-	-	-	-	52.6	44.4
280	-	-	-	-	-	-	-	-	52.8	44.6
285	-	-	-	-	-	-	-	-	53.1	44.9
290	-	-	-	-	-	-	-	-	53.3	45.1
295	-	-	-	-	-	-	-	-	53.5	45.4
300	-	-	-	-	-	-	-	-	53.8	45.6
305	-	-	-	-	-	-	-	-	54.0	45.8
310	-	-	-	-	-	-	-	-	54.2	46.0
315	-	-	-	-	-	-	-	-	54.4	46.2
320	-	-	-	-	-	-	-	-	54.5	46.4
325	-	-	-	-	-	-	-	-	54.7	46.6
330	-	-	-	-	-	-	-	-	54.9	46.8
335	-	-	-	-	-	-	-	-	55.1	47.0
340	-	-	-	-	-	-	-	-	55.2	47.1
345	-	-	-	-	-	-	-	-	55.4	47.3

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

Table also applies to columns and beams with protection all round.

Table also applies to circular and rectangular hollow columns with protection all round.

Kingspan K-Stop[®] High Temperature Board with CHP Fittings

Section Factor up to m ⁻¹	Table 6: I-Section Beams and Columns: Fire Resistance Period: 150 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
45	-	56.6	46.5	32.8	19.1	17.3	17.3	17.3	17.3	17.3
50	-	-	56.2	43.6	31.1	17.3	17.3	17.3	17.3	17.3
55	-	-	-	51.9	40.3	26.9	23.2	17.3	17.3	17.3
60	-	-	-	-	47.6	34.9	31.5	22.8	17.3	17.3
65	-	-	-	-	53.4	41.3	38.1	29.8	17.8	17.3
70	-	-	-	-	58.3	46.6	43.6	35.6	24.1	17.3
75	-	-	-	-	-	51.0	48.1	40.3	29.2	17.3
80	-	-	-	-	-	54.7	51.9	44.3	33.6	20.9
85	-	-	-	-	-	57.9	55.1	47.7	37.3	25.0
90	-	-	-	-	-	-	57.9	50.7	40.5	28.4
95	-	-	-	-	-	-	-	53.3	43.2	31.4
100	-	-	-	-	-	-	-	55.5	45.7	34.1
105	-	-	-	-	-	-	-	57.5	47.8	36.4
110	-	-	-	-	-	-	-	-	49.7	38.5
115	-	-	-	-	-	-	-	-	51.4	40.3
120	-	-	-	-	-	-	-	-	53.0	42.0
125	-	-	-	-	-	-	-	-	54.4	43.5
130	-	-	-	-	-	-	-	-	55.6	44.8
135	-	-	-	-	-	-	-	-	56.8	46.1
140	-	-	-	-	-	-	-	-	57.9	47.2
145	-	-	-	-	-	-	-	-	-	48.3
150	-	-	-	-	-	-	-	-	-	49.3
155	-	-	-	-	-	-	-	-	-	50.2
160	-	-	-	-	-	-	-	-	-	51.0
165	-	-	-	-	-	-	-	-	-	51.8
170	-	-	-	-	-	-	-	-	-	52.5
175	-	-	-	-	-	-	-	-	-	53.2
180	-	-	-	-	-	-	-	-	-	53.8
185	-	-	-	-	-	-	-	-	-	54.4
190	-	-	-	-	-	-	-	-	-	55.0
195	-	-	-	-	-	-	-	-	-	55.5
200	-	-	-	-	-	-	-	-	-	56.0
205	-	-	-	-	-	-	-	-	-	56.5
210	-	-	-	-	-	-	-	-	-	57.0
215	-	-	-	-	-	-	-	-	-	57.4
220	-	-	-	-	-	-	-	-	-	57.8
225	-	-	-	-	-	-	-	-	-	58.2
230	-	-	-	-	-	-	-	-	-	58.5
235	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-
245	-	-	-	-	-	-	-	-	-	-
250	-	-	-	-	-	-	-	-	-	-
255	-	-	-	-	-	-	-	-	-	-
260	-	-	-	-	-	-	-	-	-	-
265	-	-	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-	-	-
275	-	-	-	-	-	-	-	-	-	-
280	-	-	-	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-	-	-

Table applies to beams with protection to three sides and a concrete slab. Thickness is protection only.
 Table also applies to columns and beams with protection all round.
 Table also applies to circular and rectangular hollow columns with protection all round.

Kingspan K-Stop[®] High Temperature Board with CHP Fittings

Section Factor up to m ²	Table 7: 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
45	-	-	-	-	49.0	32.5	28.0	17.3	17.3	17.3
50	-	-	-	-	-	44.8	40.9	30.1	17.3	17.3
55	-	-	-	-	-	54.1	50.5	40.4	25.8	17.3
60	-	-	-	-	-	-	57.9	48.4	34.7	18.0
65	-	-	-	-	-	-	-	54.7	41.7	25.9
70	-	-	-	-	-	-	-	-	47.4	32.2
75	-	-	-	-	-	-	-	-	52.0	37.4
80	-	-	-	-	-	-	-	-	55.9	41.7
85	-	-	-	-	-	-	-	-	-	45.3
90	-	-	-	-	-	-	-	-	-	48.5
95	-	-	-	-	-	-	-	-	-	51.2
100	-	-	-	-	-	-	-	-	-	53.5
105	-	-	-	-	-	-	-	-	-	55.6
110	-	-	-	-	-	-	-	-	-	57.5
115	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-
125	-	-	-	-	-	-	-	-	-	-
130	-	-	-	-	-	-	-	-	-	-
135	-	-	-	-	-	-	-	-	-	-
140	-	-	-	-	-	-	-	-	-	-
145	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-
155	-	-	-	-	-	-	-	-	-	-
160	-	-	-	-	-	-	-	-	-	-
165	-	-	-	-	-	-	-	-	-	-
170	-	-	-	-	-	-	-	-	-	-
175	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-
185	-	-	-	-	-	-	-	-	-	-
190	-	-	-	-	-	-	-	-	-	-
195	-	-	-	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-	-	-	-
205	-	-	-	-	-	-	-	-	-	-
210	-	-	-	-	-	-	-	-	-	-
215	-	-	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-	-	-
225	-	-	-	-	-	-	-	-	-	-
230	-	-	-	-	-	-	-	-	-	-
235	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-
245	-	-	-	-	-	-	-	-	-	-
250	-	-	-	-	-	-	-	-	-	-
255	-	-	-	-	-	-	-	-	-	-
260	-	-	-	-	-	-	-	-	-	-
265	-	-	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-	-	-
275	-	-	-	-	-	-	-	-	-	-
280	-	-	-	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-	-	-

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

Table also applies to columns and beams with protection all round.

Table also applies to circular and rectangular hollow columns with protection all round.