Deutsches Institut für Bautechnik

Zulassungsstelle für Bauprodukte und Bauarten

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Authorised and notified according to Article 10 of the Council Directive of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products (89/106/EEC)

Deutsches Institut für Bautechnik

DIBt

Mitglied der EOTA
Member of EOTA

European Technical Approval ETA-09/0259

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung *Trade name*	INTERCHAR 404
Zulassungsinhaber *Holder of approval*	International Paint Ltd Stoneygate Lane FELLING, GATESHEAD NE10 0JY GROSSBRITANNIEN
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*	Reaktive Brandschutzbeschichtungen auf Stahlbauteilen *Reactive coatings for fire protection of steel elements*
Geltungsdauer: vom *Validity: from* bis *to*	13 June 2012 20 October 2014
Herstellwerk *Manufacturing plant*	International Paint Holmedalen 3 Aspereds Industriomrade 42457 Angered Sweden

Diese Zulassung umfasst *This Approval contains*	39 Seiten einschließlich 1 Anhang *39 pages including 1 annex*
Diese Zulassung ersetzt *This Approval replaces*	ETA-09/0259 mit Geltungsdauer vom 13.01.2012 bis 20.10.2014 *ETA-09/0259 with validity from 13.01.2012 to 20.10.2014*

I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by Council Directive 93/68/EEC[2] and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council[3];
- *Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998[4], as amended by law of 31 October 2006[5];*
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC[6];
- Guideline for European technical approval of "Fire Protective Products - Part 2: Reactive Coatings for Fire Protection of Steel Elements", ETAG 018-02.

2 Deutsches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.

3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European technical approval.

4 This European technical approval may be withdrawn by Deutsches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.

5 Reproduction of this European technical approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of Deutsches Institut für Bautechnik. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European technical approval.

6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

1 Official Journal of the European Communities L 40, 11 February 1989, p. 12
2 Official Journal of the European Communities L 220, 30 August 1993, p. 1
3 Official Journal of the European Union L 284, 31 October 2003, p. 25
4 *Bundesgesetzblatt Teil I 1998*, p. 812
5 *Bundesgesetzblatt Teil I 2006*, p. 2407, 2416
6 Official Journal of the European Communities L 17, 20 January 1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product/ products and intended use

1.1 Definition of the construction product

This European technical approval applies to the reactive coating for fire protection "INTERCHAR 404". "INTERCHAR 404" is a spray applied or, for small areas, brush applied solvent based reactive coating system. The reactive coating system for fire protection consists of the primer, the reactive coating and, depending on the use category of the top coat, where appropriate. In the case of fire reactive coatings for fire protection act by temperature stress and thus develop a heat-insulating effect. The reactive component, on which the mode of operation of the reactive coating for fire protection is based, is an intumescent material.

In conformity with ETAG 018-2 the ETA is issued for the product under end use conditions (Option 3).

1.2 Intended use

1.2.1 Field of application

"INTERCHAR 404" serves for the use as reactive coating system (sheathing) necessary on beams and columns made of structural steel (marking 'S') in accordance with EN 10025[7], excluding S185 to achieve a fire resistance duration in accordance with EN 13501-2[8].

"INTERCHAR 404" may be applied in accordance with Annex 1 to the following fields.

- Fire resistance:
  - Open sections (H and I): R 15-IncSlow, R 30-IncSlow, R 45-IncSlow, R 60-IncSlow, R 75-IncSlow, R 90-IncSlow, R 120-IncSlow
  - Square hollow sections: R 15-IncSlow, R 30-IncSlow, R 45-IncSlow, R 60-IncSlow, R 75-IncSlow, R 90-IncSlow, R 120-IncSlow
  - Circular hollow sections: R 15-IncSlow, R 30-IncSlow, R 45-IncSlow, R 60-IncSlow, R 75-IncSlow, R 90-IncSlow, R 120-IncSlow
- A/V factor and/or V/A factor: 48 m-1 up to 318 m-1 / 0.0208 m up to 0.0031 m
- Design temperatures: 350 °C up to 750 °C

The application of "INTERCHAR 404" on steel tension members made of structural steel in accordance with EN 10025 is not regulated by this ETA.

1.2.2 Use category

Depending on the use category in accordance with ETAG 018, part 2, section 2.2.2 the following types have been approved.

[7] EN 10025: part 1 to 6:2004-2005 Hot rolled products of structural steels implemented

[8] EN 13501-2:2007-10 Fire classification of construction products and building elements Part 2: Classification using data from fire resistance tests, excluding ventilation services implemented

Primer - irrespective of the use category		Reactive coating	Top coat - depending on the use category
Two components epoxy primers	e.g. "Intercure 200" "Intergard 269" "Intergard 251" "Interseal 670HS" "Interplus 256" "Interplus 356"	"Interchar404"	Type X (Y, Z_1,Z_2 included) "Intersheen 579" [9] or "Interthane 990" [9]
			Typ Z_1 (Z_2 included) without top coat or alternatively also with "Intersheen 579" [9]
Alkyd resin primers	e.g. "Interprime 306" "Interprime 198"		Type Z_2 without top coat or alternatively also with "Intersheen 54" [9] or "Intersheen 579" [9]

For the carrying out with primer "Intergard 269" the applicability of the reactive coating system has been verified on zinc coated substrates with a thickness of the zinc coating of up to 200 µm.

1.2.3 Working life

The provisions made in this European technical approval are based on an assumed working life of the reactive coating for fire protection "INTERCHAR 404" of 10 years; provided that the conditions laid down in sections 4.2, 5.1 and 5.2 for packaging, transport, storage, installation, use, as well as for use, maintenance and repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer, 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.

2 Characteristics of product and methods of verification

2.1 Mechanical resistance and stability

Not relevant.

2.2 Safety in case of fire

2.2.1 Reaction to fire

In the assembly with primer "Intergard 251", reactive coating "Interchar 404" and topcoat "Intersheen 579" the reactive coating system corresponds to the reaction-to-fire class C-s1,d0 according to EN 13501-1[10].
In the assembly with primer "Intercure 200", reactive coating "Interchar 404" and topcoat "Interthane 990" the reactive coating system corresponds to the reaction-to-fire class C-s2,d0 according to EN 13501-1[10].
All other assemblies with or without topcoat correspond to the reaction-to-fire class D-s2,d0 according to EN 13501-1[10]

[9] For all shades of this top coat
[10] EN 13501-1:2007-02 Fire classification of construction products and building elements Part 1: Classification using data from reaction to fire tests implemented

2.2.2 Fire resistance

The fire resistance classes were determined according to EN 13501-2[8] corresponding to ENV 13381-8[11] and shall be gathered from Annex 1.

2.2.3 Smouldering fire exposure

The verification under exposure to the smouldering fire curve according to ENV 13381-4[11] has been furnished in the context of the approval tests.

2.3 Hygiene, Health and the Environment

2.3.1 Air and/or water permeability

Not relevant.

2.3.2 Release of dangerous substances

According to the manufacturer's declaration, the product specification has been compared with the dangerous substances detailed in Council Directive 76/769/EEC (as amended) and listed on the database established on the EC construction website and it has been verified that it does not contain such substances above the acceptable limits.

Note: In addition to the specific clauses relating to dangerous substances contained in this European technical approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

2.3.3 Resistance to chemicals

In the context of the approval tests a verification of the resistance to chemicals was not furnished.

2.4 Safety in use (Mechanical resistance and stability)

Not relevant.

2.5 Protection against noise

Not relevant.

2.6 Energy, economy and heat retention

Not relevant.

2.7 Aspects of serviceability, durability and identification

2.7.1 The primers and the top coats indicated in section 1.2.2 of this ETA are compatible with the reactive coating "Interchar 404". The verifications were made in accordance with ETAG 018, part 2, section 5.7.2.2. The approved use categories shall be taken from section 1.2.2 of this ETAG.

2.8 Identification

The formulation for "Interchar 404" has been deposited at the DIBt. In addition density and non-volatile content have also been determined.

[11] ENV 13381-8:2010-09 Test methods for determining the contribution to the fire resistance of structural members – Part 8: Applied reactive protection to steel members

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the Decision 1999/454/EG of the European Commission[12] system 1 of the attestation of conformity applies.

Additionally according to the Decision 2001/596/EC of the European Commission[13] system 1 of the attestation of conformity is to be used in relation to the reaction-to-fire performance.

This system of attestation of conformity is described in the following:

System 1: Certification of the conformity of the product by an approved certification body on the basis of:

(a) Tasks for the manufacturer:

(1) factory production control;

(2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan;

(b) Tasks for the approved body:

(3) initial type–testing of the product;

(4) initial inspection of factory and of factory production control;

(5) continuous surveillance, assessment and approval of factory production control.

3.2 Responsibilities

3.2.1 Tasks for the manufacturer

3.2.1.1 Factory production control

The manufacturer of the reactive coating "Interchar 404" shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall ensure that the product is in conformity with this European technical approval.

The manufacturer shall draw up and keep up-to-date documents defining the factory production control that applies. The documentation to be carried out by the manufacturer and the applicable procedures shall be appropriate to the product and manufacturing process. The factory production control shall ensure the conformity of the product to an appropriate level. This involves:

a) the preparation of documented procedures and instructions relating to factory production control operations

b) the effective implementation of these procedures and instructions

c) the recording of these procedures and their results

d) the use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of non-conformity and, if necessary, revise the factory production control to rectify the cause of non-conformity

e) it shall be ensured that both the Approval Body and the Approved (certification) bodies are advised before the product, its components or the manufacturing process, is changed in a significant way

[12] Official Journal of the European Communities L 178/52 of 14.07.1999

[13] Official Journal of the European Communities L 209/33 of 2.8.2001

f) it shall be ensured that personnel involved in the production processes and the quality control procedures are adequately qualified and trained to carry out the required tasks

g) the regular maintenance of all testing and measuring equipment and the documentation of up to date calibration records

h) the maintenance of records to ensure every container of coating material produced is clearly labelled with the batch number, which allows traceability to the point of its production.

The manufacturer may only use initial and constituent materials stated in the technical documentation of this European technical approval.

The factory production control shall be in accordance with the "control plan" of this European technical approval. The results of factory production control shall be recorded and evaluated in accordance with the provisions of the "control plan".

Reactive coating

Property	Paragraph, indicating the relevant test method	Threshold (if any) and tolerances	Minimum frequency of tests
Incoming material	Declaration of conformity	Manufacturer's declaration	Every delivery
Char depth	e.g. Cylinder test or similar[14]	Manufacturer's declaration of minimum value	Every batch
Insulating efficiency	Annex A of ETAG 018-2 or alternative.[14]	Manufacturer's declaration [15]	Every 10th batch or at least once per month
Sag resistance		Manufacturer's specification	Every batch
Viscosity	e.g. EN ISO 3219		Every batch
Raw material[16]			Every delivery
Curing			Every batch
Pigment dispersion			Every batch
Non-volatile content or density	e.g. EN ISO 3251		Every batch

3.2.1.2 Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 in the field of reactive coatings for fire protection of steel elements in order to undertake the actions laid down in section 3.2.2 For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of the European technical approval ETA-09/0259 issued on 21 October 2009.

14 The alternative shall be agreed on between the testing laboratory and the manufacturer.

15 If the test result for the determination of the char depth is not satisfactory then a test of the insulating effect test should be performed.

16 test results of the supplier shall be checked according to the specification of the raw material's manufacturer.

3.2.2 Tasks for the approved bodies

The approved body shall perform the

- initial type-testing of the product,
- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control, in accordance with the provisions laid down in the control plan.
- The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical approval.

In cases where the provisions of the European technical approval and its control plan are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform Deutsches Institut für Bautechnik without delay.

3.3 CE marking

The CE marking shall be affixed to the packaging and to the accompanying commercial document, e.g. the EC declaration of conformity. The letters ”CE” shall be followed by the identification number of the approved certification body, where relevant, and be accompanied by the following additional information:

- Identification number of the Approved Body,
- the name and address of the producer (legal entity responsible for the manufacture),
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate of conformity for the product ,
- the number of the European technical approval,
- ETAG 018, Part 1 and 2
- Identification of the product (trade name: reactive coating "Interchar 404")

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 Manufacturing

The European technical approval is issued for the product on the basis of agreed data/information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to Deutsches Institut für Bautechnik before the changes are introduced. Deutsches Institut für Bautechnik will decide whether or not such changes affect the approval and consequently the validity of the CE marking on the basis of the approval and if so whether further assessment or alterations to the approval shall be necessary.

4.2 Installation

4.2.1 Application

The manufacturer shall provide an installation guide for his product.

The installation guide shall give information about.

- List of suitable substrates
- Preparation of the surface of the construction (e.g. cleanliness, required preparation grade of the surface, e.g. Sa 2 ½)
- Method of application (e.g. the temperature and humidity conditions before, during and after application)
- Necessary application wet film thickness in relation to the dry film thickness
- Required minimum dry film thickness of the reactive coating
- Period of time between the application of each component, tading account of exposure conditions
- Curing time of the system
- Approved top coats
- Equipment parameters

Provisions to protect coatins intended for internal use, if temporyrily exposed on site.

This ETA is issued on the assumption that the application of "INTERCHAR 404" occurs in accordance with the manufacturer's instructions.

4.2.2 Primer

A two component epoxy primer or alkyd resin primer as specified by the manufacturer shall be used, see clause 1.2.2 of this ETA.

The primer shall be applied on surface prepared steel. The surface of the steel shall be free of dust, grease and other pollutants. The preparation grade of surface shall be in accordance with the technical data sheets. The primer shall cover the surface of the steel completely. The required dry film thickness according to the manufacturer's declaration shall be respected.

Primer applied on the steel sections at the factory, where relevant, which does not comply with the requirements of the ETA holder shall be removed before.

4.2.3 Reactive coating

The reactive coating shall be compatible with the top coat.

The dry film thickness of the reactive coating "Interchar 404" (without primer and top coat) shall have at least the values required in Annex 1.

4.2.4 Topcoat

The top coat shall be compatible with the reactive coating. During the tests carried out for the approval procedure the top coats have been found to be compatible according to section 1.2.2 of this ETA.

The required dry film thickness according to the manufacturer's declaration shall be respected, it is approx. 40 µm - 100 µm.

4.2.5 Structural references

The steel members coated with "INTERCHAR 404" should not have claddings or other sheathings which could prevent the reactive coating from foaming.

5 Indications to the manufacturer

5.1 Packaging, transport and storage

In the accompanying document or on the tanks the manufacturer shall give information as to transport and storage.

At least the following shall be indicated: storage temperature, type of storage (container, tank, etc.), required data related to minimum and maximum temperature for transport and storage. In case of combustible components or other potentially dangerous substances the instructions shall contain indications about limitations and/or conditions for handling, transport and storage.

5.2 Use, maintenance, repair

The assessment of the fitness for use is based on the assumption that necessary maintenance and repair if required is carried out in accordance with the manufacturer's instructions during the assumed intended working life.

The top coat shall protect the reactive coating from moisture and other environmental influences. Therefore it shall always be kept in a proper state. In case of an execution without top coat the control shall refer to the reactive coating. If the maintenance work related to the reactive coating or the top coating is necessary, the manufacturer’s instructions shall be respected.

Prof. Gunter Hoppe
Head of Department

beglaubigt:
Stopp

Annex 1 – Product performance: fire resistance

1. This Annex relates to the use of "Interchar 404" for safety in case of fire of open sections (H and I), square hollow sections and circular hollow sections for steel beams or steel columns. The proper field of application is given in Tables 1 to 14 which show the minimum dry thickness of the layer (without primer and top coat) required for achieving the classification "R" in case of different design temperatures and profile factors. The tables are applicable to assemblies with or without topcoat.
2. The product has been approved on the basis of:
   a) The approval test on the basis of ENV 13381-4[17], EN 13381-8[11] and ETAG 018, Parts 1 and 2
   b) The design of the minimum dry film thickness of the layer according of EN 13381-8[11]
3. The data for beams are related to a three-sided fire exposure. A four-sided fire exposure for beams has to be calculated from the column tables, but limited to the maximum thickness for beams.

   The data for columns are related to a four-sided fire exposure. A three-sided exposure for columns has to be calculated from the column table but the V/A has to be corrected based on the area of fire exposure.
4. The layer thicknesses given are applicable to steel sections with a surface prepared according to section 4.2.2 of this ETA.
5. The thicknesses given for open H- and I-sections also apply to steel sections of other shapes, e.g. U-, L- and T-sections under consideration of the same A/V value.

[17] EN 13381-4:2002-06 Test methods for determining the contribution to the fire resistance of structural members. Part 4: Applied protection to steel members

Annex 1, Table 1: Beams, open sections (H and I Profile)

Interchar 404		**Fire Resistance 15 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
70	0,0143	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
75	0,0133	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
80	0,0125	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
85	0,0118	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
90	0,0111	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
95	0,0105	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
100	0,0100	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
105	0,0095	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
110	0,0091	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
115	0,0087	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
120	0,0083	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
125	0,0080	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
130	0,0077	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
135	0,0074	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
140	0,0071	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
145	0,0069	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
150	0,0067	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
155	0,0065	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
160	0,0063	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
165	0,0061	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
170	0,0059	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
175	0,0057	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
180	0,0056	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
185	0,0054	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
190	0,0053	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
195	0,0051	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
200	0,0050	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
205	0,0049	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
210	0,0048	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
215	0,0047	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
220	0,0045	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
225	0,0044	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
230	0,0043	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
235	0,0043	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
240	0,0042	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
245	0,0041	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
250	0,0040	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
255	0,0039	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
260	0,0038	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
265	0,0038	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
270	0,0037	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
275	0,0036	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
280	0,0036	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
285	0,0035	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
290	0,0034	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
295	0,0034	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
300	0,0033	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
305	0,0033	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
310	0,0032	0,275	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
314	0,0032	0,278	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272

Annex 1, Table 2: Beams, open sections (H and I Profile)

Interchar 404		**Fire Resistance 30 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147	0,438	0,285	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
70	0,0143	0,450	0,292	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
75	0,0133	0,480	0,309	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
80	0,0125	0,511	0,326	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
85	0,0118	0,542	0,343	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
90	0,0111	0,572	0,361	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
95	0,0105	0,603	0,378	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
100	0,0100	0,634	0,396	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
105	0,0095	0,666	0,414	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
110	0,0091	0,697	0,432	0,272	0,272	0,272	0,272	0,272	0,272	0,272	0,272
115	0,0087	0,729	0,450	0,281	0,278	0,272	0,272	0,272	0,272	0,272	0,272
120	0,0083	0,761	0,469	0,291	0,283	0,272	0,272	0,272	0,272	0,272	0,272
125	0,0080	0,793	0,488	0,301	0,289	0,272	0,272	0,272	0,272	0,272	0,272
130	0,0077	0,825	0,507	0,311	0,295	0,272	0,272	0,272	0,272	0,272	0,272
135	0,0074	0,857	0,526	0,321	0,301	0,272	0,272	0,272	0,272	0,272	0,272
140	0,0071	0,890	0,545	0,331	0,307	0,272	0,272	0,272	0,272	0,272	0,272
145	0,0069	0,923	0,565	0,341	0,314	0,272	0,272	0,272	0,272	0,272	0,272
150	0,0067	0,956	0,585	0,352	0,320	0,272	0,272	0,272	0,272	0,272	0,272
155	0,0065	0,989	0,605	0,363	0,326	0,272	0,272	0,272	0,272	0,272	0,272
160	0,0063	1,022	0,626	0,374	0,333	0,272	0,272	0,272	0,272	0,272	0,272
165	0,0061	1,056	0,646	0,385	0,340	0,272	0,272	0,272	0,272	0,272	0,272
170	0,0059	1,089	0,667	0,396	0,346	0,272	0,272	0,272	0,272	0,272	0,272
175	0,0057	1,123	0,688	0,408	0,353	0,272	0,272	0,272	0,272	0,272	0,272
180	0,0056	1,157	0,710	0,419	0,360	0,272	0,272	0,272	0,272	0,272	0,272
185	0,0054	1,192	0,731	0,431	0,367	0,272	0,272	0,272	0,272	0,272	0,272
190	0,0053	1,226	0,753	0,443	0,375	0,272	0,272	0,272	0,272	0,272	0,272
195	0,0051	1,261	0,776	0,456	0,382	0,272	0,272	0,272	0,272	0,272	0,272
200	0,0050	1,296	0,798	0,468	0,390	0,272	0,272	0,272	0,272	0,272	0,272
205	0,0049	1,331	0,821	0,481	0,397	0,272	0,272	0,272	0,272	0,272	0,272
210	0,0048	1,366	0,844	0,494	0,405	0,272	0,272	0,272	0,272	0,272	0,272
215	0,0047	1,402	0,867	0,507	0,413	0,272	0,272	0,272	0,272	0,272	0,272
220	0,0045	1,437	0,891	0,521	0,421	0,272	0,272	0,272	0,272	0,272	0,272
225	0,0044	1,473	0,915	0,534	0,429	0,272	0,272	0,272	0,272	0,272	0,272
230	0,0043	1,509	0,939	0,548	0,438	0,272	0,272	0,272	0,272	0,272	0,272
235	0,0043	1,546	0,964	0,563	0,447	0,274	0,272	0,272	0,272	0,272	0,272
240	0,0042	1,582	0,989	0,577	0,458	0,280	0,272	0,272	0,272	0,272	0,272
245	0,0041	1,619	1,014	0,592	0,470	0,286	0,272	0,272	0,272	0,272	0,272
250	0,0040	1,656	1,040	0,607	0,481	0,292	0,272	0,272	0,272	0,272	0,272
255	0,0039	1,694	1,066	0,623	0,493	0,298	0,272	0,272	0,272	0,272	0,272
260	0,0038	1,731	1,092	0,638	0,505	0,304	0,272	0,272	0,272	0,272	0,272
265	0,0038	1,769	1,119	0,655	0,517	0,310	0,272	0,272	0,272	0,272	0,272
270	0,0037	1,807	1,146	0,671	0,529	0,316	0,272	0,272	0,272	0,272	0,272
275	0,0036	1,845	1,173	0,688	0,542	0,323	0,272	0,272	0,272	0,272	0,272
280	0,0036	1,883	1,201	0,705	0,555	0,330	0,272	0,272	0,272	0,272	0,272
285	0,0035	1,922	1,229	0,722	0,568	0,337	0,272	0,272	0,272	0,272	0,272
290	0,0034	1,961	1,258	0,740	0,582	0,344	0,272	0,272	0,272	0,272	0,272
295	0,0034	2,000	1,287	0,758	0,596	0,352	0,272	0,272	0,272	0,272	0,272
300	0,0033	2,039	1,316	0,777	0,610	0,359	0,272	0,272	0,272	0,272	0,272
305	0,0033	2,079	1,346	0,796	0,624	0,367	0,272	0,272	0,272	0,272	0,272
310	0,0032	2,119	1,376	0,815	0,639	0,375	0,272	0,272	0,272	0,272	0,272
314	0,0032		1,401	0,831	0,651	0,382	0,272	0,272	0,272	0,272	0,272

Annex 1, Table 3: Beams, open sections (H and I Profile)

Interchar 404		**Fire Resistance 45 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147	0,789	0,559	0,427	0,395	0,346	0,286	0,272	0,272	0,272	0,272
70	0,0143	0,812	0,575	0,438	0,404	0,354	0,291	0,272	0,272	0,272	0,272
75	0,0133	0,869	0,613	0,465	0,429	0,374	0,305	0,272	0,272	0,272	0,272
80	0,0125	0,927	0,652	0,493	0,453	0,394	0,319	0,272	0,272	0,272	0,272
85	0,0118	0,985	0,692	0,521	0,478	0,414	0,334	0,272	0,272	0,272	0,272
90	0,0111	1,043	0,732	0,549	0,503	0,435	0,349	0,276	0,272	0,272	0,272
95	0,0105	1,101	0,772	0,578	0,529	0,456	0,364	0,286	0,272	0,272	0,272
100	0,0100	1,160	0,813	0,607	0,555	0,477	0,379	0,296	0,272	0,272	0,272
105	0,0095	1,219	0,854	0,637	0,582	0,499	0,395	0,306	0,272	0,272	0,272
110	0,0091	1,279	0,896	0,667	0,609	0,522	0,411	0,317	0,272	0,272	0,272
115	0,0087	1,339	0,938	0,698	0,636	0,544	0,427	0,328	0,272	0,272	0,272
120	0,0083	1,399	0,981	0,729	0,664	0,568	0,444	0,339	0,272	0,272	0,272
125	0,0080	1,459	1,024	0,761	0,693	0,591	0,461	0,350	0,272	0,272	0,272
130	0,0077	1,520	1,068	0,793	0,722	0,615	0,478	0,361	0,272	0,272	0,272
135	0,0074	1,581	1,112	0,825	0,751	0,640	0,496	0,373	0,272	0,272	0,272
140	0,0071	1,643	1,157	0,858	0,781	0,665	0,514	0,385	0,274	0,272	0,272
145	0,0069	1,705	1,202	0,892	0,811	0,690	0,533	0,398	0,281	0,272	0,272
150	0,0067	1,767	1,248	0,926	0,842	0,716	0,552	0,411	0,288	0,272	0,272
155	0,0065	1,829	1,294	0,961	0,874	0,743	0,572	0,424	0,295	0,272	0,272
160	0,0063	1,892	1,341	0,997	0,906	0,770	0,592	0,437	0,303	0,272	0,272
165	0,0061	1,955	1,389	1,033	0,939	0,798	0,612	0,451	0,311	0,272	0,272
170	0,0059	2,019	1,437	1,069	0,972	0,826	0,633	0,465	0,318	0,272	0,272
175	0,0057	2,083	1,485	1,107	1,006	0,855	0,655	0,480	0,326	0,272	0,272
180	0,0056		1,534	1,144	1,040	0,884	0,677	0,495	0,335	0,272	0,272
185	0,0054		1,584	1,183	1,076	0,914	0,699	0,510	0,343	0,272	0,272
190	0,0053		1,635	1,222	1,111	0,945	0,723	0,526	0,352	0,272	0,272
195	0,0051		1,686	1,262	1,148	0,977	0,746	0,542	0,361	0,272	0,272
200	0,0050		1,737	1,303	1,185	1,009	0,771	0,559	0,371	0,272	0,272
205	0,0049		1,790	1,344	1,223	1,042	0,796	0,576	0,381	0,272	0,272
210	0,0048		1,843	1,386	1,262	1,075	0,821	0,594	0,391	0,272	0,272
215	0,0047		1,896	1,429	1,302	1,110	0,848	0,612	0,401	0,272	0,272
220	0,0045		1,951	1,473	1,342	1,145	0,875	0,631	0,412	0,272	0,272
225	0,0044		2,006	1,518	1,383	1,181	0,903	0,650	0,423	0,272	0,272
230	0,0043		2,062	1,563	1,425	1,218	0,931	0,670	0,434	0,272	0,272
235	0,0043		2,118	1,609	1,468	1,256	0,961	0,691	0,446	0,272	0,272
240	0,0042			1,657	1,512	1,295	0,991	0,712	0,459	0,272	0,272
245	0,0041			1,705	1,557	1,334	1,023	0,735	0,471	0,272	0,272
250	0,0040			1,754	1,602	1,375	1,055	0,758	0,485	0,272	0,272
255	0,0039			1,804	1,649	1,417	1,088	0,781	0,499	0,272	0,272
260	0,0038			1,855	1,697	1,460	1,122	0,806	0,513	0,272	0,272
265	0,0038			1,907	1,746	1,504	1,157	0,831	0,528	0,272	0,272
270	0,0037			1,960	1,795	1,549	1,194	0,858	0,543	0,272	0,272
275	0,0036			2,014	1,847	1,595	1,231	0,885	0,560	0,272	0,272
280	0,0036			2,069	1,899	1,643	1,270	0,913	0,577	0,272	0,272
285	0,0035			2,126	1,952	1,692	1,310	0,943	0,594	0,272	0,272
290	0,0034				2,007	1,742	1,352	0,973	0,613	0,272	0,272
295	0,0034				2,063	1,794	1,395	1,005	0,632	0,272	0,272
300	0,0033				2,121	1,847	1,439	1,038	0,652	0,272	0,272
305	0,0033					1,902	1,485	1,073	0,673	0,272	0,272
310	0,0032					1,958	1,533	1,109	0,695	0,272	0,272
314	0,0032					2,004	1,572	1,139	0,714	0,272	0,272

Annex 1, Table 4: Beams, open sections (H and I Profile)

Interchar 404		**Fire Resistance 60 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147	1,141	0,833	0,657	0,613	0,548	0,467	0,400	0,343	0,289	0,272
70	0,0143	1,174	0,857	0,675	0,630	0,563	0,479	0,409	0,350	0,294	0,272
75	0,0133	1,258	0,918	0,721	0,672	0,599	0,508	0,432	0,368	0,307	0,272
80	0,0125	1,343	0,979	0,767	0,715	0,636	0,538	0,456	0,386	0,320	0,272
85	0,0118	1,428	1,041	0,815	0,759	0,674	0,568	0,480	0,405	0,333	0,275
90	0,0111	1,513	1,103	0,863	0,803	0,713	0,600	0,505	0,424	0,347	0,284
95	0,0105	1,599	1,166	0,912	0,848	0,752	0,631	0,530	0,444	0,361	0,294
100	0,0100	1,686	1,230	0,961	0,893	0,792	0,664	0,556	0,464	0,376	0,304
105	0,0095	1,773	1,295	1,011	0,940	0,833	0,697	0,582	0,484	0,391	0,314
110	0,0091	1,860	1,360	1,062	0,987	0,874	0,731	0,609	0,505	0,406	0,324
115	0,0087	1,948	1,426	1,114	1,035	0,916	0,765	0,636	0,527	0,421	0,335
120	0,0083	2,037	1,493	1,167	1,084	0,959	0,800	0,665	0,549	0,437	0,345
125	0,0080	2,126	1,561	1,220	1,133	1,003	0,836	0,694	0,572	0,454	0,357
130	0,0077		1,629	1,275	1,184	1,048	0,873	0,723	0,595	0,471	0,368
135	0,0074		1,698	1,330	1,235	1,093	0,911	0,754	0,619	0,488	0,380
140	0,0071		1,768	1,386	1,287	1,140	0,949	0,785	0,643	0,506	0,392
145	0,0069		1,839	1,443	1,341	1,187	0,988	0,817	0,669	0,524	0,405
150	0,0067		1,911	1,501	1,395	1,236	1,029	0,850	0,695	0,543	0,418
155	0,0065		1,983	1,560	1,450	1,285	1,070	0,883	0,721	0,563	0,431
160	0,0063		2,057	1,620	1,506	1,335	1,112	0,918	0,749	0,583	0,445
165	0,0061			1,681	1,563	1,387	1,155	0,953	0,777	0,604	0,459
170	0,0059			1,743	1,621	1,439	1,199	0,989	0,806	0,625	0,474
175	0,0057			1,806	1,680	1,493	1,245	1,027	0,836	0,647	0,489
180	0,0056			1,870	1,741	1,547	1,291	1,065	0,866	0,670	0,505
185	0,0054			1,935	1,802	1,603	1,339	1,104	0,898	0,693	0,521
190	0,0053			2,001	1,865	1,661	1,387	1,145	0,931	0,717	0,538
195	0,0051			2,069	1,929	1,719	1,437	1,187	0,964	0,742	0,555
200	0,0050				1,994	1,779	1,489	1,229	0,999	0,768	0,573
205	0,0049				2,060	1,840	1,541	1,274	1,035	0,795	0,592
210	0,0048					1,902	1,596	1,319	1,072	0,823	0,612
215	0,0047					1,966	1,651	1,366	1,110	0,852	0,632
220	0,0045					2,032	1,708	1,415	1,150	0,882	0,653
225	0,0044					2,098	1,767	1,464	1,191	0,913	0,675
230	0,0043						1,827	1,516	1,233	0,945	0,697
235	0,0043						1,889	1,569	1,277	0,978	0,721
240	0,0042						1,953	1,624	1,323	1,013	0,746
245	0,0041						2,019	1,681	1,370	1,049	0,771
250	0,0040						2,087	1,740	1,419	1,087	0,798
255	0,0039							1,800	1,470	1,126	0,826
260	0,0038							1,863	1,523	1,167	0,856
265	0,0038							1,928	1,578	1,209	0,886
270	0,0037							1,996	1,636	1,254	0,919
275	0,0036							2,066	1,696	1,301	0,953
280	0,0036								1,758	1,350	0,988
285	0,0035								1,823	1,401	1,026
290	0,0034								1,891	1,455	1,065
295	0,0034								1,962	1,511	1,107
300	0,0033								2,037	1,571	1,151
305	0,0033								2,115	1,633	1,198
310	0,0032									1,699	1,247
314	0,0032									1,755	1,289

Annex 1, Table 5: Beams, open sections (H and I Profile)

Interchar 404		**Fire Resistance 75 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147	1,492	1,107	0,886	0,832	0,750	0,649	0,564	0,494	0,426	0,371
70	0,0143	1,536	1,140	0,912	0,856	0,771	0,667	0,579	0,506	0,436	0,379
75	0,0133	1,647	1,222	0,976	0,916	0,825	0,711	0,616	0,537	0,460	0,398
80	0,0125	1,759	1,305	1,042	0,977	0,879	0,757	0,654	0,568	0,485	0,418
85	0,0118	1,871	1,390	1,109	1,039	0,934	0,803	0,693	0,600	0,511	0,439
90	0,0111	1,984	1,475	1,176	1,102	0,991	0,851	0,733	0,633	0,538	0,460
95	0,0105	2,098	1,561	1,245	1,166	1,048	0,899	0,774	0,667	0,565	0,482
100	0,0100		1,648	1,315	1,231	1,106	0,948	0,815	0,702	0,593	0,504
105	0,0095		1,735	1,386	1,298	1,166	0,999	0,858	0,737	0,622	0,527
110	0,0091		1,824	1,458	1,365	1,226	1,050	0,901	0,774	0,651	0,550
115	0,0087		1,914	1,531	1,434	1,288	1,103	0,945	0,811	0,681	0,575
120	0,0083		2,005	1,605	1,503	1,351	1,157	0,991	0,849	0,712	0,600
125	0,0080		2,097	1,680	1,574	1,415	1,212	1,038	0,889	0,744	0,625
130	0,0077			1,757	1,646	1,480	1,268	1,085	0,929	0,777	0,651
135	0,0074			1,834	1,719	1,547	1,325	1,134	0,970	0,810	0,678
140	0,0071			1,913	1,794	1,615	1,384	1,184	1,013	0,845	0,706
145	0,0069			1,994	1,870	1,684	1,444	1,236	1,056	0,880	0,735
150	0,0067			2,075	1,947	1,755	1,505	1,288	1,101	0,917	0,765
155	0,0065				2,026	1,827	1,568	1,343	1,147	0,955	0,795
160	0,0063				2,106	1,901	1,632	1,398	1,194	0,994	0,827
165	0,0061					1,976	1,698	1,455	1,243	1,034	0,859
170	0,0059					2,052	1,765	1,513	1,293	1,075	0,893
175	0,0057						1,834	1,574	1,345	1,117	0,928
180	0,0056						1,905	1,635	1,398	1,161	0,963
185	0,0054						1,978	1,699	1,453	1,207	1,000
190	0,0053						2,052	1,764	1,509	1,254	1,039
195	0,0051							1,831	1,567	1,302	1,079
200	0,0050							1,900	1,627	1,352	1,120
205	0,0049							1,971	1,689	1,404	1,163
210	0,0048							2,045	1,754	1,458	1,207
215	0,0047							2,120	1,820	1,513	1,253
220	0,0045								1,888	1,571	1,301
225	0,0044								1,959	1,631	1,351
230	0,0043								2,033	1,693	1,403
235	0,0043								2,109	1,758	1,457
240	0,0042									1,825	1,513
245	0,0041									1,894	1,572
250	0,0040									1,967	1,633
255	0,0039									2,043	1,697
260	0,0038									2,122	1,764
265	0,0038										1,834
270	0,0037										1,908
275	0,0036										1,985
280	0,0036										2,067
285	0,0035										
290	0,0034										
295	0,0034										
300	0,0033										
305	0,0033										
310	0,0032										
314	0,0032										

Annex 1, Table 6: Beams, open sections (H and I Profile)

Interchar 404		**Fire Resistance 90 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147	1,843	1,381	1,116	1,050	0,952	0,830	0,729	0,644	0,562	0,496
70	0,0143	1,898	1,422	1,149	1,081	0,980	0,854	0,749	0,661	0,577	0,509
75	0,0133	2,036	1,527	1,232	1,159	1,050	0,914	0,801	0,705	0,613	0,539
80	0,0125		1,632	1,317	1,239	1,122	0,975	0,853	0,750	0,651	0,571
85	0,0118		1,738	1,403	1,320	1,195	1,038	0,907	0,796	0,689	0,603
90	0,0111		1,846	1,490	1,402	1,269	1,102	0,961	0,843	0,729	0,636
95	0,0105		1,955	1,579	1,485	1,344	1,167	1,017	0,891	0,769	0,670
100	0,0100		2,065	1,669	1,570	1,421	1,233	1,075	0,940	0,810	0,705
105	0,0095			1,760	1,656	1,499	1,301	1,133	0,990	0,853	0,740
110	0,0091			1,853	1,743	1,579	1,370	1,193	1,042	0,896	0,777
115	0,0087			1,947	1,832	1,660	1,441	1,254	1,095	0,941	0,815
120	0,0083			2,043	1,923	1,743	1,513	1,317	1,150	0,987	0,854
125	0,0080				2,015	1,827	1,587	1,381	1,205	1,034	0,894
130	0,0077				2,108	1,913	1,662	1,447	1,263	1,083	0,935
135	0,0074					2,001	1,739	1,515	1,321	1,133	0,977
140	0,0071					2,090	1,818	1,584	1,382	1,184	1,020
145	0,0069						1,899	1,655	1,444	1,237	1,065
150	0,0067						1,981	1,727	1,507	1,291	1,112
155	0,0065						2,066	1,802	1,573	1,347	1,159
160	0,0063							1,878	1,640	1,404	1,208
165	0,0061							1,957	1,709	1,464	1,259
170	0,0059							2,038	1,780	1,525	1,312
175	0,0057							2,121	1,854	1,588	1,366
180	0,0056								1,929	1,653	1,422
185	0,0054								2,007	1,720	1,480
190	0,0053								2,088	1,790	1,540
195	0,0051									1,862	1,602
200	0,0050									1,936	1,666
205	0,0049									2,013	1,733
210	0,0048									2,092	1,802
215	0,0047										1,874
220	0,0045										1,949
225	0,0044										2,027
230	0,0043										2,108
235	0,0043										
240	0,0042										
245	0,0041										
250	0,0040										
255	0,0039										
260	0,0038										
265	0,0038										
270	0,0037										
275	0,0036										
280	0,0036										
285	0,0035										
290	0,0034										
295	0,0034										
300	0,0033										
305	0,0033										
310	0,0032										
314	0,0032										

Annex 1, Table 7: Beams, open sections (H and I Profile)

Interchar 404		Fire Resistance 120 minutes									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147		1,929	1,574	1,487	1,356	1,194	1,058	0,944	0,836	0,748
70	0,0143		1,988	1,622	1,532	1,397	1,229	1,089	0,972	0,860	0,768
75	0,0133			1,743	1,647	1,501	1,320	1,169	1,042	0,920	0,821
80	0,0125			1,866	1,763	1,607	1,413	1,250	1,113	0,982	0,875
85	0,0118			1,991	1,881	1,715	1,507	1,333	1,186	1,045	0,930
90	0,0111			2,117	2,000	1,825	1,604	1,418	1,261	1,110	0,987
95	0,0105				2,122	1,936	1,702	1,505	1,338	1,177	1,046
100	0,0100					2,050	1,803	1,594	1,416	1,245	1,105
105	0,0095						1,905	1,684	1,497	1,315	1,167
110	0,0091						2,010	1,777	1,579	1,387	1,230
115	0,0087						2,117	1,872	1,664	1,461	1,295
120	0,0083							1,970	1,750	1,537	1,362
125	0,0080							2,069	1,839	1,615	1,430
130	0,0077								1,930	1,695	1,501
135	0,0074								2,024	1,777	1,574
140	0,0071								2,120	1,862	1,649
145	0,0069									1,949	1,726
150	0,0067									2,038	1,805
155	0,0065										1,887
160	0,0063										1,972
165	0,0061										2,059
170	0,0059										
175	0,0057										
180	0,0056										
185	0,0054										
190	0,0053										
195	0,0051										
200	0,0050										
205	0,0049										
210	0,0048										
215	0,0047										
220	0,0045										
225	0,0044										
230	0,0043										
235	0,0043										
240	0,0042										
245	0,0041										
250	0,0040										
255	0,0039										
260	0,0038										
265	0,0038										
270	0,0037										
275	0,0036										
280	0,0036										
285	0,0035										
290	0,0034										
295	0,0034										
300	0,0033										
305	0,0033										
310	0,0032										
314	0,0032										

Annex 1, Table 8: columns, open sections (H and I Profile)

Interchar 404		**Fire Resistance 15 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
70	0,0143	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
75	0,0133	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
80	0,0125	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
85	0,0118	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
90	0,0111	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
95	0,0105	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
100	0,0100	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
105	0,0095	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
110	0,0091	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
115	0,0087	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
120	0,0083	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
125	0,0080	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
130	0,0077	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
135	0,0074	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
140	0,0071	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
145	0,0069	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
150	0,0067	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
155	0,0065	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
160	0,0063	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
165	0,0061	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
170	0,0059	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
175	0,0057	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
180	0,0056	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
185	0,0054	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
190	0,0053	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
195	0,0051	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
200	0,0050	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
205	0,0049	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
210	0,0048	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
215	0,0047	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
220	0,0045	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
225	0,0044	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
230	0,0043	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
235	0,0043	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
240	0,0042	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
245	0,0041	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
250	0,0040	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
255	0,0039	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
260	0,0038	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
265	0,0038	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
270	0,0037	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
275	0,0036	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
280	0,0036	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
285	0,0035	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
290	0,0034	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
295	0,0034	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
300	0,0033	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
305	0,0033	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
310	0,0032	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
314	0,0032	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286

Annex 1, Table 9: columns, open sections (H and I Profile)

Interchar 404		**Fire Resistance 30 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147	0,438	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
70	0,0143	0,450	0,292	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
75	0,0133	0,480	0,309	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
80	0,0125	0,511	0,326	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
85	0,0118	0,542	0,343	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
90	0,0111	0,572	0,361	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
95	0,0105	0,603	0,378	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
100	0,0100	0,634	0,396	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
105	0,0095	0,666	0,414	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
110	0,0091	0,697	0,432	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
115	0,0087	0,729	0,450	0,286	0,286	0,286	0,286	0,286	0,286	0,286	0,286
120	0,0083	0,761	0,469	0,291	0,289	0,286	0,286	0,286	0,286	0,286	0,286
125	0,0080	0,793	0,488	0,301	0,295	0,286	0,286	0,286	0,286	0,286	0,286
130	0,0077	0,825	0,507	0,311	0,301	0,286	0,286	0,286	0,286	0,286	0,286
135	0,0074	0,857	0,526	0,321	0,307	0,286	0,286	0,286	0,286	0,286	0,286
140	0,0071	0,890	0,545	0,331	0,313	0,286	0,286	0,286	0,286	0,286	0,286
145	0,0069	0,923	0,565	0,341	0,319	0,286	0,286	0,286	0,286	0,286	0,286
150	0,0067	0,956	0,585	0,352	0,326	0,286	0,286	0,286	0,286	0,286	0,286
155	0,0065	0,989	0,605	0,363	0,332	0,286	0,286	0,286	0,286	0,286	0,286
160	0,0063	1,022	0,626	0,374	0,339	0,286	0,286	0,286	0,286	0,286	0,286
165	0,0061	1,056	0,646	0,385	0,345	0,286	0,286	0,286	0,286	0,286	0,286
170	0,0059	1,089	0,667	0,396	0,352	0,286	0,286	0,286	0,286	0,286	0,286
175	0,0057	1,123	0,688	0,408	0,359	0,286	0,286	0,286	0,286	0,286	0,286
180	0,0056	1,157	0,710	0,419	0,366	0,286	0,286	0,286	0,286	0,286	0,286
185	0,0054	1,192	0,731	0,431	0,373	0,286	0,286	0,286	0,286	0,286	0,286
190	0,0053	1,226	0,753	0,443	0,380	0,286	0,286	0,286	0,286	0,286	0,286
195	0,0051	1,261	0,776	0,456	0,388	0,286	0,286	0,286	0,286	0,286	0,286
200	0,0050	1,296	0,798	0,468	0,395	0,286	0,286	0,286	0,286	0,286	0,286
205	0,0049	1,331	0,821	0,481	0,403	0,286	0,286	0,286	0,286	0,286	0,286
210	0,0048	1,366	0,844	0,494	0,411	0,286	0,286	0,286	0,286	0,286	0,286
215	0,0047	1,402	0,867	0,507	0,419	0,286	0,286	0,286	0,286	0,286	0,286
220	0,0045	1,437	0,891	0,521	0,427	0,286	0,286	0,286	0,286	0,286	0,286
225	0,0044	1,473	0,915	0,534	0,435	0,286	0,286	0,286	0,286	0,286	0,286
230	0,0043	1,509	0,939	0,548	0,443	0,286	0,286	0,286	0,286	0,286	0,286
235	0,0043	1,546	0,964	0,563	0,452	0,286	0,286	0,286	0,286	0,286	0,286
240	0,0042	1,582	0,989	0,577	0,461	0,286	0,286	0,286	0,286	0,286	0,286
245	0,0041	1,619	1,014	0,592	0,470	0,286	0,286	0,286	0,286	0,286	0,286
250	0,0040	1,656	1,040	0,607	0,481	0,292	0,286	0,286	0,286	0,286	0,286
255	0,0039	1,694	1,066	0,623	0,493	0,298	0,286	0,286	0,286	0,286	0,286
260	0,0038	1,731	1,092	0,638	0,505	0,304	0,286	0,286	0,286	0,286	0,286
265	0,0038	1,769	1,119	0,655	0,517	0,310	0,286	0,286	0,286	0,286	0,286
270	0,0037	1,807	1,146	0,671	0,529	0,316	0,286	0,286	0,286	0,286	0,286
275	0,0036	1,845	1,173	0,688	0,542	0,323	0,286	0,286	0,286	0,286	0,286
280	0,0036	1,883	1,201	0,705	0,555	0,330	0,286	0,286	0,286	0,286	0,286
285	0,0035	1,922	1,229	0,722	0,568	0,337	0,286	0,286	0,286	0,286	0,286
290	0,0034	1,961	1,258	0,740	0,582	0,344	0,286	0,286	0,286	0,286	0,286
295	0,0034	2,000	1,287	0,758	0,596	0,352	0,286	0,286	0,286	0,286	0,286
300	0,0033	2,039	1,316	0,777	0,610	0,359	0,286	0,286	0,286	0,286	0,286
305	0,0033	2,079	1,346	0,796	0,624	0,367	0,286	0,286	0,286	0,286	0,286
310	0,0032	2,119	1,376	0,815	0,639	0,375	0,286	0,286	0,286	0,286	0,286
314	0,0032	2,151	1,401	0,831	0,651	0,382	0,286	0,286	0,286	0,286	0,286

Annex 1, Table 10: columns, open sections (H and I Profile)

Interchar 404		**Fire Resistance 45 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147	0,789	0,559	0,427	0,395	0,346	0,286	0,286	0,286	0,286	0,286
70	0,0143	0,812	0,575	0,438	0,404	0,354	0,291	0,286	0,286	0,286	0,286
75	0,0133	0,869	0,613	0,465	0,429	0,374	0,305	0,286	0,286	0,286	0,286
80	0,0125	0,927	0,652	0,493	0,453	0,394	0,319	0,286	0,286	0,286	0,286
85	0,0118	0,985	0,692	0,521	0,478	0,414	0,334	0,286	0,286	0,286	0,286
90	0,0111	1,043	0,732	0,549	0,503	0,435	0,349	0,286	0,286	0,286	0,286
95	0,0105	1,101	0,772	0,578	0,529	0,456	0,364	0,286	0,286	0,286	0,286
100	0,0100	1,160	0,813	0,607	0,555	0,477	0,379	0,296	0,286	0,286	0,286
105	0,0095	1,219	0,854	0,637	0,582	0,499	0,395	0,306	0,286	0,286	0,286
110	0,0091	1,279	0,896	0,667	0,609	0,522	0,411	0,317	0,286	0,286	0,286
115	0,0087	1,339	0,938	0,698	0,636	0,544	0,427	0,328	0,286	0,286	0,286
120	0,0083	1,399	0,981	0,729	0,664	0,568	0,444	0,339	0,286	0,286	0,286
125	0,0080	1,459	1,024	0,761	0,693	0,591	0,461	0,350	0,286	0,286	0,286
130	0,0077	1,520	1,068	0,793	0,722	0,615	0,478	0,361	0,286	0,286	0,286
135	0,0074	1,581	1,112	0,825	0,751	0,640	0,496	0,373	0,286	0,286	0,286
140	0,0071	1,643	1,157	0,858	0,781	0,665	0,514	0,385	0,286	0,286	0,286
145	0,0069	1,705	1,202	0,892	0,811	0,690	0,533	0,398	0,286	0,286	0,286
150	0,0067	1,767	1,248	0,926	0,842	0,716	0,552	0,411	0,288	0,286	0,286
155	0,0065	1,829	1,294	0,961	0,874	0,743	0,572	0,424	0,295	0,286	0,286
160	0,0063	1,892	1,341	0,997	0,906	0,770	0,592	0,437	0,303	0,286	0,286
165	0,0061	1,955	1,389	1,033	0,939	0,798	0,612	0,451	0,311	0,286	0,286
170	0,0059	2,019	1,437	1,069	0,972	0,826	0,633	0,465	0,318	0,286	0,286
175	0,0057	2,083	1,485	1,107	1,006	0,855	0,655	0,480	0,326	0,286	0,286
180	0,0056	2,147	1,534	1,144	1,040	0,884	0,677	0,495	0,335	0,286	0,286
185	0,0054	2,212	1,584	1,183	1,076	0,914	0,699	0,510	0,343	0,286	0,286
190	0,0053	2,277	1,635	1,222	1,111	0,945	0,723	0,526	0,352	0,286	0,286
195	0,0051	2,343	1,686	1,262	1,148	0,977	0,746	0,542	0,361	0,286	0,286
200	0,0050	2,409	1,737	1,303	1,185	1,009	0,771	0,559	0,371	0,286	0,286
205	0,0049	2,475	1,790	1,344	1,223	1,042	0,796	0,576	0,381	0,286	0,286
210	0,0048		1,843	1,386	1,262	1,075	0,821	0,594	0,391	0,286	0,286
215	0,0047		1,896	1,429	1,302	1,110	0,848	0,612	0,401	0,286	0,286
220	0,0045		1,951	1,473	1,342	1,145	0,875	0,631	0,412	0,286	0,286
225	0,0044		2,006	1,518	1,383	1,181	0,903	0,650	0,423	0,286	0,286
230	0,0043		2,062	1,563	1,425	1,218	0,931	0,670	0,434	0,286	0,286
235	0,0043		2,118	1,609	1,468	1,256	0,961	0,691	0,446	0,286	0,286
240	0,0042		2,176	1,657	1,512	1,295	0,991	0,712	0,459	0,286	0,286
245	0,0041		2,234	1,705	1,557	1,334	1,023	0,735	0,471	0,286	0,286
250	0,0040		2,292	1,754	1,602	1,375	1,055	0,758	0,485	0,286	0,286
255	0,0039		2,352	1,804	1,649	1,417	1,088	0,781	0,499	0,286	0,286
260	0,0038		2,413	1,855	1,697	1,460	1,122	0,806	0,513	0,286	0,286
265	0,0038		2,474	1,907	1,746	1,504	1,157	0,831	0,528	0,286	0,286
270	0,0037			1,960	1,795	1,549	1,194	0,858	0,543	0,286	0,286
275	0,0036			2,014	1,847	1,595	1,231	0,885	0,560	0,286	0,286
280	0,0036			2,069	1,899	1,643	1,270	0,913	0,577	0,286	0,286
285	0,0035			2,126	1,952	1,692	1,310	0,943	0,594	0,286	0,286
290	0,0034			2,184	2,007	1,742	1,352	0,973	0,613	0,286	0,286
295	0,0034			2,243	2,063	1,794	1,395	1,005	0,632	0,286	0,286
300	0,0033			2,303	2,121	1,847	1,439	1,038	0,652	0,286	0,286
305	0,0033			2,365	2,180	1,902	1,485	1,073	0,673	0,286	0,286
310	0,0032			2,428	2,240	1,958	1,533	1,109	0,695	0,286	0,286
314	0,0032			2,479	2,289	2,004	1,572	1,139	0,714	0,286	0,286

Annex 1, Table 11: columns, open sections (H and I Profile)

Interchar 404		**Fire Resistance 60 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147	1,141	0,833	0,657	0,613	0,548	0,467	0,400	0,343	0,289	0,286
70	0,0143	1,174	0,857	0,675	0,630	0,563	0,479	0,409	0,350	0,294	0,286
75	0,0133	1,258	0,918	0,721	0,672	0,599	0,508	0,432	0,368	0,307	0,286
80	0,0125	1,343	0,979	0,767	0,715	0,636	0,538	0,456	0,386	0,320	0,286
85	0,0118	1,428	1,041	0,815	0,759	0,674	0,568	0,480	0,405	0,333	0,286
90	0,0111	1,513	1,103	0,863	0,803	0,713	0,600	0,505	0,424	0,347	0,286
95	0,0105	1,599	1,166	0,912	0,848	0,752	0,631	0,530	0,444	0,361	0,294
100	0,0100	1,686	1,230	0,961	0,893	0,792	0,664	0,556	0,464	0,376	0,304
105	0,0095	1,773	1,295	1,011	0,940	0,833	0,697	0,582	0,484	0,391	0,314
110	0,0091	1,860	1,360	1,062	0,987	0,874	0,731	0,609	0,505	0,406	0,324
115	0,0087	1,948	1,426	1,114	1,035	0,916	0,765	0,636	0,527	0,421	0,335
120	0,0083	2,037	1,493	1,167	1,084	0,959	0,800	0,665	0,549	0,437	0,345
125	0,0080	2,126	1,561	1,220	1,133	1,003	0,836	0,694	0,572	0,454	0,357
130	0,0077	2,215	1,629	1,275	1,184	1,048	0,873	0,723	0,595	0,471	0,368
135	0,0074	2,305	1,698	1,330	1,235	1,093	0,911	0,754	0,619	0,488	0,380
140	0,0071	2,395	1,768	1,386	1,287	1,140	0,949	0,785	0,643	0,506	0,392
145	0,0069	2,486	1,839	1,443	1,341	1,187	0,988	0,817	0,669	0,524	0,405
150	0,0067		1,911	1,501	1,395	1,236	1,029	0,850	0,695	0,543	0,418
155	0,0065		1,983	1,560	1,450	1,285	1,070	0,883	0,721	0,563	0,431
160	0,0063		2,057	1,620	1,506	1,335	1,112	0,918	0,749	0,583	0,445
165	0,0061		2,131	1,681	1,563	1,387	1,155	0,953	0,777	0,604	0,459
170	0,0059		2,206	1,743	1,621	1,439	1,199	0,989	0,806	0,625	0,474
175	0,0057		2,282	1,806	1,680	1,493	1,245	1,027	0,836	0,647	0,489
180	0,0056		2,359	1,870	1,741	1,547	1,291	1,065	0,866	0,670	0,505
185	0,0054		2,437	1,935	1,802	1,603	1,339	1,104	0,898	0,693	0,521
190	0,0053		2,516	2,001	1,865	1,661	1,387	1,145	0,931	0,717	0,538
195	0,0051			2,069	1,929	1,719	1,437	1,187	0,964	0,742	0,555
200	0,0050			2,138	1,994	1,779	1,489	1,229	0,999	0,768	0,573
205	0,0049			2,208	2,060	1,840	1,541	1,274	1,035	0,795	0,592
210	0,0048			2,279	2,128	1,902	1,596	1,319	1,072	0,823	0,612
215	0,0047			2,352	2,197	1,966	1,651	1,366	1,110	0,852	0,632
220	0,0045			2,426	2,268	2,032	1,708	1,415	1,150	0,882	0,653
225	0,0044			2,501	2,340	2,098	1,767	1,464	1,191	0,913	0,675
230	0,0043				2,413	2,167	1,827	1,516	1,233	0,945	0,697
235	0,0043				2,488	2,237	1,889	1,569	1,277	0,978	0,721
240	0,0042					2,309	1,953	1,624	1,323	1,013	0,746
245	0,0041					2,383	2,019	1,681	1,370	1,049	0,771
250	0,0040					2,459	2,087	1,740	1,419	1,087	0,798
255	0,0039						2,157	1,800	1,470	1,126	0,826
260	0,0038						2,229	1,863	1,523	1,167	0,856
265	0,0038						2,303	1,928	1,578	1,209	0,886
270	0,0037						2,380	1,996	1,636	1,254	0,919
275	0,0036						2,459	2,066	1,696	1,301	0,953
280	0,0036							2,139	1,758	1,350	0,988
285	0,0035							2,215	1,823	1,401	1,026
290	0,0034							2,293	1,891	1,455	1,065
295	0,0034							2,375	1,962	1,511	1,107
300	0,0033							2,460	2,037	1,571	1,151
305	0,0033								2,115	1,633	1,198
310	0,0032								2,197	1,699	1,247
314	0,0032								2,265	1,755	1,289

Annex 1, Table 12: columns, open sections (H and I Profile)

Interchar 404		**Fire Resistance 75 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147	1,492	1,107	0,886	0,832	0,750	0,649	0,564	0,494	0,426	0,371
70	0,0143	1,536	1,140	0,912	0,856	0,771	0,667	0,579	0,506	0,436	0,379
75	0,0133	1,647	1,222	0,976	0,916	0,825	0,711	0,616	0,537	0,460	0,398
80	0,0125	1,759	1,305	1,042	0,977	0,879	0,757	0,654	0,568	0,485	0,418
85	0,0118	1,871	1,390	1,109	1,039	0,934	0,803	0,693	0,600	0,511	0,439
90	0,0111	1,984	1,475	1,176	1,102	0,991	0,851	0,733	0,633	0,538	0,460
95	0,0105	2,098	1,561	1,245	1,166	1,048	0,899	0,774	0,667	0,565	0,482
100	0,0100	2,212	1,648	1,315	1,231	1,106	0,948	0,815	0,702	0,593	0,504
105	0,0095	2,326	1,735	1,386	1,298	1,166	0,999	0,858	0,737	0,622	0,527
110	0,0091	2,442	1,824	1,458	1,365	1,226	1,050	0,901	0,774	0,651	0,550
115	0,0087		1,914	1,531	1,434	1,288	1,103	0,945	0,811	0,681	0,575
120	0,0083		2,005	1,605	1,503	1,351	1,157	0,991	0,849	0,712	0,600
125	0,0080		2,097	1,680	1,574	1,415	1,212	1,038	0,889	0,744	0,625
130	0,0077		2,190	1,757	1,646	1,480	1,268	1,085	0,929	0,777	0,651
135	0,0074		2,284	1,834	1,719	1,547	1,325	1,134	0,970	0,810	0,678
140	0,0071		2,380	1,913	1,794	1,615	1,384	1,184	1,013	0,845	0,706
145	0,0069		2,476	1,994	1,870	1,684	1,444	1,236	1,056	0,880	0,735
150	0,0067			2,075	1,947	1,755	1,505	1,288	1,101	0,917	0,765
155	0,0065			2,158	2,026	1,827	1,568	1,343	1,147	0,955	0,795
160	0,0063			2,243	2,106	1,901	1,632	1,398	1,194	0,994	0,827
165	0,0061			2,329	2,187	1,976	1,698	1,455	1,243	1,034	0,859
170	0,0059			2,416	2,270	2,052	1,765	1,513	1,293	1,075	0,893
175	0,0057			2,505	2,355	2,131	1,834	1,574	1,345	1,117	0,928
180	0,0056				2,441	2,211	1,905	1,635	1,398	1,161	0,963
185	0,0054					2,292	1,978	1,699	1,453	1,207	1,000
190	0,0053					2,376	2,052	1,764	1,509	1,254	1,039
195	0,0051					2,461	2,128	1,831	1,567	1,302	1,079
200	0,0050						2,207	1,900	1,627	1,352	1,120
205	0,0049						2,287	1,971	1,689	1,404	1,163
210	0,0048						2,370	2,045	1,754	1,458	1,207
215	0,0047						2,454	2,120	1,820	1,513	1,253
220	0,0045							2,198	1,888	1,571	1,301
225	0,0044							2,279	1,959	1,631	1,351
230	0,0043							2,361	2,033	1,693	1,403
235	0,0043							2,447	2,109	1,758	1,457
240	0,0042								2,187	1,825	1,513
245	0,0041								2,269	1,894	1,572
250	0,0040								2,354	1,967	1,633
255	0,0039								2,442	2,043	1,697
260	0,0038									2,122	1,764
265	0,0038									2,205	1,834
270	0,0037									2,291	1,908
275	0,0036									2,381	1,985
280	0,0036									2,476	2,067
285	0,0035										2,152
290	0,0034										2,243
295	0,0034										2,338
300	0,0033										2,438
305	0,0033										
310	0,0032										
314	0,0032										

Annex 1, Table 13: columns, open sections (H and I Profile)

Interchar 404		**Fire Resistance 90 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147	1,843	1,381	1,116	1,050	0,952	0,830	0,729	0,644	0,562	0,496
70	0,0143	1,898	1,422	1,149	1,081	0,980	0,854	0,749	0,661	0,577	0,509
75	0,0133	2,036	1,527	1,232	1,159	1,050	0,914	0,801	0,705	0,613	0,539
80	0,0125	2,175	1,632	1,317	1,239	1,122	0,975	0,853	0,750	0,651	0,571
85	0,0118	2,314	1,738	1,403	1,320	1,195	1,038	0,907	0,796	0,689	0,603
90	0,0111	2,455	1,846	1,490	1,402	1,269	1,102	0,961	0,843	0,729	0,636
95	0,0105		1,955	1,579	1,485	1,344	1,167	1,017	0,891	0,769	0,670
100	0,0100		2,065	1,669	1,570	1,421	1,233	1,075	0,940	0,810	0,705
105	0,0095		2,176	1,760	1,656	1,499	1,301	1,133	0,990	0,853	0,740
110	0,0091		2,288	1,853	1,743	1,579	1,370	1,193	1,042	0,896	0,777
115	0,0087		2,402	1,947	1,832	1,660	1,441	1,254	1,095	0,941	0,815
120	0,0083		2,517	2,043	1,923	1,743	1,513	1,317	1,150	0,987	0,854
125	0,0080			2,140	2,015	1,827	1,587	1,381	1,205	1,034	0,894
130	0,0077			2,239	2,108	1,913	1,662	1,447	1,263	1,083	0,935
135	0,0074			2,339	2,204	2,001	1,739	1,515	1,321	1,133	0,977
140	0,0071			2,441	2,300	2,090	1,818	1,584	1,382	1,184	1,020
145	0,0069				2,399	2,181	1,899	1,655	1,444	1,237	1,065
150	0,0067				2,499	2,274	1,981	1,727	1,507	1,291	1,112
155	0,0065					2,369	2,066	1,802	1,573	1,347	1,159
160	0,0063					2,466	2,152	1,878	1,640	1,404	1,208
165	0,0061						2,241	1,957	1,709	1,464	1,259
170	0,0059						2,331	2,038	1,780	1,525	1,312
175	0,0057						2,424	2,121	1,854	1,588	1,366
180	0,0056						2,519	2,206	1,929	1,653	1,422
185	0,0054							2,293	2,007	1,720	1,480
190	0,0053							2,383	2,088	1,790	1,540
195	0,0051							2,476	2,170	1,862	1,602
200	0,0050								2,256	1,936	1,666
205	0,0049								2,344	2,013	1,733
210	0,0048								2,435	2,092	1,802
215	0,0047									2,175	1,874
220	0,0045									2,260	1,949
225	0,0044									2,349	2,027
230	0,0043									2,441	2,108
235	0,0043										2,192
240	0,0042										2,280
245	0,0041										2,372
250	0,0040										2,468
255	0,0039										
260	0,0038										
265	0,0038										
270	0,0037										
275	0,0036										
280	0,0036										
285	0,0035										
290	0,0034										
295	0,0034										
300	0,0033										
305	0,0033										
310	0,0032										
314	0,0032										

Annex 1, Table 14: columns, open sections (H and I Profile)

Interchar 404		Fire Resistance 120 minutes									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
68	0,0147		1,929	1,574	1,487	1,356	1,194	1,058	0,944	0,836	0,748
70	0,0143		1,988	1,622	1,532	1,397	1,229	1,089	0,972	0,860	0,768
75	0,0133		2,135	1,743	1,647	1,501	1,320	1,169	1,042	0,920	0,821
80	0,0125		2,285	1,866	1,763	1,607	1,413	1,250	1,113	0,982	0,875
85	0,0118		2,436	1,991	1,881	1,715	1,507	1,333	1,186	1,045	0,930
90	0,0111			2,117	2,000	1,825	1,604	1,418	1,261	1,110	0,987
95	0,0105			2,246	2,122	1,936	1,702	1,505	1,338	1,177	1,046
100	0,0100			2,376	2,246	2,050	1,803	1,594	1,416	1,245	1,105
105	0,0095			2,509	2,371	2,166	1,905	1,684	1,497	1,315	1,167
110	0,0091				2,499	2,284	2,010	1,777	1,579	1,387	1,230
115	0,0087					2,404	2,117	1,872	1,664	1,461	1,295
120	0,0083						2,226	1,970	1,750	1,537	1,362
125	0,0080						2,337	2,069	1,839	1,615	1,430
130	0,0077						2,452	2,171	1,930	1,695	1,501
135	0,0074							2,276	2,024	1,777	1,574
140	0,0071							2,383	2,120	1,862	1,649
145	0,0069							2,493	2,219	1,949	1,726
150	0,0067								2,320	2,038	1,805
155	0,0065								2,424	2,131	1,887
160	0,0063									2,226	1,972
165	0,0061									2,324	2,059
170	0,0059									2,425	2,149
175	0,0057										2,243
180	0,0056										2,339
185	0,0054										2,439
190	0,0053										
195	0,0051										
200	0,0050										
205	0,0049										
210	0,0048										
215	0,0047										
220	0,0045										
225	0,0044										
230	0,0043										
235	0,0043										
240	0,0042										
245	0,0041										
250	0,0040										
255	0,0039										
260	0,0038										
265	0,0038										
270	0,0037										
275	0,0036										
280	0,0036										
285	0,0035										
290	0,0034										
295	0,0034										
300	0,0033										
305	0,0033										
310	0,0032										
314	0,0032										

Annex 1, Table 15: columns, rectangular hollow sections

Interchar 404		**Fire Resistance 15 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
58	0,0172	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
60	0,0167	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
65	0,0154	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
70	0,0143	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
75	0,0133	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
80	0,0125	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
85	0,0118	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
90	0,0111	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
95	0,0105	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
100	0,0100	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
105	0,0095	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
110	0,0091	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
115	0,0087	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
120	0,0083	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
125	0,0080	0,469	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
130	0,0077	0,512	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
135	0,0074	0,553	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
140	0,0071	0,594	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
145	0,0069	0,633	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
150	0,0067	0,671	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
155	0,0065	0,709	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
160	0,0063	0,746	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
165	0,0061	0,782	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
170	0,0059	0,817	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
175	0,0057	0,851	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
180	0,0056	0,885	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
185	0,0054	0,917	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
190	0,0053	0,950	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
195	0,0051	0,981	0,470	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
200	0,0050	1,012	0,497	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
205	0,0049	1,042	0,524	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
210	0,0048	1,071	0,550	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
215	0,0047	1,100	0,576	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
220	0,0045	1,128	0,601	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
225	0,0044	1,156	0,626	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
230	0,0043	1,183	0,651	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
235	0,0043	1,210	0,675	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
240	0,0042	1,236	0,698	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
245	0,0041	1,261	0,722	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
250	0,0040	1,287	0,744	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
255	0,0039	1,311	0,767	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
260	0,0038	1,335	0,789	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
265	0,0038	1,359	0,811	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
270	0,0037	1,382	0,832	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
275	0,0036	1,405	0,854	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
280	0,0036	1,427	0,874	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
285	0,0035	1,449	0,895	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
290	0,0034	1,471	0,915	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
295	0,0034	1,492	0,935	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
300	0,0033	1,513	0,955	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
305	0,0033	1,534	0,974	0,456	0,455	0,455	0,455	0,455	0,455	0,455	0,455
310	0,0032	1,554	0,993	0,473	0,466	0,455	0,455	0,455	0,455	0,455	0,455
315	0,0032	1,574	1,012	0,490	0,476	0,455	0,455	0,455	0,455	0,455	0,455
318	0,0031	1,585	1,023	0,500	0,482	0,455	0,455	0,455	0,455	0,455	0,455

Annex 1, Table 16: columns, rectangular hollow sections

Interchar 404		**Fire Resistance 30 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
58	0,0172	0,688	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
60	0,0167	0,738	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
65	0,0154	0,862	0,456	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
70	0,0143	0,982	0,560	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
75	0,0133	1,099	0,662	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
80	0,0125	1,212	0,762	0,455	0,455	0,455	0,455	0,455	0,455	0,455	0,455
85	0,0118	1,323	0,859	0,504	0,484	0,455	0,455	0,455	0,455	0,455	0,455
90	0,0111	1,430	0,955	0,589	0,536	0,455	0,455	0,455	0,455	0,455	0,455
95	0,0105	1,534	1,048	0,673	0,586	0,455	0,455	0,455	0,455	0,455	0,455
100	0,0100	1,635	1,139	0,756	0,645	0,478	0,455	0,455	0,455	0,455	0,455
105	0,0095	1,734	1,229	0,838	0,724	0,553	0,455	0,455	0,455	0,455	0,455
110	0,0091	1,830	1,316	0,918	0,802	0,628	0,455	0,455	0,455	0,455	0,455
115	0,0087	1,923	1,402	0,996	0,878	0,702	0,455	0,455	0,455	0,455	0,455
120	0,0083	2,015	1,486	1,074	0,954	0,774	0,455	0,455	0,455	0,455	0,455
125	0,0080	2,103	1,569	1,150	1,029	0,847	0,496	0,455	0,455	0,455	0,455
130	0,0077	2,190	1,649	1,226	1,103	0,918	0,560	0,455	0,455	0,455	0,455
135	0,0074	2,275	1,728	1,300	1,175	0,988	0,624	0,455	0,455	0,455	0,455
140	0,0071	2,357	1,806	1,373	1,247	1,058	0,687	0,455	0,455	0,455	0,455
145	0,0069	2,437	1,882	1,445	1,318	1,127	0,750	0,455	0,455	0,455	0,455
150	0,0067	2,516	1,957	1,516	1,388	1,196	0,812	0,463	0,455	0,455	0,455
155	0,0065	2,593	2,030	1,586	1,457	1,263	0,874	0,519	0,455	0,455	0,455
160	0,0063	2,668	2,102	1,654	1,525	1,330	0,936	0,574	0,455	0,455	0,455
165	0,0061	2,741	2,172	1,722	1,592	1,396	0,997	0,629	0,455	0,455	0,455
170	0,0059	2,812	2,241	1,789	1,658	1,462	1,057	0,685	0,455	0,455	0,455
175	0,0057	2,882	2,309	1,855	1,724	1,527	1,118	0,740	0,455	0,455	0,455
180	0,0056	2,951	2,376	1,920	1,788	1,591	1,178	0,794	0,455	0,455	0,455
185	0,0054	3,018	2,442	1,984	1,852	1,655	1,237	0,849	0,455	0,455	0,455
190	0,0053	3,083	2,506	2,047	1,915	1,717	1,296	0,904	0,472	0,455	0,455
195	0,0051	3,147	2,569	2,109	1,978	1,780	1,355	0,958	0,520	0,455	0,455
200	0,0050	3,210	2,631	2,171	2,039	1,841	1,414	1,012	0,567	0,455	0,455
205	0,0049	3,271	2,692	2,231	2,100	1,902	1,472	1,066	0,615	0,455	0,455
210	0,0048	3,331	2,752	2,291	2,160	1,963	1,529	1,120	0,662	0,455	0,455
215	0,0047	3,390	2,811	2,350	2,219	2,023	1,587	1,174	0,710	0,455	0,455
220	0,0045	3,448	2,869	2,408	2,278	2,082	1,644	1,228	0,758	0,455	0,455
225	0,0044	3,504	2,926	2,466	2,336	2,140	1,700	1,281	0,805	0,455	0,455
230	0,0043	3,559	2,982	2,522	2,393	2,199	1,757	1,335	0,853	0,455	0,455
235	0,0043	3,614	3,037	2,578	2,449	2,256	1,813	1,388	0,901	0,455	0,455
240	0,0042	3,667	3,091	2,633	2,505	2,313	1,868	1,441	0,949	0,455	0,455
245	0,0041	3,719	3,145	2,688	2,561	2,369	1,923	1,494	0,997	0,455	0,455
250	0,0040	3,770	3,197	2,742	2,615	2,425	1,978	1,547	1,045	0,455	0,455
255	0,0039	3,820	3,249	2,795	2,669	2,481	2,033	1,600	1,093	0,484	0,455
260	0,0038	3,870	3,299	2,847	2,722	2,536	2,087	1,652	1,141	0,523	0,455
265	0,0038	3,918	3,349	2,899	2,775	2,590	2,141	1,705	1,189	0,563	0,455
270	0,0037	3,965	3,399	2,950	2,827	2,644	2,194	1,757	1,237	0,603	0,455
275	0,0036	4,012	3,447	3,000	2,879	2,697	2,248	1,809	1,285	0,643	0,455
280	0,0036	4,057	3,495	3,050	2,930	2,750	2,301	1,861	1,333	0,683	0,455
285	0,0035	4,102	3,542	3,099	2,980	2,802	2,353	1,913	1,382	0,724	0,455
290	0,0034	4,146	3,588	3,148	3,030	2,854	2,406	1,965	1,430	0,764	0,455
295	0,0034	4,190	3,634	3,196	3,080	2,905	2,458	2,016	1,478	0,805	0,455
300	0,0033	4,232	3,679	3,243	3,128	2,956	2,509	2,068	1,527	0,846	0,455
305	0,0033	4,274	3,723	3,290	3,177	3,006	2,561	2,119	1,575	0,888	0,455
310	0,0032	4,315	3,766	3,337	3,225	3,056	2,612	2,170	1,624	0,929	0,455
315	0,0032	4,356	3,809	3,382	3,272	3,106	2,662	2,221	1,672	0,971	0,455
318	0,0031	4,379	3,835	3,410	3,300	3,135	2,693	2,252	1,701	0,996	0,455

Annex 1, Table 17: columns, rectangular hollow sections

Interchar 404		**Fire Resistance 45 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
58	0,0172	1,601	1,129	0,784	0,690	0,549	0,455	0,455	0,455	0,455	0,455
60	0,0167	1,677	1,197	0,846	0,750	0,606	0,455	0,455	0,455	0,455	0,455
65	0,0154	1,864	1,364	0,997	0,897	0,747	0,473	0,455	0,455	0,455	0,455
70	0,0143	2,045	1,527	1,146	1,042	0,887	0,599	0,455	0,455	0,455	0,455
75	0,0133	2,222	1,686	1,292	1,185	1,025	0,725	0,468	0,455	0,455	0,455
80	0,0125	2,393	1,842	1,436	1,326	1,161	0,849	0,582	0,455	0,455	0,455
85	0,0118	2,559	1,994	1,578	1,465	1,296	0,973	0,696	0,455	0,455	0,455
90	0,0111	2,721	2,144	1,717	1,602	1,430	1,096	0,809	0,515	0,455	0,455
95	0,0105	2,878	2,290	1,854	1,737	1,562	1,218	0,922	0,617	0,455	0,455
100	0,0100	3,031	2,432	1,989	1,870	1,692	1,340	1,034	0,719	0,455	0,455
105	0,0095	3,180	2,572	2,122	2,002	1,821	1,460	1,147	0,820	0,469	0,455
110	0,0091	3,325	2,709	2,253	2,131	1,949	1,580	1,259	0,922	0,558	0,455
115	0,0087	3,466	2,843	2,381	2,259	2,075	1,699	1,370	1,024	0,647	0,455
120	0,0083	3,604	2,975	2,508	2,385	2,200	1,817	1,482	1,126	0,737	0,455
125	0,0080	3,738	3,104	2,633	2,509	2,323	1,934	1,593	1,228	0,827	0,455
130	0,0077	3,868	3,230	2,756	2,631	2,445	2,051	1,703	1,331	0,918	0,455
135	0,0074	3,996	3,353	2,877	2,752	2,566	2,167	1,814	1,433	1,009	0,500
140	0,0071	4,120	3,475	2,996	2,872	2,685	2,282	1,924	1,536	1,100	0,575
145	0,0069	4,242	3,594	3,113	2,989	2,804	2,396	2,034	1,638	1,192	0,651
150	0,0067	4,361	3,710	3,229	3,106	2,921	2,510	2,143	1,741	1,284	0,727
155	0,0065	4,476	3,825	3,343	3,220	3,036	2,622	2,252	1,844	1,377	0,804
160	0,0063	4,589	3,937	3,455	3,333	3,151	2,734	2,361	1,946	1,470	0,882
165	0,0061	4,700	4,047	3,566	3,445	3,264	2,846	2,470	2,049	1,563	0,960
170	0,0059	4,808	4,155	3,675	3,555	3,376	2,956	2,578	2,153	1,657	1,039
175	0,0057	4,913	4,262	3,782	3,664	3,487	3,066	2,687	2,256	1,752	1,118
180	0,0056	5,017	4,366	3,888	3,772	3,597	3,175	2,794	2,359	1,846	1,198
185	0,0054	5,118	4,468	3,993	3,878	3,706	3,284	2,902	2,462	1,941	1,279
190	0,0053		4,569	4,096	3,983	3,814	3,392	3,009	2,566	2,037	1,360
195	0,0051		4,668	4,198	4,087	3,920	3,499	3,116	2,669	2,133	1,442
200	0,0050		4,765	4,298	4,189	4,026	3,605	3,223	2,773	2,230	1,525
205	0,0049		4,860	4,397	4,290	4,130	3,711	3,329	2,877	2,327	1,608
210	0,0048		4,954	4,494	4,390	4,234	3,816	3,435	2,981	2,424	1,692
215	0,0047		5,046	4,591	4,489	4,336	3,920	3,541	3,085	2,522	1,777
220	0,0045		5,137	4,685	4,586	4,438	4,024	3,646	3,189	2,620	1,862
225	0,0044			4,779	4,683	4,538	4,127	3,751	3,293	2,719	1,948
230	0,0043			4,872	4,778	4,637	4,230	3,856	3,397	2,818	2,035
235	0,0043			4,963	4,872	4,736	4,332	3,961	3,502	2,918	2,123
240	0,0042			5,053	4,965	4,833	4,433	4,065	3,606	3,018	2,211
245	0,0041			5,142	5,057	4,930	4,534	4,170	3,711	3,119	2,300
250	0,0040				5,148	5,026	4,634	4,273	3,816	3,220	2,390
255	0,0039					5,120	4,733	4,377	3,920	3,321	2,481
260	0,0038						4,832	4,480	4,025	3,423	2,572
265	0,0038						4,930	4,583	4,130	3,526	2,665
270	0,0037						5,027	4,686	4,235	3,629	2,758
275	0,0036						5,124	4,789	4,341	3,732	2,851
280	0,0036							4,891	4,446	3,836	2,946
285	0,0035							4,993	4,551	3,941	3,042
290	0,0034							5,094	4,657	4,046	3,138
295	0,0034								4,762	4,152	3,235
300	0,0033								4,868	4,258	3,333
305	0,0033								4,974	4,364	3,432
310	0,0032								5,080	4,471	3,532
315	0,0032									4,579	3,633
318	0,0031									4,644	3,694

Annex 1, Table 18: columns, rectangular hollow sections

Interchar 404		**Fire Resistance 60 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
58	0,0172	2,514	1,952	1,551	1,446	1,288	0,993	0,745	0,498	0,455	0,455
60	0,0167	2,616	2,045	1,636	1,529	1,368	1,067	0,814	0,561	0,455	0,455
65	0,0154	2,866	2,272	1,846	1,735	1,568	1,252	0,985	0,716	0,455	0,455
70	0,0143	3,108	2,493	2,052	1,938	1,766	1,435	1,156	0,872	0,573	0,455
75	0,0133	3,344	2,710	2,256	2,138	1,962	1,617	1,326	1,028	0,712	0,455
80	0,0125	3,573	2,922	2,455	2,335	2,155	1,798	1,496	1,185	0,852	0,468
85	0,0118	3,795	3,130	2,652	2,529	2,346	1,978	1,665	1,341	0,992	0,587
90	0,0111	4,011	3,332	2,845	2,721	2,535	2,156	1,834	1,497	1,133	0,707
95	0,0105	4,222	3,531	3,035	2,910	2,721	2,334	2,002	1,654	1,275	0,828
100	0,0100	4,426	3,725	3,222	3,096	2,906	2,510	2,170	1,811	1,417	0,951
105	0,0095	4,626	3,916	3,407	3,279	3,089	2,685	2,337	1,968	1,560	1,074
110	0,0091	4,819	4,102	3,588	3,460	3,269	2,858	2,504	2,125	1,703	1,197
115	0,0087	5,008	4,284	3,766	3,639	3,448	3,031	2,671	2,282	1,848	1,322
120	0,0083		4,463	3,942	3,815	3,625	3,202	2,837	2,440	1,992	1,448
125	0,0080		4,638	4,115	3,989	3,799	3,373	3,002	2,597	2,138	1,575
130	0,0077		4,810	4,286	4,160	3,972	3,542	3,167	2,755	2,284	1,703
135	0,0074		4,978	4,453	4,329	4,143	3,710	3,332	2,913	2,430	1,832
140	0,0071		5,143	4,619	4,496	4,313	3,877	3,496	3,071	2,578	1,962
145	0,0069			4,781	4,661	4,480	4,042	3,660	3,229	2,726	2,092
150	0,0067			4,942	4,823	4,646	4,207	3,823	3,387	2,875	2,224
155	0,0065			5,100	4,984	4,809	4,371	3,986	3,546	3,024	2,357
160	0,0063				5,142	4,972	4,533	4,149	3,704	3,174	2,491
165	0,0061					5,132	4,695	4,311	3,863	3,325	2,626
170	0,0059						4,855	4,472	4,022	3,476	2,762
175	0,0057						5,015	4,634	4,181	3,628	2,900
180	0,0056						5,173	4,794	4,340	3,781	3,038
185	0,0054							4,955	4,500	3,934	3,177
190	0,0053							5,114	4,659	4,088	3,318
195	0,0051								4,819	4,243	3,460
200	0,0050								4,979	4,399	3,603
205	0,0049								5,139	4,555	3,747
210	0,0048									4,712	3,892
215	0,0047									4,870	4,038
220	0,0045									5,029	4,186
225	0,0044										4,335
230	0,0043										4,485
235	0,0043										4,637
240	0,0042										4,790
245	0,0041										4,944
250	0,0040										5,099
255	0,0039										
260	0,0038										
265	0,0038										
270	0,0037										
275	0,0036										
280	0,0036										
285	0,0035										
290	0,0034										
295	0,0034										
300	0,0033										
305	0,0033										
310	0,0032										
315	0,0032										
318	0,0031										

Annex 1, Table 19: columns, rectangular hollow sections

Interchar 404		**Fire Resistance 75 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
58	0,0172	3,427	2,776	2,317	2,201	2,027	1,691	1,412	1,129	0,832	0,493
60	0,0167	3,555	2,892	2,426	2,308	2,131	1,788	1,503	1,214	0,908	0,558
65	0,0154	3,868	3,179	2,695	2,573	2,390	2,030	1,730	1,424	1,098	0,723
70	0,0143	4,171	3,460	2,959	2,834	2,645	2,271	1,957	1,635	1,290	0,889
75	0,0133	4,466	3,734	3,219	3,091	2,898	2,510	2,183	1,846	1,482	1,056
80	0,0125	4,753	4,002	3,474	3,344	3,148	2,747	2,409	2,057	1,674	1,224
85	0,0118	5,032	4,265	3,726	3,594	3,395	2,983	2,634	2,268	1,868	1,394
90	0,0111		4,521	3,973	3,840	3,640	3,217	2,858	2,479	2,063	1,565
95	0,0105		4,773	4,216	4,082	3,881	3,449	3,082	2,691	2,258	1,737
100	0,0100		5,018	4,456	4,321	4,120	3,680	3,305	2,903	2,454	1,911
105	0,0095			4,691	4,557	4,357	3,909	3,528	3,115	2,651	2,086
110	0,0091			4,923	4,790	4,590	4,137	3,750	3,328	2,849	2,262
115	0,0087			5,151	5,019	4,821	4,363	3,971	3,540	3,048	2,439
120	0,0083					5,050	4,587	4,192	3,753	3,248	2,618
125	0,0080						4,811	4,412	3,966	3,448	2,798
130	0,0077						5,032	4,631	4,179	3,650	2,980
135	0,0074							4,850	4,392	3,852	3,163
140	0,0071							5,069	4,606	4,056	3,348
145	0,0069								4,820	4,260	3,534
150	0,0067								5,034	4,465	3,721
155	0,0065									4,671	3,910
160	0,0063									4,878	4,101
165	0,0061									5,086	4,293
170	0,0059										4,486
175	0,0057										4,681
180	0,0056										4,878
185	0,0054										5,076
190	0,0053										
195	0,0051										
200	0,0050										
205	0,0049										
210	0,0048										
215	0,0047										
220	0,0045										
225	0,0044										
230	0,0043										
235	0,0043										
240	0,0042										
245	0,0041										
250	0,0040										
255	0,0039										
260	0,0038										
265	0,0038										
270	0,0037										
275	0,0036										
280	0,0036										
285	0,0035										
290	0,0034										
295	0,0034										
300	0,0033										
305	0,0033										
310	0,0032										
315	0,0032										
318	0,0031										

Annex 1, Table 20: columns, rectangular hollow sections

Interchar 404		**Fire Resistance 90 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
58	0,0172	4,340	3,599	3,084	2,957	2,765	2,389	2,078	1,760	1,423	1,032
60	0,0167	4,493	3,740	3,216	3,087	2,893	2,510	2,192	1,866	1,519	1,117
65	0,0154	4,869	4,087	3,544	3,411	3,211	2,809	2,475	2,132	1,762	1,331
70	0,0143		4,426	3,866	3,729	3,525	3,107	2,759	2,397	2,006	1,546
75	0,0133		4,758	4,182	4,043	3,835	3,402	3,041	2,663	2,251	1,763
80	0,0125		5,083	4,493	4,353	4,142	3,696	3,322	2,929	2,497	1,981
85	0,0118			4,799	4,658	4,445	3,987	3,603	3,195	2,744	2,201
90	0,0111			5,101	4,958	4,745	4,277	3,883	3,462	2,992	2,423
95	0,0105					5,041	4,564	4,162	3,728	3,241	2,646
100	0,0100						4,850	4,441	3,995	3,491	2,871
105	0,0095						5,133	4,718	4,263	3,742	3,098
110	0,0091							4,995	4,530	3,995	3,326
115	0,0087								4,798	4,248	3,556
120	0,0083								5,066	4,503	3,788
125	0,0080									4,759	4,022
130	0,0077									5,016	4,257
135	0,0074										4,495
140	0,0071										4,734
145	0,0069										4,975
150	0,0067										
155	0,0065										
160	0,0063										
165	0,0061										
170	0,0059										
175	0,0057										
180	0,0056										
185	0,0054										
190	0,0053										
195	0,0051										
200	0,0050										
205	0,0049										
210	0,0048										
215	0,0047										
220	0,0045										
225	0,0044										
230	0,0043										
235	0,0043										
240	0,0042										
245	0,0041										
250	0,0040										
255	0,0039										
260	0,0038										
265	0,0038										
270	0,0037										
275	0,0036										
280	0,0036										
285	0,0035										
290	0,0034										
295	0,0034										
300	0,0033										
305	0,0033										
310	0,0032										
315	0,0032										
318	0,0031										

Annex 1, Table 21: columns, rectangular hollow sections

Interchar 404		**Fire Resistance 120 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
58	0,0172			4,617	4,467	4,243	3,786	3,410	3,022	2,604	2,112
60	0,0167			4,797	4,646	4,418	3,953	3,569	3,172	2,742	2,236
65	0,0154				5,086	4,853	4,367	3,966	3,547	3,090	2,547
70	0,0143						4,779	4,361	3,922	3,439	2,860
75	0,0133							4,756	4,297	3,789	3,176
80	0,0125							5,149	4,673	4,141	3,494
85	0,0118								5,049	4,495	3,815
90	0,0111									4,850	4,138
95	0,0105										4,463
100	0,0100										4,791
105	0,0095										5,122
110	0,0091										
115	0,0087										
120	0,0083										
125	0,0080										
130	0,0077										
135	0,0074										
140	0,0071										
145	0,0069										
150	0,0067										
155	0,0065										
160	0,0063										
165	0,0061										
170	0,0059										
175	0,0057										
180	0,0056										
185	0,0054										
190	0,0053										
195	0,0051										
200	0,0050										
205	0,0049										
210	0,0048										
215	0,0047										
220	0,0045										
225	0,0044										
230	0,0043										
235	0,0043										
240	0,0042										
245	0,0041										
250	0,0040										
255	0,0039										
260	0,0038										
265	0,0038										
270	0,0037										
275	0,0036										
280	0,0036										
285	0,0035										
290	0,0034										
295	0,0034										
300	0,0033										
305	0,0033										
310	0,0032										
315	0,0032										
318	0,0031										

Annex 1, Table 22: columns, circular hollow sections

Interchar 404		**Fire Resistance 15 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
48	0,0208	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
50	0,0200	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
55	0,0182	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
60	0,0167	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
65	0,0154	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
70	0,0143	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
75	0,0133	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
80	0,0125	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
85	0,0118	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
90	0,0111	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
95	0,0105	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
100	0,0100	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
105	0,0095	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
110	0,0091	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
115	0,0087	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
120	0,0083	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
125	0,0080	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
130	0,0077	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
135	0,0074	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
140	0,0071	0,568	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
145	0,0069	0,596	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
150	0,0067	0,624	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
155	0,0065	0,651	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
160	0,0063	0,677	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
165	0,0061	0,703	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
170	0,0059	0,728	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
175	0,0057	0,752	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
180	0,0056	0,775	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
185	0,0054	0,798	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
190	0,0053	0,821	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
195	0,0051	0,843	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
200	0,0050	0,864	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
205	0,0049	0,885	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
210	0,0048	0,906	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
215	0,0047	0,925	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
220	0,0045	0,945	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
225	0,0044	0,964	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
230	0,0043	0,982	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
235	0,0043	1,001	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
240	0,0042	1,018	0,557	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
245	0,0041	1,036	0,572	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
250	0,0040	1,053	0,586	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
255	0,0039	1,069	0,600	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
260	0,0038	1,086	0,614	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
265	0,0038	1,102	0,627	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
270	0,0037	1,117	0,640	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
275	0,0036	1,133	0,653	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
280	0,0036	1,148	0,666	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
282	0,0035	1,154	0,671	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556

Annex 1, Table 23: columns, circular hollow sections

Interchar 404		Fire Resistance 30 minutes									
		Design Temperature θ_D in °C C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
48	0,0208	0,600	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
50	0,0200	0,647	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
55	0,0182	0,760	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
60	0,0167	0,868	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
65	0,0154	0,973	0,639	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
70	0,0143	1,074	0,725	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
75	0,0133	1,172	0,808	0,556	0,556	0,556	0,556	0,556	0,556	0,556	0,556
80	0,0125	1,266	0,889	0,597	0,581	0,556	0,556	0,556	0,556	0,556	0,556
85	0,0118	1,357	0,967	0,665	0,621	0,556	0,556	0,556	0,556	0,556	0,556
90	0,0111	1,445	1,044	0,731	0,661	0,556	0,556	0,556	0,556	0,556	0,556
95	0,0105	1,531	1,118	0,796	0,700	0,556	0,556	0,556	0,556	0,556	0,556
100	0,0100	1,613	1,191	0,859	0,743	0,570	0,556	0,556	0,556	0,556	0,556
105	0,0095	1,693	1,261	0,921	0,802	0,623	0,556	0,556	0,556	0,556	0,556
110	0,0091	1,771	1,330	0,981	0,859	0,675	0,556	0,556	0,556	0,556	0,556
115	0,0087	1,846	1,397	1,040	0,915	0,726	0,556	0,556	0,556	0,556	0,556
120	0,0083	1,919	1,463	1,098	0,970	0,777	0,556	0,556	0,556	0,556	0,556
125	0,0080	1,989	1,526	1,155	1,024	0,826	0,556	0,556	0,556	0,556	0,556
130	0,0077	2,058	1,589	1,211	1,076	0,874	0,564	0,556	0,556	0,556	0,556
135	0,0074	2,125	1,649	1,266	1,128	0,922	0,604	0,556	0,556	0,556	0,556
140	0,0071	2,190	1,709	1,319	1,179	0,969	0,644	0,556	0,556	0,556	0,556
145	0,0069	2,253	1,766	1,372	1,229	1,015	0,683	0,556	0,556	0,556	0,556
150	0,0067	2,314	1,823	1,423	1,278	1,061	0,722	0,556	0,556	0,556	0,556
155	0,0065	2,374	1,878	1,473	1,326	1,106	0,760	0,556	0,556	0,556	0,556
160	0,0063	2,432	1,932	1,523	1,374	1,150	0,798	0,556	0,556	0,556	0,556
165	0,0061	2,488	1,985	1,571	1,420	1,193	0,835	0,556	0,556	0,556	0,556
170	0,0059	2,543	2,037	1,619	1,466	1,236	0,872	0,571	0,556	0,556	0,556
175	0,0057	2,597	2,087	1,666	1,510	1,277	0,908	0,602	0,556	0,556	0,556
180	0,0056	2,649	2,136	1,711	1,554	1,319	0,944	0,633	0,556	0,556	0,556
185	0,0054	2,700	2,185	1,756	1,598	1,359	0,979	0,663	0,556	0,556	0,556
190	0,0053	2,750	2,232	1,801	1,640	1,400	1,014	0,693	0,556	0,556	0,556
195	0,0051	2,798	2,278	1,844	1,682	1,439	1,048	0,723	0,556	0,556	0,556
200	0,0050	2,846	2,323	1,887	1,723	1,478	1,083	0,752	0,556	0,556	0,556
205	0,0049	2,892	2,368	1,929	1,764	1,516	1,116	0,781	0,556	0,556	0,556
210	0,0048	2,937	2,411	1,970	1,803	1,554	1,149	0,810	0,556	0,556	0,556
215	0,0047	2,981	2,454	2,010	1,842	1,591	1,182	0,839	0,556	0,556	0,556
220	0,0045	3,024	2,496	2,050	1,881	1,628	1,215	0,867	0,556	0,556	0,556
225	0,0044	3,066	2,537	2,089	1,919	1,664	1,247	0,895	0,556	0,556	0,556
230	0,0043	3,107	2,577	2,127	1,956	1,699	1,278	0,922	0,556	0,556	0,556
235	0,0043	3,147	2,616	2,165	1,993	1,734	1,309	0,950	0,556	0,556	0,556
240	0,0042	3,186	2,655	2,202	2,029	1,769	1,340	0,977	0,565	0,556	0,556
245	0,0041	3,225	2,692	2,239	2,064	1,803	1,371	1,004	0,587	0,556	0,556
250	0,0040	3,262	2,729	2,275	2,099	1,837	1,401	1,031	0,608	0,556	0,556
255	0,0039	3,299	2,766	2,310	2,134	1,870	1,431	1,057	0,630	0,556	0,556
260	0,0038	3,335	2,802	2,345	2,168	1,902	1,460	1,083	0,651	0,556	0,556
265	0,0038	3,371	2,837	2,379	2,201	1,935	1,489	1,109	0,672	0,556	0,556
270	0,0037	3,405	2,871	2,412	2,234	1,966	1,518	1,135	0,693	0,556	0,556
275	0,0036	3,439	2,905	2,446	2,266	1,998	1,547	1,160	0,713	0,556	0,556
280	0,0036	3,472	2,938	2,478	2,298	2,029	1,575	1,185	0,734	0,556	0,556
282	0,0035	3,485	2,951	2,491	2,311	2,041	1,586	1,195	0,742	0,556	0,556

Annex 1, Table 24: columns, circular hollow sections

Interchar 404		**Fire Resistance 45 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
48	0,0208	1,352	0,994	0,729	0,660	0,556	0,556	0,556	0,556	0,556	0,556
50	0,0200	1,424	1,055	0,783	0,693	0,558	0,556	0,556	0,556	0,556	0,556
55	0,0182	1,598	1,206	0,915	0,818	0,672	0,556	0,556	0,556	0,556	0,556
60	0,0167	1,767	1,353	1,044	0,940	0,785	0,558	0,556	0,556	0,556	0,556
65	0,0154	1,929	1,495	1,170	1,060	0,896	0,654	0,556	0,556	0,556	0,556
70	0,0143	2,085	1,634	1,293	1,177	1,004	0,749	0,556	0,556	0,556	0,556
75	0,0133	2,236	1,768	1,413	1,292	1,111	0,842	0,634	0,556	0,556	0,556
80	0,0125	2,382	1,899	1,530	1,404	1,215	0,934	0,715	0,556	0,556	0,556
85	0,0118	2,523	2,026	1,645	1,514	1,318	1,024	0,796	0,556	0,556	0,556
90	0,0111	2,660	2,149	1,757	1,622	1,419	1,114	0,876	0,623	0,556	0,556
95	0,0105	2,792	2,270	1,867	1,727	1,518	1,202	0,954	0,691	0,556	0,556
100	0,0100	2,920	2,387	1,975	1,831	1,615	1,288	1,032	0,759	0,556	0,556
105	0,0095	3,043	2,501	2,080	1,932	1,711	1,374	1,109	0,825	0,556	0,556
110	0,0091	3,163	2,612	2,183	2,031	1,805	1,458	1,185	0,891	0,592	0,556
115	0,0087	3,280	2,721	2,283	2,129	1,897	1,541	1,261	0,957	0,647	0,556
120	0,0083	3,392	2,826	2,382	2,224	1,988	1,623	1,335	1,022	0,701	0,556
125	0,0080	3,502	2,929	2,478	2,318	2,077	1,704	1,409	1,087	0,755	0,556
130	0,0077	3,608	3,030	2,573	2,410	2,165	1,784	1,482	1,151	0,809	0,556
135	0,0074	3,711	3,128	2,666	2,500	2,251	1,862	1,554	1,214	0,862	0,556
140	0,0071	3,812	3,224	2,757	2,588	2,336	1,940	1,625	1,277	0,915	0,556
145	0,0069	3,909	3,317	2,846	2,675	2,419	2,017	1,696	1,339	0,968	0,572
150	0,0067	4,004	3,409	2,933	2,760	2,501	2,092	1,766	1,401	1,020	0,614
155	0,0065	4,097	3,498	3,019	2,844	2,582	2,167	1,835	1,463	1,073	0,655
160	0,0063	4,186	3,585	3,103	2,926	2,661	2,240	1,903	1,524	1,124	0,695
165	0,0061	4,274	3,670	3,185	3,007	2,739	2,313	1,971	1,584	1,176	0,736
170	0,0059	4,359	3,754	3,266	3,086	2,816	2,385	2,038	1,644	1,227	0,777
175	0,0057	4,442	3,835	3,345	3,164	2,892	2,455	2,104	1,703	1,278	0,817
180	0,0056	4,523	3,915	3,423	3,241	2,967	2,525	2,170	1,762	1,329	0,857
185	0,0054	4,602	3,993	3,500	3,316	3,040	2,594	2,235	1,821	1,379	0,897
190	0,0053	4,679	4,069	3,575	3,390	3,112	2,662	2,299	1,879	1,429	0,937
195	0,0051	4,754	4,144	3,648	3,463	3,184	2,730	2,363	1,937	1,479	0,977
200	0,0050	4,827	4,217	3,721	3,534	3,254	2,796	2,426	1,994	1,528	1,017
205	0,0049	4,898	4,289	3,792	3,604	3,323	2,862	2,488	2,050	1,577	1,056
210	0,0048	4,968	4,359	3,862	3,674	3,391	2,926	2,550	2,107	1,626	1,096
215	0,0047		4,428	3,930	3,742	3,458	2,990	2,611	2,163	1,675	1,135
220	0,0045		4,495	3,998	3,808	3,524	3,054	2,671	2,218	1,723	1,174
225	0,0044		4,561	4,064	3,874	3,589	3,116	2,731	2,273	1,771	1,213
230	0,0043		4,626	4,130	3,939	3,654	3,178	2,791	2,327	1,819	1,252
235	0,0043		4,690	4,194	4,003	3,717	3,239	2,849	2,382	1,866	1,290
240	0,0042		4,752	4,257	4,066	3,779	3,299	2,908	2,435	1,914	1,329
245	0,0041		4,813	4,319	4,128	3,841	3,359	2,965	2,489	1,961	1,367
250	0,0040		4,873	4,380	4,188	3,902	3,417	3,022	2,542	2,007	1,405
255	0,0039		4,932	4,440	4,248	3,961	3,476	3,079	2,594	2,054	1,443
260	0,0038		4,990	4,499	4,307	4,020	3,533	3,135	2,646	2,100	1,481
265	0,0038			4,557	4,366	4,079	3,590	3,190	2,698	2,146	1,519
270	0,0037			4,614	4,423	4,136	3,646	3,245	2,749	2,192	1,556
275	0,0036			4,670	4,479	4,193	3,702	3,300	2,800	2,237	1,594
280	0,0036			4,726	4,535	4,249	3,757	3,354	2,851	2,282	1,631
282	0,0035			4,748	4,557	4,271	3,778	3,375	2,871	2,300	1,646

Annex 1, Table 25: columns, circular hollow sections

Interchar 404		**Fire Resistance 60 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
48	0,0208	2,103	1,659	1,333	1,225	1,063	0,829	0,651	0,556	0,556	0,556
50	0,0200	2,201	1,744	1,409	1,298	1,131	0,888	0,705	0,556	0,556	0,556
55	0,0182	2,437	1,953	1,595	1,476	1,297	1,036	0,837	0,630	0,556	0,556
60	0,0167	2,665	2,155	1,777	1,650	1,460	1,181	0,968	0,745	0,556	0,556
65	0,0154	2,884	2,352	1,955	1,821	1,620	1,323	1,097	0,859	0,622	0,556
70	0,0143	3,096	2,543	2,128	1,988	1,777	1,464	1,225	0,972	0,719	0,556
75	0,0133	3,301	2,729	2,298	2,151	1,931	1,603	1,351	1,084	0,816	0,556
80	0,0125	3,498	2,909	2,463	2,311	2,082	1,740	1,476	1,195	0,912	0,617
85	0,0118	3,689	3,084	2,625	2,467	2,230	1,874	1,600	1,306	1,007	0,697
90	0,0111	3,874	3,255	2,784	2,621	2,376	2,007	1,722	1,415	1,102	0,776
95	0,0105	4,053	3,421	2,939	2,771	2,519	2,138	1,843	1,523	1,197	0,855
100	0,0100	4,226	3,583	3,090	2,918	2,660	2,267	1,962	1,630	1,290	0,933
105	0,0095	4,393	3,741	3,239	3,063	2,798	2,394	2,080	1,737	1,383	1,011
110	0,0091	4,556	3,894	3,384	3,204	2,934	2,519	2,197	1,842	1,476	1,089
115	0,0087	4,713	4,044	3,526	3,343	3,068	2,643	2,313	1,947	1,568	1,166
120	0,0083	4,866	4,190	3,665	3,479	3,199	2,765	2,427	2,051	1,660	1,243
125	0,0080	5,014	4,332	3,802	3,612	3,328	2,885	2,540	2,154	1,751	1,320
130	0,0077		4,471	3,935	3,743	3,455	3,004	2,652	2,256	1,841	1,397
135	0,0074		4,606	4,066	3,871	3,579	3,121	2,762	2,357	1,931	1,473
140	0,0071		4,739	4,194	3,997	3,702	3,236	2,872	2,457	2,020	1,549
145	0,0069		4,868	4,320	4,121	3,823	3,350	2,980	2,557	2,109	1,625
150	0,0067		4,994	4,443	4,242	3,941	3,462	3,087	2,656	2,197	1,700
155	0,0065			4,564	4,362	4,058	3,573	3,193	2,754	2,285	1,775
160	0,0063			4,683	4,479	4,173	3,683	3,298	2,851	2,372	1,850
165	0,0061			4,799	4,594	4,286	3,791	3,402	2,947	2,459	1,924
170	0,0059			4,913	4,707	4,397	3,897	3,504	3,043	2,545	1,998
175	0,0057				4,818	4,507	4,003	3,606	3,138	2,631	2,072
180	0,0056				4,927	4,615	4,107	3,707	3,232	2,716	2,146
185	0,0054					4,721	4,209	3,806	3,325	2,801	2,219
190	0,0053					4,825	4,311	3,905	3,418	2,885	2,292
195	0,0051					4,928	4,411	4,002	3,509	2,969	2,365
200	0,0050						4,509	4,099	3,601	3,052	2,438
205	0,0049						4,607	4,195	3,691	3,135	2,510
210	0,0048						4,703	4,289	3,781	3,217	2,582
215	0,0047						4,799	4,383	3,870	3,299	2,654
220	0,0045						4,893	4,476	3,958	3,380	2,725
225	0,0044						4,986	4,568	4,046	3,461	2,796
230	0,0043							4,659	4,133	3,542	2,867
235	0,0043							4,749	4,219	3,622	2,938
240	0,0042							4,838	4,305	3,701	3,008
245	0,0041							4,926	4,390	3,780	3,078
250	0,0040							5,014	4,475	3,859	3,148
255	0,0039								4,558	3,937	3,217
260	0,0038								4,642	4,015	3,287
265	0,0038								4,724	4,092	3,356
270	0,0037								4,806	4,169	3,424
275	0,0036								4,887	4,246	3,493
280	0,0036								4,968	4,322	3,561
282	0,0035								5,000	4,352	3,588

Annex 1, Table 26: columns, circular hollow sections

Interchar 404		**Fire Resistance 75 minutes**									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
48	0,0208	2,855	2,324	1,937	1,808	1,616	1,336	1,125	0,905	0,687	0,556
50	0,0200	2,978	2,433	2,035	1,902	1,704	1,415	1,197	0,969	0,743	0,556
55	0,0182	3,276	2,699	2,275	2,134	1,921	1,610	1,376	1,129	0,883	0,630
60	0,0167	3,563	2,958	2,510	2,360	2,134	1,803	1,552	1,287	1,021	0,747
65	0,0154	3,840	3,208	2,740	2,581	2,344	1,993	1,726	1,443	1,159	0,864
70	0,0143	4,107	3,452	2,964	2,798	2,549	2,180	1,899	1,598	1,295	0,981
75	0,0133	4,365	3,689	3,183	3,010	2,751	2,364	2,069	1,752	1,431	1,097
80	0,0125	4,615	3,919	3,397	3,217	2,948	2,545	2,238	1,905	1,567	1,213
85	0,0118	4,856	4,143	3,606	3,421	3,143	2,724	2,404	2,056	1,701	1,328
90	0,0111		4,361	3,810	3,620	3,334	2,900	2,569	2,206	1,834	1,443
95	0,0105		4,573	4,010	3,815	3,521	3,074	2,731	2,355	1,967	1,558
100	0,0100		4,779	4,206	4,006	3,705	3,245	2,892	2,502	2,099	1,672
105	0,0095		4,980	4,398	4,193	3,886	3,414	3,052	2,648	2,230	1,785
110	0,0091			4,585	4,377	4,064	3,580	3,209	2,793	2,360	1,898
115	0,0087			4,769	4,557	4,238	3,745	3,365	2,937	2,489	2,011
120	0,0083			4,949	4,733	4,410	3,906	3,519	3,079	2,618	2,123
125	0,0080				4,906	4,579	4,066	3,671	3,220	2,746	2,234
130	0,0077					4,745	4,224	3,822	3,361	2,873	2,346
135	0,0074					4,908	4,379	3,971	3,500	2,999	2,456
140	0,0071						4,532	4,118	3,637	3,125	2,567
145	0,0069						4,683	4,264	3,774	3,250	2,677
150	0,0067						4,833	4,409	3,910	3,374	2,786
155	0,0065						4,980	4,551	4,044	3,497	2,895
160	0,0063							4,693	4,178	3,620	3,004
165	0,0061							4,833	4,310	3,742	3,112
170	0,0059							4,971	4,441	3,863	3,220
175	0,0057								4,572	3,984	3,328
180	0,0056								4,701	4,104	3,435
185	0,0054								4,829	4,223	3,541
190	0,0053								4,956	4,341	3,647
195	0,0051									4,459	3,753
200	0,0050									4,576	3,859
205	0,0049									4,692	3,963
210	0,0048									4,808	4,068
215	0,0047									4,923	4,172
220	0,0045										4,276
225	0,0044										4,379
230	0,0043										4,482
235	0,0043										4,585
240	0,0042										4,687
245	0,0041										4,789
250	0,0040										4,890
255	0,0039										4,992
260	0,0038										
265	0,0038										
270	0,0037										
275	0,0036										
280	0,0036										
282	0,0035										

Annex 1, Table 27: columns, circular hollow sections

Interchar 404		Fire Resistance 90 minutes									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
48	0,0208	3,607	2,990	2,540	2,391	2,168	1,843	1,599	1,343	1,088	0,826
50	0,0200	3,754	3,122	2,660	2,507	2,277	1,941	1,690	1,424	1,160	0,888
55	0,0182	4,114	3,446	2,955	2,791	2,546	2,185	1,914	1,627	1,340	1,043
60	0,0167	4,461	3,760	3,243	3,070	2,809	2,425	2,136	1,828	1,518	1,198
65	0,0154	4,796	4,065	3,524	3,342	3,068	2,662	2,356	2,027	1,696	1,351
70	0,0143		4,361	3,799	3,608	3,321	2,895	2,572	2,224	1,872	1,504
75	0,0133		4,649	4,067	3,869	3,571	3,124	2,787	2,420	2,047	1,657
80	0,0125		4,929	4,330	4,124	3,815	3,351	2,999	2,614	2,221	1,809
85	0,0118			4,586	4,374	4,055	3,574	3,208	2,806	2,394	1,960
90	0,0111			4,837	4,618	4,291	3,793	3,415	2,997	2,566	2,111
95	0,0105				4,858	4,522	4,010	3,620	3,186	2,737	2,261
100	0,0100					4,750	4,223	3,823	3,374	2,907	2,410
105	0,0095					4,973	4,434	4,023	3,559	3,076	2,559
110	0,0091						4,642	4,221	3,744	3,244	2,707
115	0,0087						4,846	4,417	3,926	3,411	2,855
120	0,0083							4,610	4,108	3,577	3,002
125	0,0080							4,802	4,287	3,741	3,149
130	0,0077							4,992	4,466	3,905	3,295
135	0,0074								4,642	4,068	3,440
140	0,0071								4,818	4,230	3,585
145	0,0069								4,992	4,391	3,729
150	0,0067									4,551	3,873
155	0,0065									4,710	4,016
160	0,0063									4,868	4,158
165	0,0061										4,300
170	0,0059										4,442
175	0,0057										4,583
180	0,0056										4,723
185	0,0054										4,863
190	0,0053										5,002
195	0,0051										
200	0,0050										
205	0,0049										
210	0,0048										
215	0,0047										
220	0,0045										
225	0,0044										
230	0,0043										
235	0,0043										
240	0,0042										
245	0,0041										
250	0,0040										
255	0,0039										
260	0,0038										
265	0,0038										
270	0,0037										
275	0,0036										
280	0,0036										
282	0,0035										

Annex 1, Table 28: columns, circular hollow sections

Interchar 404		Fire Resistance 120 minutes									
		Design Temperature θ_D in °C									
A/V	V/A	350	400	450	470	500	550	600	650	700	750
m^{-1}	m	Minimum thickness required – DFT in mm (without primer and topcoat)									
48	0,0208		4,320	3,748	3,558	3,273	2,857	2,547	2,218	1,889	1,550
50	0,0200		4,500	3,912	3,716	3,423	2,995	2,675	2,335	1,994	1,642
55	0,0182		4,939	4,315	4,107	3,794	3,335	2,991	2,624	2,254	1,871
60	0,0167			4,709	4,489	4,158	3,670	3,304	2,911	2,513	2,098
65	0,0154				4,863	4,516	4,000	3,614	3,195	2,770	2,325
70	0,0143					4,866	4,326	3,920	3,477	3,025	2,551
75	0,0133						4,646	4,222	3,756	3,279	2,776
80	0,0125						4,962	4,521	4,033	3,531	3,000
85	0,0118							4,816	4,307	3,781	3,223
90	0,0111								4,579	4,031	3,446
95	0,0105								4,849	4,278	3,667
100	0,0100									4,524	3,887
105	0,0095									4,769	4,107
110	0,0091									5,012	4,326
115	0,0087										4,544
120	0,0083										4,761
125	0,0080										4,977
130	0,0077										
135	0,0074										
140	0,0071										
145	0,0069										
150	0,0067										
155	0,0065										
160	0,0063										
165	0,0061										
170	0,0059										
175	0,0057										
180	0,0056										
185	0,0054										
190	0,0053										
195	0,0051										
200	0,0050										
205	0,0049										
210	0,0048										
215	0,0047										
220	0,0045										
225	0,0044										
230	0,0043										
235	0,0043										
240	0,0042										
245	0,0041										
250	0,0040										
255	0,0039										
260	0,0038										
265	0,0038										
270	0,0037										
275	0,0036										
280	0,0036										
282	0,0035										