BS EN 13084-7:2012

BSI Standards Publication

Free-standing chimneys

Part 7: Product specifications of cylindrical steel fabrications for use in single wall steel chimneys and steel liners

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National foreword

This British Standard is the UK implementation of EN 13084-7:2012. It supersedes BS EN 13084-7:2005 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/506/14, Structural Chimneys and Flues.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Cheminées autoportantes - Partie 7: Spécifications de produit applicables aux fabrications cylindriques en acier pour cheminées en acier à paroi simple et parois intérieures en acier

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Foreword

This document (EN 13084-7:2012) has been prepared by Technical Committee CEN/TC 297 “Free-standing industrial chimneys”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2013, and conflicting national standards shall be withdrawn at the latest by June 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13084-7:2005.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

Compared with EN 13084-7:2005, the following changes have been made:

a) Corrigendum of 2008 was incorporated;

b) 6.2 was revised;

c) 7.2.4 was revised.

This European Standard, EN 13084, *Free-standing chimneys*, consists of the following parts:

— *Part 1: General requirements*;

— *Part 2: Concrete chimneys*;

— *Part 4: Brick liners — Design and execution*;

— *Part 5: Material for brick liners — Product specifications*;

— *Part 6: Steel liners — Design and execution*;

— *Part 7: Product specifications of cylindrical steel fabrications for use in single wall steel chimneys and steel liners* (the present document);

— *Part 8: Design and execution of mast construction with satellite components*.

The following European Standard additionally applies:

— EN 1993-3-2, *Eurocode 3: Design of steel structures — Part 3-2: towers, masts and chimneys — Chimneys*.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard deals with steel products for single wall steel chimneys and liners which are produced either in series or as single items. It is a product standard which specifies the performance requirements of cylindrical steel fabrications for use in single wall steel chimneys and steel liners for free-standing chimneys used to convey the flue gas to the outside atmosphere. It also specifies the requirements for insulation and cladding being part of the single wall steel chimney and liner. It provides for the evaluation of conformity of single wall steel chimneys and liners to this European Standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 287-1, *Qualification test of welders — Fusion welding — Part 1: Steels*

EN 1090-2, *Execution of steel structures and aluminium structures — Part 2: Technical requirements for steel structures*

EN 1418, *Welding personnel — Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding of metallic materials*

EN 1993-1-6, *Eurocode 3 — Design of steel structures — Part 1-6: Strength and Stability of Shell Structures*

EN 1993-3-2, *Eurocode 3 — Design of steel structures — Part 3-2: Towers, masts and chimneys — Chimneys*

EN 10025-2, *Hot rolled products of structural steels — Part 2: Technical delivery conditions for non-alloy structural steels*

EN 10025-5, *Hot rolled products of structural steels — Part 5: Technical delivery conditions for structural steels with improved atmospheric corrosion resistance*

EN 10028-2, *Flat products made of steels for pressure purposes — Part 2: Non-alloy and alloy steels with specified elevated temperature properties*

EN 10088-2, *Stainless steels — Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

EN 10095, *Heat resisting steels and nickel alloys*

EN 10204, *Metallic products — Types of inspection documents*

EN 13084-1:2007, *Free-standing chimneys — Part 1: General requirements*

EN 13084-6:2004, *Free-standing chimneys — Part 6: Steel liners — Design and execution*

EN ISO 5817*, Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections (ISO 5817:2003, corrected version:2005, including Technical Corrigendum 1:2006)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13084-1:2007 and EN 13084-6:2004 apply.

The single wall steel chimney and steel liner should be considered in the same way for design and requirements.

4 Requirements

4.1 General

For the purposes of this document, EN 13084-6 applies.

The products of single wall steel chimney and liner manufactured in accordance with this European Standard shall comply with the requirements given in EN 13084-1 and EN 1993-3-2.

The design of steel chimneys should be covered by the Eurocodes dealing with chimneys and the requirements should be based on design and intended end use.

4.2 Performance characteristics

4.2.1 Mechanical resistance and stability

Mechanical resistance and stability shall be verified in accordance with EN 1993-3-2 taking into account the characteristic values given in Tables 1 to 3 in this standard.

4.2.2 Resistance to fire

Resistance to fire relates only to a soot-fire occurring within the chimney.

A chimney could convey air and/or different type of gases (see EN 13084-1). Soot-fire resistance shall only be verified for products conveying within the flue gas emitted for solid combustibles.

The resistance to fire shall be verified in accordance with EN 13084-6. If the product has been designed to be soot fire resistant, the product designation is “G”, otherwise the designation is “O”.

4.2.3 Gas tightness/Leakage

The product shall be gas tight and the class *H0* shall be declared in accordance with EN 13084-6.

In order to meet this requirement, the design shall be in accordance with EN 13084-6, and the manufacture shall be in accordance with the qualities and controls stated in this standard.

4.2.4 Flow resistance

The mean roughness value for steel to carry out flow calculations shall be declared in accordance with EN 13084-1:2007, Table A.3.

The individual resistance coefficient of some forms is given in EN 13084-1:2007, Table A.4.

4.2.5 Dimensioning/Thermal resistance

Flow calculations shall be carried out in accordance with EN 13084-1.

The thermal resistance shall be calculated on the basis of EN 13084-1:2007, A.2.2.

NOTE Dimensions related to stability are calculated on the basis of 4.2.1.

4.2.6 Thermal shock resistance

Generally, thermal shock resistance is not applicable to steel because rapid changes of temperature have no significant effect on steel chimneys and liners.

For specific applications (such as turbines) thermal shock may be relevant and expert advice should be sought.

4.2.7 Resistance to freeze-thaw

Resistance to freeze-thaw is not relevant to steel chimneys and steel liners.

4.3 Durability

The class of chemical attack shall be declared in accordance with EN 13084-1.

Durability to chemical attack is covered by use of materials shown in Table 4. Other steels may be used provided their durability to the relevant chemical attack is demonstrated.

Durability may also be achieved by other means including additional coatings and linings.

4.4 Dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this standard are placed on those markets.

In the absence of European harmonised test methods, verification and declaration on release/content should be carried out, taking into account national provisions in the place of use.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction web site on EUROPA accessed through: *http://ec.europa.eu/enterprise/construction/cpd-ds/*.

5 Materials

5.1 Steels

The steel chimneys or liners shall be made of the steels listed in Tables 1 to 4. In addition, other steels may be used in accordance with EN 13084-6:2004, Clause 4.

Table 1 — Characteristic values of yield stress in relation to temperature ($f_{y,k}$ in N/mm²)

Type of steel		Temperature of the material (°C)																					
Short name	Material	20	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
EN 10025-2																							
S235JR	1.0038	235	235	190	175	160	140	120															
S235J2	1.0117	235	235	190	175	160	140	120															
S275JR	1.0044	275	275	215	200	185	165	145	125	104													
S275J2	1.0145	275	275	215	200	185	165	145	125	104													
S355JR	1.0045	355	355	260	245	230	210	190															
S355J2	1.0577	355	355	260	245	230	210	190															
Usable for		Windshield and liner																					
EN 10025-5																							
S235J0W	1.8958	235	235	190	175	160	140	120															
S235J2W	1.8961	235	235	190	175	160	140	120															
S355J2WP	1.8946	355	355	260	245	230	210	190															
S355J0W	1.8959	355	355	260	245	230	210	190	170	140	120	85											
Usable for		Windshield and liner									Liners only												
EN 10028-2																							
P265GH	1.0425	255	247	232	215	197	181	166	154	145	80												
16 Mo 3	1.5415	270	268	259	245	228	209	190	172	156	145	139											
13 CrMo 45	1.7335	290	285	275	260	243	226	209	194	180	169	159	76										
10 CrMo 9 10	1.7380	300	270	249	238	232	227	221	211	198	185	173	83	44									
Usable for		windshield and liner																					
EN 10088-2																							
X5CrNi 18 10	1.4301	195	177	157	142	127	118	110	104	98	95	92	90										
X2CrNi 18-9	1.4307	200		147	132	118	108	100	94	89	85	81	80										
X2CrNiMoN 22-5-3	1.4462	460		360	355	315	300																
X2CrTiNb 18	1.4509	230		230	220	210	205	200	180														
X6CrNiTi 18 10	1.4541	205	190	176	167	157	147	136	130	125	121	119	118										
X6CrNiMoTi17 12 2	1.4571	215	202	185	177	167	157	145	140	135	131	129	127										
X2CrNiMo 17 12 2	1.4404	190	182	166	152	137	127	118	113	108	103	100	98										
X2CrNiMo 18 14 3	1.4435	190	182	166	152	137	127	118	113	108	103	100	98										
X1NiCrMoCu 25 20 5	1.4539	220	190	175	165	155	145	135	130	125	120	110	105										
Usable for		Windshield and liner									Liners only												
EN 10095																							
X8CrNiTi18-10	1.4878	205	190	176	167	157	147	136	130	125	121	119	118	110	77	45	30	15					
X15CrNiSi25-2	1.4841	230	190	176	167	157	147	136	130	125	121	120	112	105	77	50	37	23	16	10	6	3	
X15CrNiSi20-12	1.4828	230	190	176	167	157	147	136	130	125	121	120	120	120	85	50	35	20	14	10			
Usable for		Windshield and liner									liners only												
Values given are for material up to 40 mm thickness. If cold-formed materials are used the above values shall still be applied. If there is no value the material is not applicable.																							

Table 2 — Characteristic values of E-Modulus (10^5 N/mm²) in relation to temperature

Type of steel			Temperature of the material (°C)															
	Short name	Material	20	150	250	350	450	500	550	600	650	700	750	800	850	900	950	1000
EN 10025-2	S235JR	1.0038	2,1	2,05	2,0	1,92												
	S235J2	1.0117																
	S275JR	1.0044																
	S275J2	1.0145																
	S355JR	1.0045																
	S355J2	1.0577																
EN 10025-5	S235JOW	1.8958																
	S235J2W	1.8961																
	S355J2WP	1.8946																
	S355JOW	1.8959																
EN 10028-2	P265GH	1.0425	2,1	2,05	2,0	1,92	1,84	1,8										
	16 Mo 3	1.5415																
	13 CrMo 45	1.7335																
	10 CrMo 9 10	1.7380																
EN 10088-2	X5CrNi 18 10	1.4301	1,7 2,0 [a]	1,64 1,94 [a]	1,56 1,86 [a]	1,49 1,79 [a]	1,42 1,72 [a]	1,385 1,685[a]	1,35 1,65 [a]	1,315 1,615[a]								
	X2CrNi 18-9	1.4307																
	X2CrNiMoN 22-5-3	1.4462																
	X2CrTiNb 18	1.4509																
	X6CrNiTi 18 10	1.4541																
	X6CrNiMoTi17 12 2	1.4571																
	X2CrNiMo 17 12 2	1.4404																
	X2CrNiMo 18 14 3	1.4435																
	X1NiCrMoCu 25 20 5	1.4539																
EN 10095	X8CrNiTi18-10	1.4878	1,7 2,0 [a]	1,64 1,94 [a]	1,56 1,86 [a]	1,49 1,79 [a]	1,42 1,72 [a]	1,385 1,685[a]	1,35 1,65 [a]	1,315 1,615[a]								
	X15CrNiSi25-2	1.4841																
	X15CrNiSi20-12	1.4828																

[a] For calculating compression stresses.

Table 3 — Characteristic values of thermal expansion coefficients (10^{-6} K^{-1}) between 20 °C and different temperatures

Type of steel			Temperature of the material up to °C									
	Short name	Material	100	200	300	400	500	600	700	800	900	1000
EN 10025-2		1.0036	12,0	12,1	12,9	13,5						
	S235JR	1.0038										
	S235J2	1.0117										
	S275JR	1.0044										
	S275J2	1.0145										
	S355JR	1.0045										
	S355J2	1.0577										
EN 10025-5	S235JOW	1.8958	12,0	12,1	12,9	13,5	13,9					
	S235J2W	1.8961										
	S355J2WP	1.8946										
	S355JOW	1.8959										
EN 10028-2	P265GH	1.0425	11,1	12,1	12,9	13,5	13,9					
	16 Mo 3	1.5415										
	13 CrMo 45	1.7335										
	10 CrMo 9 10	1.7380										
EN 10088-2	X5CrNi 18 10	1.4301	16,0	16,5	17,0	17,5	18,0					
	X2CrNi 18-9	1.4307	16,0	16,5	17,0	18,0	18,0					
	X2CrNiMoN 22-5-3	1.4462	13,0	13,5	14,0							
	X2CrTiNb 18	1.4509	10,0	10,0	10,5	10,5						
	X6CrNiTi 18 10	1.4541	16,0	16,5	17,0	17,5	18,0					
	X6CrNiMoTi17 12 2	1.4571	16,5	17,5	18,0	18,5	19,0					
	X2CrNiMo 17 12 2	1.4404	16,0	16,5	17,0	17,5	18,0					
	X2CrNiMo 18 14 3	1.4435	16,0	16,5	17,0	17,5	18,0					
	X1NiCrMoCu 25 20 5	1.4539	15,8	16,1	16,5	16,9	17,3					
EN 10095	X8CrNiTi18-10	1.4878		17,0		18,0		18,5		19,0		
	X15CrNiSi25-2	1.4841		15,5		17,0		17,5		18,0		19,0
	X15CrNiSi20-12	1.4828		16,5		17,5		18,0		18,5		19,5
The values can be interpolated linearly.												

Table 4 — Corrosion allowance of surfaces in contact with flue gases

Type of steel				Degree of chemical attack in accordance with EN 13084-1							
				First ten years				Each additional 10 year period			
Short name		Material	Condensate resistance	Low L	Medium M	High H	very high V	Low L	Medium M	High H	very high V
EN 10025-2			D	1,0	2,5	N	N	1,0	1,5	N	N
	S235JR	1.0038									
	S235J2	1.0117									
	S275JR	1.0044									
	S275J2	1.0145									
	S355JR	1.0045									
	S355J2	1.0577									
EN 10025-5	S235JOW	1.8958	D	1,0	2,5	N	N	1,0	1,5	N	N
	S235J2W	1.8961									
	S355J2WP	1.8946									
	S355JOW	1.8959									
EN 10028-2	P265GH	1.0425	D	1,0	2,5	N	N	1,0	1,5	N	N
	16 Mo 3	1.5415									
	13 CrMo 45	1.7335									
	10 CrMo 9 10	1.7380									
EN 10088-2	X5CrNi 18 10	1.4301	*D*	0,0	0,75	1,25	N	0,0	0,75	1,25	N
	X2CrNi 18-9	1.4307	*D*	0,0	0,75	1,25	N	0,0	0,75	1,25	N
	X2CrNiMoN 22-5-3	1.4462	*W*	0,0	0,25	0,75	N	0,0	0,25	0,75	N
	X2CrTiNb 18	1.4509	*D*	0,0	1,0	1,5	N	0,0	1,0	1,5	N
	X6CrNiTi 18 10	1.4541	*D*	0,0	0,75	1,25	N	0,0	0,75	1,25	N
	X6CrNiMoTi17 12 2	1.4571	*W*	0,0	0,25	0,75	N	0,0	0,25	0,75	N
	X2CrNiMo 17 12 2	1.4404	*W*	0,0	0,25	0,75	N	0,0	0,25	0,75	N
	X2CrNiMo 18 14 3	1.4435	*W*	0,0	0,25	0,75	N	0,0	0,25	0,75	N
	X1NiCrMoCu 25 20 5	1.4539	*W*	0,0	0,25	0,5	1,5	0,0	0,25	0,5	1,5
EN 10095	X8CrNiTi18-10	1.4878	D	0,0	0,75	1,5	N	0,0	0,75	1,5	N
	X15CrNiSi25-2	1.4841									
	X15CrNiSi20-12	1.4828									

N not permitted
D useable in dry condition (higher than water dew point)
W useable in wet and/or dry condition (below water dew point)
NOTE For acid dew point see EN 13084-1.

5.2 Coating

Coating systems shall be in accordance with EN 13084-1, EN 13084-6 and EN 1993-3-2. All coatings shall be applied according to the instructions of the material manufacturers.

5.3 Insulation

The insulating material shall be in accordance with the requirements given in EN 13084-1:2007, 4.4.

5.4 Cladding

Cladding materials shall be suitable for the environment to which they are exposed.

6 Construction

6.1 Tolerances

Tolerances shall comply with EN 13084-6:2004, 7.1.

The minimum gauge length shall be 150 mm (λ_g of EN 1993-1-6).

NOTE This is a deviation from λ_g of EN 1993-1-6.

6.2 Welding

The manufacturer of liners shall be in accordance with EN 1090-2, EXC 2.

The manufacturer of single wall chimneys shall be in accordance with EN 1090-2, EXC 3.

All butt welds shall be full penetration and continuous.

All welding on liners shall be at least in accordance with EN ISO 5817, Quality level “D”. Larger long pores are not permitted.

All welding on single wall chimneys shall be at least in accordance with EN ISO 5817, Quality level “C”.

6.3 Construction details

Where apertures are cut in the shell plates, the corners shall be radiused in accordance with EN 13084-6.

Flanges and opening reinforcement to the liner shall be continuously welded.

The liner shall be continuously welded to its base plate and this in turn to any gussets or reinforcing components.

Stiffening rings can have intermittent welding if permitted by the design. However, crevices exposed to weather or flue gases shall be sealed against corrosion.

6.4 Insulation

Insulation shall be adequately supported to stop it from slipping and/or sagging. This can be achieved by pinning and/or banding.

Where insulation is not covered by cladding, it shall be covered with wire mesh, or cloth, or aluminium foil etc.

Insulation shall be applied in such a manner to minimise any gaps at the seams. If insulation is applied in two or more layers, all joints shall be staggered to minimise heat-loss.

6.5 Cladding

Cladding shall be manufactured and fitted in such a manner as to allow for differentials in thermal expansions and prevent the ingress of weather.

Cladding shall be adequately supported and fixed by riveting or screwing.

7 Evaluation of conformity

7.1 General

7.1.1 Introduction

The compliance of cylindrical steel fabrications with the requirements of this standard and with the stated values (including classes) shall be demonstrated by:

— Initial type testing,

— Factory production control by the manufacturer, including product assessment as described in 4.2 and 4.3.

7.1.2 Initial type testing

Initial type testing shall be performed to show conformity with this standard. Tests previously performed in accordance with the provisions of this standard (same product, same characteristic(s), test method, sampling procedure, system of attestation of conformity, etc.) may be taken into account.

NOTE Component products CE marked in accordance with appropriate harmonised European specifications may be presumed to have the performances stated with the CE marking, although this does not replace the responsibility of the chimney designer to ensure that the chimney as a whole is correctly designed and its component products have the necessary performance values to meet the design.

All characteristics listed above in Clauses 4 and 5 shall be subject to Initial type testing, i.e. checking of calculations and drawings, raw materials, welding procedures and qualification of welders, resistance to fire, gas tightness/leakage, flow resistance, dimensioning/thermal resistance, thermal shock resistance, flexural tensile strength, compressive strength, resistance to freeze-thaw and durability.

7.1.3 Further type testing

Whenever a change occurs in the chimney, the raw material or the supplier of the components, or the production process, which would change significantly one or more of the characteristics, the type tests shall be repeated for the appropriate characteristic(s).

7.2 Factory production control

7.2.1 General

The manufacturer shall establish, document and maintain a factory production control (FPC) system as a means for ensuring that the product manufactured conforms to this European Standard. The FPC system shall be in accordance with 7.2.2, 7.2.3, 7.2.4, 7.2.5, 7.2.6 and Annex A.

It is the responsibility of the notified body to check the content of the tasks in the factory production control and to see whether the following characteristics have been taken into consideration and that these are available:

a) Soot fire resistance in accordance with EN 13084-6;

b) Prescriptions for welding in accordance with EN 13084-6;

c) Fluid dynamic calculations in accordance with EN 13084-1;

d) Temperature classes;

e) Static calculations;

f) Resistance against chemical attack.

7.2.2 Material records

The following material records shall be provided:

a) Steel – Inspection certificate 3.1 in accordance with EN 10204;

b) Welding consumables – Inspection certificate 3.1 in accordance with EN 10204;

c) Structural bolting with CE-marking;

d) Insulation – declared values by the manufacturer.

7.2.3 Qualifications of the welders

The documentation of the manual welder shall be in accordance with EN 287-1.

The documentation of the mechanical welder shall be in accordance with EN 1418.

7.2.4 Welding quality control

Welding shall be visually inspected in accordance with EN ISO 5817.

An inspection report shall be issued.

7.2.5 Coatings

The following data shall be recorded and issued as a letter of conformity:

a) paint manufacturer and batch numbers;

b) surface preparation;

c) ambient and treated surface temperature;

d) ambient air humidity;

e) average dry film thickness.

7.2.6 Geometrical dimensions

Critical dimensions shall be checked and documented on the basis of the approved drawings.

8 Temperature classes

The manufacturer shall declare the temperature classes as defined in Table 5.

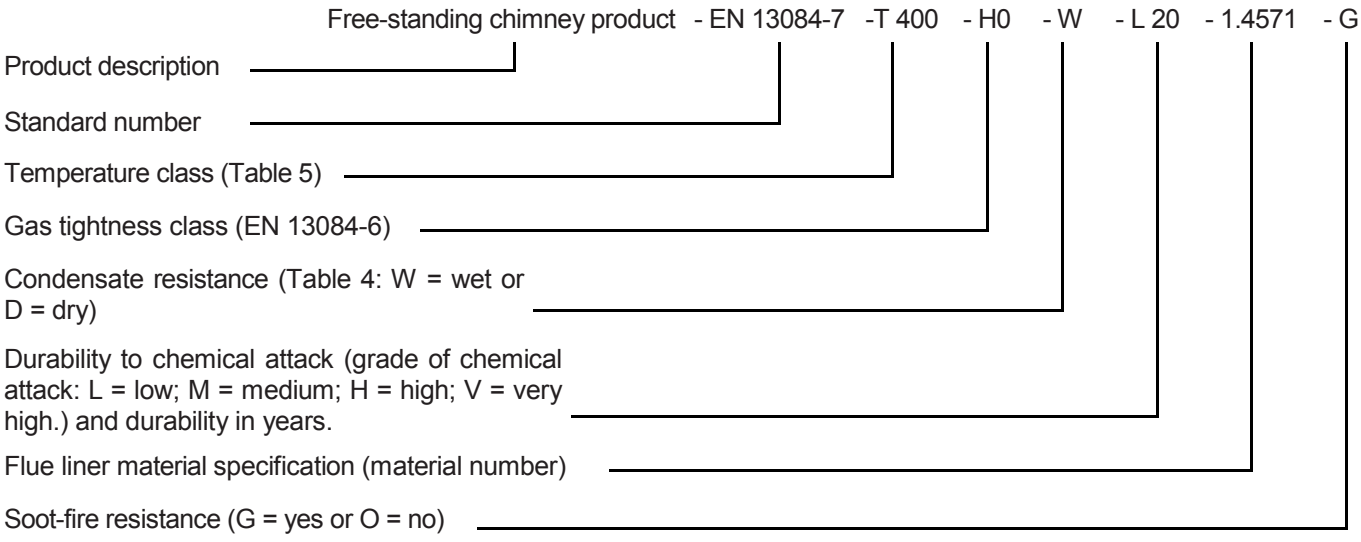
Table 5 — Temperature resistance of cylindrical steel fabrications

Class	Maximum temperature of the flue gas	Temperature resistance of the lining system
T 200	200 °C	Minimum 200 °C
T 400	400 °C	Minimum 400 °C
T 550	550 °C	Minimum 550 °C
T 750	750 °C	Minimum 750 °C
T 900	900 °C	Minimum 900 °C
T 1000	1000 °C	Minimum 1000 °C
NOTE 1 To meet the overall requirement of the installation, it is essential that the thermal gradient of the materials (including insulation installed in differing layers) be proven by calculation.		
NOTE 2 Other temperature classes may be given by design if they are proofed by thermal calculation.		

9 Product designation

All chimney and liner sections shall have a unique number, identifying the contract and its position in the system according to the drawings. In addition, they shall be designated in accordance with the following designation system.

EXAMPLE:



Annex A
(normative)

Assessment of factory production control

A.1 General

This annex gives the tasks to be performed to assess the FPC system in order to ensure that the FPC is suitable for manufacturing cylindrical steel fabrications for use in single wall steel chimneys and steel liners for free-standing chimneys in accordance with the requirements of this European Standard.

The alternative tasks are whether the manufacturer performs design and manufacturing in his own shop or manufacturing is done by a welding company by contract. The tasks for both options are related to two assessment activities:

— initial inspection of the factory and the factory production control;

— continuous surveillance and assessment of the FPC system.

A.2 Initial inspection

The FPC system shall demonstrate that the system for performing work according to this standard is adequate for delivering components that conform to the requirements of this European Standard. The tasks for the initial assessment are related to a check of the product assessment where specifics for the tasks are given in Table A.1.

Table A.1 — Table for initial inspection

Tasks related to design work	
	To examine the reproducibility of the proof given for the declared characteristics. The aim of the inspections is to examine whether the system of factory production control for the constructive elaboration of the product is adequate and sufficiently functional.
Tasks related to execution work	
	The aim of the inspections is to examine whether the system of factory production control for the manufacture of the product is adequate and functional.
NOTE For the list of characteristics declared for CE marking, see Table ZA.1.	

A.3 Continuous surveillance

The tasks for the continuous surveillance of the FPC are given in Table A.2.

Table A.2 — Table for continuous surveillance

Tasks related to design work	
	To examine the reproducibility of the proof given in Table ZA.1. Acceptance of the system of factory production control for the structural design.
Tasks related to execution work	
	Acceptance of the system of factory production control for the manufacture of the product is sufficient, and worked accordingly.

A.4 Frequency of inspection

A.4.1 General

The first surveillance shall be carried out in a period not exceeding one year after the initial assessment. If no significant corrective actions are needed, the frequency of inspection may be reduced, provided that one of the following cases does not occur:

a) change in the relevant design standards (e. g. EN 13084-1, EN 13084-6, EN 1993-3-2, etc.);

b) renovation or alteration of the relevant production facilities;

c) change of the welding supervisor;

d) introduction of new welding processes and reports on the characterisation of the welding procedure.

A.4.2 Surveillance intervals

The distances between the initial assessment and subsequent monitoring shall comply with Table A.3.

Table A.3 — Current monitoring intervals distances between the surveillance of factory production control after the initial assessment (in years)

1 – 2 – 3 … 3

A.4.3 Declaration of manufacturer

When a period of two or three years elapses between inspection dates, the manufacturer shall provide a statement confirming that no cases defined under A.4.1 have occurred during the relevant period.

A.4.4 Measures in non-compliance

In cases of lack of conformity with the requirements of this standard and to resolve the disagreement, the current monitoring intervals are the same as after the initial inspection.

NOTE EN ISO 19011 provides guidance for the review of quality management systems.

A.5 Reports

After each monitoring, a report shall be drafted. All corrective actions as a result of the report shall be carried out or planned, and should be monitored and checked at the time of a subsequent monitoring.

Annex ZA
(informative)

Clauses of this European Standard addressing the provisions of the EU Construction Products Directive

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under a mandate M/105 and M 442 Chimneys, flues and specific products given to CEN by the European Commission and the European Free Trade Association.

The clauses of this European Standard shown in this annex meet the requirements of the mandate given under the EU Construction Products Directive (89/106/EEC).

Compliance with these clauses confers a presumption of fitness of the single wall steel free standing chimneys and steel liners covered by this annex for the intended uses indicated herein; reference shall be made to the information accompanying the CE marking.

This annex establishes the conditions for the CE marking of the single wall steel free standing chimneys and steel liners intended for the uses indicated in Table ZA.1 and shows the relevant clauses applicable:

This annex has the same scope as Clause 1 of this standard and is defined by Table ZA.1.

Table ZA.1 — Relevant clauses for steel free standing single wall chimneys and steel liners

Product: Cylindrical steel fabrications for use in single wall steel chimneys and steel chimney liners **Intended use:** Conveying of flue gases			
Essential Characteristics	**Requirement clauses in this European Standard**	**Levels and/or classes**	**Notes**
Resistance to fire	4.2.2	Class	Defined by design
Gas tightness/leakage	4.2.3	-	Defined by design
Flow resistance	4.2.4	-	Design value
Dimensioning/Thermal resistance	4.2.5	-	Design value
Thermal shock resistance	4.2.6	-	Design value
Resistance to wind load	4.2.1		Design value
Flexural tensile strength	4.2.1	-	Design value
Compressive strength	4.2.1	-	Design value
Resistance to freeze-thaw	4.2.7	-	
Durability of gas tightness/leakage against chemicals/corrosion	4.3; 5	-	Selected material
Durability of flexural tensile strength against chemicals	4.3; 5	-	Selected material
Durability of compressive strength against chemicals	4.3; 5	-	Selected material
Dangerous substances	4.4		

The requirement on a certain characteristic is not applicable in those Member States (MSs) where there are no regulatory requirements on that characteristic for the intended use of the product. In this case, manufacturers placing

their products on the market of these MSs are not obliged to determine nor declare the performance of their products with regard to this characteristic and the option “No performance determined” (NPD) in the information accompanying the CE marking (see ZA.3) may be used. The NPD option may not be used, however, where the characteristic is subject to a threshold level.

ZA.2 Procedure for attestation of conformity of single wall steel free standing chimneys and steel liners

ZA.2.1 System of attestation of conformity

The system of attestation of conformity of single wall steel free standing chimneys and steel liners indicated in Table ZA.1, in accordance with the Decision of the Commission 95/467EC amended by 2001/596/EC of 2001-01-8 as given in Annex III of the mandate for Chimneys, FLUES and Specific Products is shown in Table ZA.2 for the indicated intended use and relevant level(s) or class(es):

Table ZA.2 — System of attestation of conformity

Products	Intended use	Level(s) or class(es)	Attestation of conformity system
Cylindrical steel fabrications used in single wall chimneys and steel liners	Conveying of product of combustion	Any	2 +
System 2+: See Directive 89/106/EEC (CPD) Annex III.2.(ii), First possibility, including certification of the factory production control by an approved body on the basis of initial inspection of factory and of factory production control as well as of continuous surveillance, assessment and approval of factory production control.			

The attestation of conformity of the material for steel free standing chimneys and steel liners in Table ZA.1 shall be based on the evaluation of conformity procedures indicated in Table ZA.3 resulting from application of the clauses of this or other European Standard indicated therein.

Table ZA.3 — Assignment of evaluation of conformity tasks for Materials for single wall free standing steel chimneys and steel liners under system 2+

Tasks			Content of the task	Evaluation of conformity clauses to apply
Tasks for the manufacturer	Factory production control (F.P.C)		Parameters related to all relevant characteristics of Table ZA.1	7.2
	Initial type testing		All relevant characteristics of Table ZA.1	7.1.2
	Testing of samples taken at the factory		All relevant characteristics of Table ZA.1	7.1.3
Tasks for the notified body	Certification of F.P.C on the basis of	Initial inspection of factory and of F.P.C	Parameters related to all relevant characteristics of Table ZA.1, in particular: compressive strength	7.2 and Annex A
		Continuous surveillance, assessment and approval of F.P.C.	Parameters related to all relevant characteristics of Table ZA.1, in particular: compressive strength	7.2 and Annex A

ZA.2.2 EC Certificate and Declaration of conformity

When compliance with the conditions of this annex is achieved, and once the notified body has drawn up the certificate mentioned below, the manufacturer or his agent established in the EEA shall prepare and retain a declaration of conformity, which entitles the manufacturer to affix the CE marking. This declaration shall include:

— name and address of the manufacturer, or his authorised representative established in the EEA, and the place of production;

— description of the product (type, identification, use, ...), and a copy of the information accompanying the CE marking;

— provisions to which the product conforms (e.g. Annex ZA of this European Standard);

— particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions, etc);

— the number of the accompanying factory production control certificate;

— name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or his authorised representative.

The declaration shall be accompanied by a factory production control certificate, drawn up by the notified body, which shall contain, in addition to the information above, the following:

— name and address of the notified body;

— the number of the factory production control certificate;

— conditions and period of validity of the certificate, where applicable;

— name of, and position held by, the person empowered to sign the certificate.

The above mentioned declaration and certificate shall be presented in the official language or languages of the Member State in which the product is to be used.

ZA.3 CE marking and labelling

The manufacturer or his authorised representative established within the EEA is responsible for the affixing of the CE marking. The CE marking symbol to affix shall be in accordance with Directive 93/68/EEC and shall be shown on the cylindrical steel fabrication for use in single wall steel chimneys or steel liner (or when not possible it may be on the accompanying label, the packaging or on the accompanying commercial documents e.g. a delivery note). The following information shall accompany the CE marking symbol:

— identification number of the certification body;

— name or identifying mark and registered address of the producer;

— the last two digits of the year in which the marking is affixed;

— number of the EC Certificate of conformity or factory production control certificate (if relevant);

— reference to this European Standard with version date;

— description of the product: generic name, material, dimensions, … and intended use;

— information on those relevant essential characteristics listed in Table ZA.1 which are to be declared presented as:

  — declared values and, where relevant, level or class (including “pass” for pass/fail requirements, where necessary) to declare for each essential characteristic as indicated in "Notes" in Table ZA.1;

  — as an alternative, standard designation(s) alone or in combination with declared values as above, and;

  — “No performance determined” for characteristics where this is relevant.

The “No performance determined” (NPD) option may not be used where the characteristic is subject to a threshold level. Otherwise, the NPD option may be used when and where the characteristic, for a given intended use, is not subject to regulatory requirements in the Member State of destination.

Figures ZA.1 and ZA.2 give examples of the information to be given on the product, label, packaging and/or commercial documents.

CE 01234	*CE conformity marking, consisting of the* *"CE"-symbol given in Directive 93/68/EEC.* *Identification number of the certification body*
AnyCo Ltd, PO Box 21, B-1050	*Name or identifying mark and registered address of the producer*
12	*Last two digits of the year in which the marking was affixed*
01234-CPD-00234	*Certificate number*
EN 13084-7:2012 cylindrical steel fabrications for use in single wall steel chimneys T400-H0-W-L20-1.4571-G	*Number of European Standard with date of version* *Description of product* *and* *information on regulated characteristics* (in accordance with Clause 9 of this standard for the relevant characteristics according to Table ZA.1)
Mechanical resistance Resistance to fire, gas tightness, flow resistance, thermal resistance, dimensioning, wind load resistance Position number of the product and/or reference to the design documents and (where applicable) client's order	Reference to design documents (e.g. position number), or to client's order + drawings and material specifications.

Figure ZA.1 — Example CE marking information for single wall chimneys

CE 01234	*CE conformity marking, consisting of the* *"CE"-symbol given in Directive 93/68/EEC.* *Identification number of the certification body*
AnyCo Ltd, PO Box 21, B-1050 **12** 01234-CPD-00234	*Name or identifying mark and registered address of the producer* *Last two digits of the year in which the marking was affixed* *Certificate number*
EN 13084-7:2012 cylindrical steel fabrications for use as steel liner for free-standing chimneys T400-H0-W-L20-1.4571-G	*Number of European Standard with date of version* *Description of product* *and* *information on regulated characteristics* (in accordance with Clause 9 of this standard for the relevant characteristics according to Table ZA.1)
Mechanical resistance Resistance to fire, gas tightness, flow resistance, thermal resistance, dimensioning, wind load resistance Position number of the product and/or reference to the design documents and (where applicable) client's order	Reference to design documents (e.g. position number), or to client's order + drawings and material specifications.

Figure ZA.2 — Example CE marking information for steel liner

Bibliography

[1] EN 10025-1, *Hot rolled products of structural steels — Part 1: General technical delivery conditions*

[2] EN ISO 9001, *Quality management systems — Requirements (ISO 9001)*

[3] EN ISO 19011, *Guidelines for auditing management systems (ISO 19011)*

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