



SLOVENSKI STANDARD

SIST EN 13084-7:2013

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Nadomešča:

SIST EN 13084-7:2006

SIST EN 13084-7:2006/AC:2009

Prostostoječi dimniki - Specifikacije proizvoda za cilindrične jeklene proizvode, ki se uporabljajo v enojnih zidnih jeklenih dimnikih in jeklenih ceveh

Free-standing chimneys - Product specifications of cylindrical steel fabrications for use in single wall steel chimneys and steel liners

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Freistehende Schornsteine - Produktfestlegungen für zylindrische Stahlbauteile zur Verwendung in einschaligen Stahlschornsteinen und Innenrohren aus Stahl

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Cheminées indépendantes - Specifications des produit pour composants en acier pour l'utilisation dans des conduits simple paroi et des parois en acier

Ta slovenski standard je istoveten z: EN 13084-7:2012

ICS:

91.060.40 Dimniki, jaški, kanali Chimneys, shafts, ducts

SIST EN 13084-7:2013 en,fr,de

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13084-7

December 2012

ICS 91.060.40

Supersedes EN 13084-7:2005

English Version

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

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

Freistehende Schornsteine - Teil 7: Produktfestlegungen
für zylindrische Stahlbauteile zur Verwendung in
einschaligen Stahlschornsteinen und Innenrohren aus Stahl

This European Standard was approved by CEN on 27 October 2012.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
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EN 13084-7:2012 (E)**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.

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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.

EN 13084-7:2012 (E)**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".

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4.2.3 Gas tightness/Leakage

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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

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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.

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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.