SLOVENSKI STANDARD
SIST EN 13084-6:2016

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Prostostoječi dimniki - 6. del: Jeklene tuljave - Projektiranje in izvedba

Free-standing chimneys - Part 6: Steel liners - Design and execution

Freistehende Schornsteine - Teil 6: Innenrohre aus Stahl - Bemessung und Ausführung

Cheminées autoportantes - Partie 6: Parois intérieures en acier - Conception et mise en œuvre

Ta slovenski standard je istoveten z: EN 13084-6:2015

ICS:

91.060.40	Dimniki, jaški, kanali	Chimneys, shafts, ducts

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EUROPEAN STANDARD

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English Version

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European foreword

This document (EN 13084-6:2015) 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of an identical text or by endorsement, at the latest by May 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.

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 13084-6:2004.

This European Standard is part one of the package of standards listed below:

— EN 13084-1, *Free-standing industrial chimneys – Part 1: General requirements.*

— EN 13084-2, *Free-standing chimneys – Part 2: Concrete chimneys.*

— EN 13084-4, *Free-standing chimneys – Part 4: Brick liners – Design and execution.*

— EN 13084-5, *Free-standing chimneys – Part 5: Material for brick liners – Product specifications*

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

— EN 13084-7, *Free-standing chimneys – Part 7: Product specifications of cylindrical steel fabrications for use in single wall steel chimneys and steel liners*

— EN 13084-8, *Free-standing chimneys – Part 8: Design and execution of mast construction with satellite components*

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

The main changes compared to the previous edition are:

a) all normative references were updated;

b) The reference in 6.1.3 was corrected to EN 1991-1-4:2005, 7.2.9.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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 document deals with special requirements and performance criteria for the design of lining systems made of steel for free standing chimneys. It specifies the requirements for cylindrical steel liners as stated in EN 13084-1.

This document covers the design of the following three basic types of liners located in a load bearing structure:

a) base supported liner;

b) sectional liner;

c) top hung liner.

Additionally this document applies to single wall chimneys whose surface is in contact with flue gases.

Liners built from prefabricated metal chimneys in accordance with EN 1856-1 and EN 1856-2 are installed as base supported liners with additional supports and guides as defined in this document.

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 1443, *Chimneys — General requirements*

EN 1856-1, *Chimneys — Requirements for metal chimneys — Part 1: System chimney products*

EN 1856-2, *Chimneys — Requirements for metal chimneys — Part 2: Metal flue liners and connecting flue pipes*

EN 1859:2009+A1:2013, *Chimneys — Metal chimneys — Test methods*

EN 1991-1-4:2005, *Eurocode 1: Actions on structures — Part 1-4: General actions — Wind actions*

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

EN 1993-3-2:2006, *Eurocode 3 — Design of steel structures — Part 3-2: Towers, masts and chimneys — Chimneys*

EN 10028 (all parts), *Flat products made of steels for pressure purposes*

EN 10088 (all parts), *Stainless steels*

EN 10095, *Heat resisting steels and nickel alloys*

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

EN 13084-7:2012, *Free-standing chimneys — Part 7: Product specifications of cylindrical steel fabrications for use in single wall steel chimneys and steel liners*

EN 62305-1, *Protection against lightning — Part 1: General principles (IEC 62305-1)*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in EN 13084-1:2007 and the following, apply.

3.1
base supported liner
liner which is supported vertically only at the liner base

3.2
independent liner
base supported liner which has no other horizontal support or restraint

3.3
guided liner
liner which has horizontal supports and/or guides allowing free expansion

3.4
top hung liner
liner which is supported vertically at or near the top

3.5
sectional steel liner
liner with at least two independent vertically supported sections

3.6
liner support
load bearing component which supports the liner

3.7
duct entry
part of the liner which introduces the flue gases into the liner

3.8
gas flow
mass or volume of gas through the liner per unit of time

3.9
single wall chimney
liner which also is bearing wind or seismic actions

3.10
turning vanes
plates to lead the flue gas in another direction

3.11
prefabricated metal chimneys
prefabricated metal chimneys or liners in accordance with EN 1856-1 and EN 1856-2

4 Material

4.1 General

Materials used, shall be based upon chemical, thermal and mechanical effects and shall fulfil the requirements of EN 13084-1 and EN 1993-3-2.

Materials used shall not have a negative influence upon each other.

If prefabricated metal chimneys are used the additional requirements of this document shall be fulfilled.

4.2 Steels

Steels commonly used are given in EN 13084-7.

Other steels shall meet the requirements of EN 1993-3-2 and EN 13084-1.

5 General design requirements

5.1 General

Gas flow calculations to determine the diameter of the liner are covered by EN 13084-1. Material expansion due to temperature shall be taken into account. For steel liners and prefabricated metal chimneys the class of chemical attack shall be in accordance with EN 13084-1.

5.2 Liner

The liner shall be designed in such a way that it is able to take the actions caused by:

— permanent action;

— pressure;

— temperature;

— the interaction with the supporting and guiding system;

— construction, transport and erection.

The expansion shall be based upon the temperature, and length or diameter of the liner.

For prefabricated metal chimneys the free movement of the liner shall be guaranteed.

5.3 Liner details

5.3.1 Supports and/or guides

Supports and/or guides shall be designed in such a manner that they are able to take the actions caused by:

— the lining system;

— the load bearing system;

— thermal transfer;

— construction, transport and erection.

For prefabricated metal chimneys the distance between horizontal supports shall not exceed 75 % of the manufacturers declared value as defined in EN 1856-1 and EN 1856-2 with a maximum of 3,0 m. Their free unsupported height above the last support shall not exceed 66 % of the manufacturers declared value as defined in EN 1856-1 and EN 1856-2 with a maximum of 2,0 m.

5.3.2 Openings

Where openings are cut into the liner, as for duct entries, instrumentation or inspection panels, the strength and the stability shall be verified including any imposed loads.

Openings in the liner shall have corners radiussed. See 6.3 for details.

If prefabricated metal chimneys are not able to fulfil the given criteria in 6.3 a welded inlet construction can be used according to the requirements of this document and EN 13084-7. The connection between the welded inlet construction and prefabricated metal chimney part shall be gas tight according to the class of the liner.

The size of openings shall be dimensioned according to their use.

Manholes shall have a minimum area of 0,28 m^2 and a minimum width of 0,45 m.

Cleaning and inspection openings shall be provided so that the bottom of the liner may be inspected and cleaned when necessary.

If openings are enclosed within the windshield they shall be to the same standard of gas tightness as the liner itself.

If a ventilated space is provided there shall be adequate provision for the inspection of this space.

5.3.3 Drainage system

Adequate means shall be provided to drain condensate.

The drainage system shall be dimensioned and fitted according to the operating conditions.

This code does not cover the removal and disposal of condensate or waste products from the termination point of the drainage system fitted by the chimney manufacturer. It should be noted that the condensate and waste products should not be allowed to freeze, nor cold air bleed back into the liner.

5.3.4 Seals, gaskets and jointing compounds

If seals, gaskets or jointing compounds are used their influence on the structure shall be considered.

5.3.5 Expansion joints

Expansion joints shall be designed to withstand movements due to thermal expansion, chimney and foundation movement, design pressures and flue gas composition in appropriate combinations.

Expansion joints shall be to the same standard of gas tightness as the liner itself.

5.3.6 Chimney cap

The chimney cap protects the space between liner(s) and windshield against the ingress of weather and flue gas.

Consideration shall also be given to the effects of chemical attack.

5.3.7 Insulation

Deviating from EN 13084-1:2007, 4.3.2, the insulation and/or cladding shall be sufficient to ensure that under normal operating conditions the surface temperature, not including solar gain, does not exceed 50 °C at an ambient temperature of 15 °C where personnel protection is required.