SLOVENSKI STANDARD
SIST EN 13084-6:2005

01-april-2005

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 intérieurs en acier - Conception et mise en oeuvre

Ta slovenski standard je istoveten z: **EN 13084-6:2004**

ICS:

91.060.40	Dimniki, jaški, kanali	Chimneys, shafts, ducts

SIST EN 13084-6:2005 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13084-6

November 2004

ICS 91.060.40

English version

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

Conduits de fumée auto-portants - Partie 6: Parois intérieurs en acier - Planification et exécution

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

This European Standard was approved by CEN on 10 October 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 13084-6:2004: E

Contents

Tables

Foreword

This document (EN 13084-6:2004) 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 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

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*[1].

— EN 13084-6, *Free-standing chimneys – Part 6: Steel liners – Design and execution*[1].

— EN 13084-7, *Free-standing chimneys – Part 7: Product specifications of cylindrical steel fabrications for use in single wall steel chimneys and steel liners*[1].

— EN 13084-8, *Free-standing chimneys – Part 8: Design and execution of mast construction with satellite components*[1].

— 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 organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

[1] To be published

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 also 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 referenced documents are indispensable for the application of this document. 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 liners and connecting flue pipes*.

EN 1859:2000, *Chimneys – Metal chimneys – Test methods.*

EN 1993-1-6, *Eurocode 3: Design of steel structures – Part 1-6: General rules - Supplementary rules for the shell structures.*

EN 1993-3-2, *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 13084-1:2000, *Free-standing industrial chimneys – Part 1: General requirements.*

prEN 13084-7:2001, *Free-standing chimneys – Part 7: Product specification of cylindrical steel fabrications for use in single wall steel chimneys and steel liners.*

IEC 62305-1, *Protection against lightning – Part 1: General principles.*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in EN 13084-1:2000 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 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 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 prEN 13084-7.

Other steels have to 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 has to 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, length and 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 radiused. See 6.3 for details.