SLOVENSKI STANDARD
SIST EN 13084-1:2025

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Prostostoječi dimniki - 1. del: Splošne zahteve

Free-standing chimneys - Part 1: General requirements

Freistehende Schornsteine - Teil 1: Allgemeine Anforderungen

Cheminées autoportantes - Partie 1 : Exigences générales

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91.060.40	Dimniki, jaški, kanali	Chimneys, shafts, ducts

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Free-standing chimneys - Part 1: General requirements

Cheminées autoportantes - Partie 1 : Exigences générales

Freistehende Schornsteine - Teil 1: Allgemeine Anforderungen

This European Standard was approved by CEN on 25 November 2024.

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

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European foreword

This document (EN 13084-1:2025) has been prepared by Technical Committee CEN/TC 297 “Free-standing industrial chimneys”, the secretariat of which is held by AFNOR.

This document supersedes EN 13084-1:2007.

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of an identical text or by endorsement, at the latest by July 2025, and conflicting national standards shall be withdrawn at the latest by July 2025.

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

In comparison with its previous edition EN 13084-1:2007, the current edition EN 13084-1:2024 includes the following:

— reorganization of terms and definitions;

— addition of the paragraph on connecting flue pipe;

— additional information on access systems;

— new informative Annex B “Calculation method for combined flue gases with different temperatures”.

This document is part 1 of a series of standards as listed below:

— EN 13084-1, *Free-standing 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 13084-9, *Free-standing chimneys — Part 9: Lifetime management — Monitoring, inspection, maintenance, remedial and reporting; operations and actions required*

Additionally applies:

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

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

1 Scope

This document deals with the general requirements and the basic performance criteria for the design and construction of all types of structurally independent chimneys including their liners.

This document also applies to chimneys connected to buildings when at least one of the following criteria is met:

— the distance between the lateral guides is more than 4 m;

— the free-standing height above the uppermost structural support attachment is more than 3 m;

— the free-standing height above the uppermost structural support attachment for chimneys with rectangular cross section is more than five times the smallest external dimension.

Structurally independent chimneys take into account in their design: operational conditions and other actions to verify mechanical resistance and stability and safety in use. Detailed requirements relating to specialized designs are given in the standards for concrete chimneys, steel chimneys and their liners, as well as masts construction with satellite components.

In other parts of the EN 13084 series, rules will be given where system chimney products in accordance with EN 1443 (and the relating product standards) are used in structurally independent chimneys.

This document does not cover the design and construction of connecting flue pipes.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1990, *Eurocode — Basis of structural and geotechnical design*

EN 1991-1-1, *Eurocode 1: Actions on structures — Part 1-1: General actions — Densities, self-weight, imposed loads for buildings*

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

EN 1998-6, *Eurocode 8: Design of structures for earthquake resistance — Part 6: Towers, masts and chimneys*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/

— IEC Electropedia: available at https://www.electropedia.org/

3.1 General terms

3.1.1
chimney
vertical structure used to carry off air or combustion products to the outside up to a height from the ground defined to ensure dispersion of the pollutants in order to avoid, prevent or reduce harmful effects on human health and the environment

3.1.2
structurally independent chimney
free-standing chimney
chimney designed and manufactured in order to be self-supporting and resist other operational conditions like wind, oscillations, vibrations, etc

Note 1 to entry: A chimney may also be considered as structurally independent, if it is guyed or laterally supported or if it stands on another structure.

3.1.3
guyed chimney
chimney, the stability of which is ensured by guy ropes

3.1.4
concrete chimney
chimney, the windshield of which is made of concrete

3.1.5
steel chimney
chimney, the windshield of which is made of steel

3.1.6
masonry chimney
chimney the windshield of which is made of masonry

3.1.7
single-wall chimney
chimney whose structural shell also conducts the flue gases and can be fitted with thermal insulation and/or internal lining

3.1.8
double-wall chimney
chimney consisting of an outer structural shell and one inner liner which carries the flue gases

3.1.9
multi-flue chimney
group of two or more chimneys structurally interconnected or a group of two or more liners within a structural shell

3.1.10
effective chimney height
vertical distance between the inlet (centre axis) and the chimney outlet level

3.1.11
involved party
party involved in the process of executing the project, including designers, specifiers, manufacturers, installers, customers, end-users and contractors

3.2 Terms for chimney parts

3.2.1
windshield
structural shell designed for load bearing purposes and to protect the flue from wind actions

Note 1 to entry: It may also function as a flue.

3.2.2
structural shell
main load-bearing steel structure of the shell structure, excluding any flanges

3.2.3
mast
structural construction designed and manufactured to be self-supportive and/or free standing and support the attached satellite components

3.2.4
lining system
total system, if any, which separates the flue gases from the windshield

Note 1 to entry: This comprises a liner and its supports, the space between liner and windshield and insulation, where existing.

3.2.5
liner
structural element (membrane) of the lining system, contained within the structural shell

3.2.6
lateral guide
component of a chimney or connecting flue pipe/duct used to fix it to a structural element (building, mast, wind shield…) in order to withstand lateral loads (wind load for instance)

3.2.7
accessible space
space between windshield and liner that is designed for entry by personnel

3.2.8
connecting flue pipe/duct
component or components connecting the appliance outlet to the chimney

3.2.9
cladding
additional non-structural outer wall around a chimney and/or liner for protection against heat transfer and/or weathering, and/or for decorative purposes

3.2.10
coating
paint or other surface treatment to protect the outer surface of a liner or chimney against atmospheric corrosivity and/or plume downwash

3.2.11
insulation
material and/or air gap between the flue liner and the outer wall, designed to increase the thermal resistance of the chimney, reduce condensates and improve buoyancy

3.2.12
spoiler
device attached to the surface of a chimney with the objective of reducing cross wind response

3.2.13
protective cap
cap at the top of the chimney which covers the space between windshield and liner

3.2.14
climbing socket
threaded socket inserted in the concrete windshield to enable climbing dogs to be attached to the surface

3.3 Terms for operation

3.3.1
inlet
location where gases come into the chimney

3.3.2
outlet
top of the chimney, where the flue gases are released to the atmosphere

3.3.3
flue gas
gaseous products of combustion or other processes, including air, which can comprise of solids or liquids

3.3.4
gas tightness
ability of the liner to prevent smoke/exhaust gases from escaping out of the liner into the chimney or the outside atmosphere under the outlet level

3.3.5
positive pressure
pressure inside the liner which is greater than the pressure outside the liner

3.3.6
negative pressure
pressure inside the liner which is lower than the pressure outside the liner

3.3.7
flow resistance
pressure loss in a flue or in a combustion circuit opposed to the flow of the flue gas and/or combustion air in motion at a given temperature and velocity

3.3.8
individual resistance coefficient
dimensionless quantity that defines the flow resistance of an incident or an equipment on the flue

3.3.9
thermal resistance
resistance to heat transfer from the inside to the outside of the chimney

3.3.10
thermal shock resistance
ability of the chimney and/or liner to withstand sudden changes in temperature either during heating or cooling

3.3.11
intransient heat flow
flow of heat, where the temperature of each point does not change with time

3.3.12
transient heat flow
flow of heat, where the temperature changes with time

3.3.13
mean roughness
average of the surface roughness of the liner or the component

3.3.14
down draught
negative pressure on the lee-side of the chimney top, which can cause the flue gases to be drawn down

3.3.15
gas flow
mass or volume of gas through the liner per unit of time

4 General requirements

4.1 Materials

Materials shall conform to the appropriate CEN or ISO standards. Where no such standards exist, other materials may be used if their properties are well defined and their suitability has been proven. This proof shall take account of the mechanical, thermal and chemical loads.

For concrete and steel chimneys as well as for liners see EN 13084-2, EN 13084-4, EN 13084-5, EN 13084-6, EN 13084-7, EN 13084-8 and EN 1993-3-2:2006.

4.2 Flue gas considerations

4.2.1 General

Thermal and flow calculations shall be carried out to ensure that the flue gases will be conveyed from the combustion appliance to atmosphere taking into account the effects of the flue gases on the environment and the safety in use. However, the effect of the flue gases concerning the pollution with gaseous and particle components is not the subject matter of this document.