



# SLOVENSKI STANDARD

## SIST EN 14471:2014

01-februar-2014

Nadomešča:  
SIST EN 14471:2006

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### Dimniki - Sistemski dimniki s plastičnimi dimniškimi tuljavami - Zahteve in preskusne metode

Chimneys - System chimneys with plastic flue liners - Requirements and test methods

Abgasanlagen - Systemabgasanlagen mit Kunststoffinnenrohren - Anforderungen und Prüfungen

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Conduits de fumée - Systèmes de conduits de fumée avec parois intérieures en plastique - Exigences et méthodes d'essai

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**Ta slovenski standard je istoveten z: EN 14471:2013**

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#### **ICS:**

91.060.40      Dimniki, jaški, kanali      Chimneys, shafts, ducts

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**en,fr,de**

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EUROPEAN STANDARD

EN 14471

NORME EUROPÉENNE

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November 2013

ICS 91.060.40

Supersedes EN 14471:2005

English Version

## Chimneys - System chimneys with plastic flue liners - Requirements and test methods

Conduits de fumée - Système de conduits de fumée avec  
conduits intérieurs en plastique - Prescriptions et méthodes  
d'essai

Abgasanlagen - Systemabgasanlagen mit  
Kunststoffinnenrohren - Anforderungen und Prüfungen

This European Standard was approved by CEN on 14 September 2013.

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.

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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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**EN 14471:2013 (E)****Foreword**

This document (EN 14471:2013) has been prepared by Technical Committee CEN/TC 166 “Chimneys”, the secretariat of which is held by ASI.

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of an identical text or by endorsement, at the latest by May 2014, and conflicting national standards shall be withdrawn at the latest by May 2014.

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 14471:2005.

The main modifications compared to EN 14471:2005 are the following:

- the Normative References were updated;
- additions were made in Clause 3 (Terms and definitions);
- Clause 4 was revised;
- the requirements in Clause 5 were completely revised;
- all annexes were revised and some annexes were added.

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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.

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.



## Introduction

The objective of this European Standard is to evaluate the behaviour of system chimneys with plastic flue liners.

A system chimney with a plastic flue liner may be a single wall chimney (only the plastic flue liner) or may be a double wall chimney or a flue liner with enclosure or with outer wall. The system chimney according to this standard can consist of a plastic liner only (e.g. single wall) or a system with plastic inner liner (e.g. concentric or with outer wall). The system chimney is defined by the manufacturer, whereas the requirements for the installation are defined by the national regulations of the member states.

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**EN 14471:2013 (E)****1 Scope**

This European Standard specifies the performance requirements and test methods for system chimneys with plastic flue liners used to convey the products of combustion from appliances to the outside atmosphere under dry and wet conditions. It also specifies the requirements for marking, manufacturer's instructions and evaluation of conformity.

This European Standard describes chimney components from which system chimneys can be assembled.

This European Standard is not applicable to chimneys with sootfire resistance classification class G.

This European Standard is not applicable for chimneys with the following classification:

- corrosion resistance class 2 concerning natural wood<sup>1)</sup>;
- corrosion resistance class 3;
- pressure class N2.

This European Standard is applicable to chimneys designed so that no condensate accumulation can occur, e.g. with a minimum inclination of 3° to the horizontal.

This European Standard is not applicable

- for system chimneys with plastic coated flue liners;
- to structurally independent (free-standing or self-supporting) chimneys.

Chimneys with components which need further processing during the installation to reach the final material properties are no system chimneys and therefore also not covered by this standard.

This European Standard does not cover the requirements for horizontal terminals (as defined for C1 installation types in CEN/TR 1749) regarding aerodynamic behaviour, rainwater ingress and icing behaviour.

**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 1443:2003, *Chimneys — General requirements*

EN 13216-1:2004, *Chimneys — Test methods for system chimneys — Part 1: General test methods*

EN 13384-1:2002+A2:2008, *Chimneys — Thermal and fluid dynamic calculation methods — Part 1: Chimneys serving one appliance*

EN 13501-1:2007+A1:2009, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

EN 13501-2, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*

1) There is no sufficient knowledge on data for flue gas condensate from appliances fired with natural wood.

EN 14241-1, *Chimneys — Elastomeric seals and elastomeric sealants — Material requirements and test methods — Part 1: Seals in flue liners*

EN 14297, *Chimneys — Freeze-thaw resistance test method for chimney products*

EN 60529, *Degrees of protection provided by enclosures (IP code) (IEC 60529)*

EN ISO 75-1, *Plastics — Determination of temperature of deflection under load — Part 1: General test method (ISO 75-1)*

EN ISO 178, *Plastics — Determination of flexural properties (ISO 178)*

EN ISO 179-1, *Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test (ISO 179-1)*

EN ISO 306, *Plastics — Thermoplastic materials — Determination of Vicat softening temperature (VST) (ISO 306)*

EN ISO 527-1, *Plastics — Determination of tensile properties — Part 1: General principles (ISO 527-1)*

EN ISO 527-2, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2)*

EN ISO 1043-1, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics (ISO 1043-1)*

EN ISO 1133-1, *Plastics — Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics — Part 1: Standard method (ISO 1133-1)*

EN ISO 1133-2, *Plastics — Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics — Part 2: Method for materials sensitive to time-temperature history and/or moisture (ISO 1133-2)*

EN ISO 1183-1, *Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pycnometer method and titration method (ISO 1183-1)*

EN ISO 8256, *Plastics — Determination of tensile-impact strength (ISO 8256)*

EN ISO 9969, *Thermoplastics pipes — Determination of ring stiffness (ISO 9969)*

EN ISO 11925-2, *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2)*

EN ISO 11357-3, *Plastics — Differential scanning calorimetry (DSC) — Part 3: Determination of temperature and enthalpy of melting and crystallization (ISO 11357-3)*

EN ISO 14021, *Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling) (ISO 14021)*

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1443:2003, EN 13216-1:2004 and the following apply.

**EN 14471:2013 (E)****3.1  
characterization**

identification (finger print) of the material by determining a combination of properties covering the thermal, mechanical and physicochemical behaviour

**3.2  
material**

material composition of which an individual component is made, being the result of a manufacturing process in which the raw material(s) is transformed by extrusion, moulding, welding, etc. in its intended shape

**3.3  
material test**

test in which specific properties of a material as defined in 3.2 are tested

Note 1 to entry: The material test does not include the effects of the performance of the chimney system resulting in stress etc. on the individual components.

**3.4  
flue**

passage for conveying the products of combustion to the outside atmosphere

**3.5  
flue gas**

gaseous portion of the products of combustion conveyed in a flue

**3.6  
products of combustion**

products resulting from the combustion of fuel (gaseous, liquid and solid constituents)

**3.7  
flue liner**

wall of a chimney consisting of components the surface of which is in contact with products of combustion

[SOURCE: EN 1443:2003, 3.5]

**3.8  
coated flue liner**

flue liner where material is applied to the inner surface of the flue liner to change the surface properties

**3.9  
chimney**

structure consisting of a wall or walls enclosing a flue or flues

**3.10  
chimney component**

any part of a chimney

[SOURCE: EN 1443:2003, 3.7]

**3.11  
chimney fitting**

chimney component conveying products of combustion except a chimney section

**3.12  
chimney section**

straight chimney component conveying products of combustion

**3.13****single wall chimney**

chimney where the flue liner is the chimney

**3.14****multi-wall chimney**

chimney consisting of a flue liner and at least one additional wall

**3.15****outer wall**

external wall of a chimney the surface of which comes in contact with ambient or external environment, or is within cladding or enclosure

**3.16****cladding**

additional non-structural outer wall around a chimney for protection against heat transfer or weathering, or for decorative purposes

**3.17****external installation**

part of a chimney which is located outside the building

**3.18****internal installation**

part of a chimney which is located inside a building

**3.19****joint**

connection between two components

**3.20****support**

chimney accessory used to fix (or transfer the load of) chimney components to structural elements (building, mast, etc.)

**3.21****connecting flue pipe**

component or components connecting the heating appliance outlet and the chimney

**3.22****terminal**

fitting installed at the outlet of a chimney

**3.23****system chimney**

chimney that is installed using a combination of compatible chimney components, obtained or specified from one manufacturing source with product responsibility for the whole chimney

**3.24****enclosure**

barrier that when built around a chimney will give additional safety in case of fire and may provide additional heat transfer resistance

**3.25****dry operating condition**

condition when a chimney is designed to operate normally with the temperature of the inner surface of the flue liner above the water dew point

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## 3.26

**wet operating condition**

condition when the chimney is designed to operate normally with the temperature of the inner surface of the flue liner at or below the water dew point

## 3.27

**condensate**

liquid products formed when the flue gas is at or below the water dew point

## 3.28

**negative pressure chimney**

chimney designed to operate with the pressure inside the flue less than the pressure outside the flue

## 3.29

**positive pressure chimney**

chimney designed to operate with the pressure inside the flue greater than the pressure outside the flue

## 3.30

**sootfire**

combustion of the flammable residue deposited on the flue liner

## 3.31

**sootfire resistant chimney**

chimney that is capable of withstanding a specified thermal shock

## 3.32

**thermal resistance of a chimney**

resistance to heat transfer through the wall or walls of the chimney

## 3.33

**reaction to fire**

response of a product in contributing by its own decomposition to a fire to which it is exposed, under specified conditions

## 3.34

**resistance to fire of a chimney**

ability of the chimney to prevent ignition of adjacent combustible materials and to prevent the spread of fire to adjacent areas

## 3.35

**nominal working temperature**

average flue gas temperature obtained during the nominal output test for the maximum temperature level

symbol :  $T_{nom}$  in °C

## 3.36

**material test temperature**

temperature the material is actually exposed to in the oven during long-term resistance to thermal load

symbol :  $T_m$  in °C

## 3.37

**performance test temperature**

temperature of the medium in the flue liner of a system chimney which is exposed to during the test according to 7.2 to 7.6

symbol :  $T_f$  in °C

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**3.38****free-standing chimney**

chimney, externally attached to a building, which meets at least one of the following criteria:

- distance between the lateral supports is greater than 4 m;
- free-standing height above the uppermost structural attachment is greater than 3 m;
- horizontal distance between the building and the outer surface of the chimney is greater than 1 m.

A chimney attached to a free-standing mast is considered as a free-standing chimney.

A chimney can also be considered as free-standing if it is guyed or laterally supported or if it stands on another structure.

[SOURCE: EN 13084-1:2007]

**3.39****flexible flue liner**

flue liner that is designed to change its shape by elastic deformation to accommodate bends in the route of the flue without significantly changing the cross section

**3.40****flow resistance of a terminal**

pressure loss in a terminal due to the flow in the flue duct and where appropriate in the air duct gas at a given temperature and velocity

Note 1 to entry: For balanced flue applications there is a pressure loss for the flue and also for the air supply. For non-balanced flue applications there is a pressure loss only for the flue.

**3.41****coefficient of flow resistance**

ratio between the flow resistance of a terminal and the dynamic pressure of the medium due to a directional and/or cross sectional change in the terminal

**3.42****wind velocity pressure**

pressure generated on the terminal due to wind

**3.43****coefficient of wind velocity pressure**

ratio between the pressure generated by wind in the flue duct and where appropriate in the air duct and the dynamic pressure of the wind

Note 1 to entry: For balanced flue applications it is the ratio of the differential pressure generated by wind between the flue duct and the air duct and the dynamic pressure of the wind.

**3.44****recirculation factor**

ratio between the amounts of flue gas returning from the flue gas outlet to the air supply duct and the air flow in the air supply duct

**3.45****wind direction characteristics**

range of the angles of wind directions in a vertical plane

**3.46****rainwater ingress**

water which enters the flue duct or the air duct