



# SLOVENSKI STANDARD

SIST EN 14471:2006

01-januar-2006

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

Abgasanlagen - Systemabgasanlagen mit Kunststoffinnenrohren - Anforderungen und Prüfungen

Conduits de fumée - Systemes de conduits de fumée avec parois intérieurs en plastique  
- Exigences et méthodes d'essai

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Ta slovenski standard je istoveten z: <sup>SIST EN 14471:2006</sup> EN 14471:2005  
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**ICS:**

91.060.40

**SIST EN 14471:2006**

**en**

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ICS 91.060.40

English Version

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

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

Abgasanlagen - Systemabgasanlagen für  
Kunststoffinnenrohre - Anforderungen und Prüfungen

This European Standard was approved by CEN on 1 July 2005.

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.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This European Standard (EN 14471:2005) has been prepared by Technical Committee CEN/TC 166 “Chimneys”, the secretariat of which is held by UNI.

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 February 2006, and conflicting national standards shall be withdrawn at the latest by February 2006.

This European Standard 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 European Standard.

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.

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## Introduction

The objective of this European Standard is to evaluate the behaviour of system chimneys<sup>1)</sup> with plastic flue liners.

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1) 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.



## 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>2)</sup>;
- corrosion resistance class 3;
- pressure class N2.

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

This European Standard is only applicable to system chimneys with plastic flue liners and is not applicable for system chimneys with plastic coated flue liners.

This European Standard is not applicable to structurally independent (free-standing or self-supporting) chimneys.

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## 2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 513, *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors - Determination of the resistance to artificial weathering*

EN 1443:2003, *Chimneys - General requirements*

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

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

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

EN 13384-1, *Chimneys - Thermal and fluid dynamic calculation methods - Part 1: Chimneys serving one appliance*

EN 13501-1:2002, *Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire tests*

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

## EN 14471:2005 (E)

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

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

prEN 14989-1, *Chimneys and air supply duct systems for roomsealed appliances - Requirements and test methods - Part 1: Vertical terminals for C6-type appliances*

EN 60529, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

EN ISO 178, *Plastics - Determination of flexural properties (ISO 178:2001)*

EN ISO 179-1, *Plastics - Determination of Charpy impact properties - Part 1: Non-instrumented impact test (ISO 179-1:2000)*

EN ISO 306, *Plastics - Thermoplastic materials - Determination of Vicat softening temperature (VST) (ISO 306:2004)*

EN ISO 527-1, *Plastics - Determination of tensile properties - Part 1: General principles (ISO 527-1:1993 including Corr 1:1994)*

EN ISO 527-2, *Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2:1993 including Corr 1:1994)*

EN ISO 1043-1, *Plastics - Symbols and abbreviated terms - Part 1: Basic polymers and their special characteristics (ISO 1043-1:2001)*

EN ISO 1133, *Plastics - Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics (ISO 1133:1997)*

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 1183-1:2004)*

EN ISO 8256, *Plastics - Determination of tensile-impact strength (ISO 8256:2004)*

EN ISO 9969, *Thermoplastics pipes - Determination of ring stiffness (ISO 9969:1994)*

EN ISO 14021, *Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling) (ISO 14021:1999)*

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

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

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

### 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1443:2003 and the following apply.

#### 3.1

##### **characterisation<sup>3)</sup>**

identification 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<sup>4)</sup>**

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

#### 3.4

##### **flue**

passage for conveying the products of combustion to the outside atmosphere [3.2 of EN 1443: 2003]

#### 3.5

##### **flue gas**

gaseous portion of the products of combustion conveyed in a flue [3.3 of EN 1443: 2003]

#### 3.6

##### **products of combustion**

products resulting from the combustion of fuel (gaseous, liquid and solid constituents) [3.4 of EN 1443: 2003]

#### 3.7

##### **flue liner**

wall of a chimney consisting of components the surface of which is in contact with products of combustion [3.5 of EN 1443: 2003]

#### 3.8

##### **coated flue liner**

flue liner with a layer applied to change the surface properties

#### 3.9

##### **chimney**

structure consisting of a wall or walls enclosing a flue or flues [3.6 of EN 1443: 2003]

#### 3.10

##### **chimney component**

any part of a chimney [3.7 of EN 1443: 2003]

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3) A fingerprint of the material.

4) The material test does not include the effects of the performance of the chimney system resulting in stress etc. on the individual components.

**3.11**

**chimney fitting**

chimney component conveying products of combustion except a chimney section [3.9 of EN 1443: 2003]

**3.12**

**chimney section**

straight chimney component conveying products of combustion [3.8 of EN 1443: 2003]

**3.13**

**single wall chimney**

chimney where the flue liner is the chimney [3.11 of EN 1443: 2003]

**3.14**

**multi-wall chimney**

chimney consisting of a flue liner and at least one additional wall [3.12 of EN 1443: 2003]

**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 [3.15 of EN 1443: 2003]

**3.16**

**cladding**

additional non structural outer wall around a chimney for protection against heat transfer or weathering, or for decorative purposes [3.17 of EN 1443: 2003]

**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

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**3.19**

**joint**

connection between two components [3.29 of EN 1443: 2003]

**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 [3.31 of EN 1443: 2003]

**3.22**

**terminal**

fitting installed at the outlet of a chimney [3.19 of EN 1443: 2003]

**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 [3.13 of EN 1443: 2003]

**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 [3.16 of EN 1443: 2003]

**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 [3.23 of EN 1443: 2003]

**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 [3.24 of EN 1443: 2003]

**3.27****condensate**

liquid products formed when the flue gas is at or below the water dew point [3.27 of EN 1443: 2003]

**3.28****negative pressure chimney**

chimney designed to operate with the pressure inside the flue less than the pressure outside the flue [3.21 of EN 1443: 2003]

**3.29****positive pressure chimney**

chimney designed to operate with the pressure inside the flue greater than the pressure outside the flue [3.22 of EN 1443 : 2003]

**3.30****sootfire**

combustion of the flammable residue deposited on the flue liner [3.25 of EN 1443: 2003]

**3.31****sootfire resistant chimney**

chimney that is capable of withstanding a specified thermal shock [3.26 of EN 1443: 2003]

**3.32****thermal resistance of a chimney**

resistance to heat transfer through the wall or walls of the chimney [3.28 of EN 1443: 2003]

**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 [3.1.14 of EN 13501-1: 2002]

**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 [3.30 of EN 1443: 2003]

**3.35****nominal working temperature**

average flue gas temperature obtained during the nominal output test for the maximum temperature level [3.32 of EN 1443: 2003]

symbol :  $T_{\text{nom}}$  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

**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. [EN 13084-1]

**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.

## 4 Classification and designation

### 4.1 General

The classification system of EN 1443 is followed.

Chimneys shall be classified in accordance with classes of convenience for the following parameters:

- Temperature;
- Pressure;
- Sootfire resistance;
- Condensate resistance;
- Corrosion resistance;
- Thermal resistance;
- Distance from combustibles;
- Location;

- Reaction to fire;
- Enclosures.

#### 4.2 Temperature classes

Temperature classes for chimneys see Table 1.

NOTE Temperature classes up to T600 do not necessarily imply that all of these classes are applicable for system chimneys with plastic flue liners.

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