

# **SLOVENSKI STANDARD**

## **SIST-TS CEN/TS 16134:2012**

**01-februar-2012**

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**Dimniške kape - Splošne zahteve in preskusne metode, neodvisne od materiala**

Chimney terminals - General requirements and material independent test methods

Schornsteinaufsätze - Allgemeine Anforderungen und werkstoffunabhängige Prüfverfahren

Terminaux de conduits de fumée - Exigences générales et méthodes d'essai pour tous matériaux

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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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ICS 91.060.40

English Version

**Chimney terminals - General requirements and material  
independent test methods**

Terminaux de conduits de fumée - Exigences générales et  
méthodes d'essai pour tous matériaux

Schornsteinaufsätze - Allgemeine Anforderungen und  
werkstoffunabhängige Prüfverfahren

This Technical Specification (CEN/TS) was approved by CEN on 30 November 2010 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (CEN/TS 16134:2011) has been prepared by Technical Committee CEN/TC 166 “Chimneys”, the secretariat of which is held by UNI.

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 Technical Specification describes general requirements for terminals based on the appropriate characteristics of EN 1443.

This Technical Specification describes material independent test methods for vertical terminals concerning

- flow resistance,
- wind velocity pressure,
- recirculation,
- rain water ingress and
- icing behaviour.

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Material relevant items or items related to the chimney for the terminal are not in the scope of this Technical Specification.

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According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

## Introduction

This Technical Specification covers vertical terminals for non room-sealed and for room-sealed appliances.

NOTE Room-sealed applications include balanced and non-balanced flue applications.

The characteristics of a terminal are dependent on its type, as declared by the manufacturer.

The type of terminal depends on whether the wind influence is taken into account and whether the application is for balanced or non-balanced flue chimneys.

The characteristics are also considering different wind directions regarding the intended location of the terminal.

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## 1 Scope

This Technical Specification specifies general requirements and material independent test methods for vertical terminals with different aerodynamic properties.

This Technical Specification does not apply to material dependent test methods and to requirements and test methods related to a chimney.

It is intended to be used as reference for product standards for terminals.

NOTE For the designation, marking and product information, relating to the items of the terminals a proposal is included.

## 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 1443:2003, *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 14297:2004, *Chimneys — Freeze-thaw resistance test method for chimney products*

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

## 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.

NOTE Pressure always means the difference pressure to the environment.

### 3.1

#### **terminal**

fitting installed at the outlet of a chimney

NOTE The terminal can be a separate component of a chimney and/or a part of a chimney.

### 3.2

#### **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 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.

### 3.3

#### **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

**CEN/TS 16134:2011 (E)****3.4****wind velocity pressure**

pressure generated on the terminal due to wind

**3.5****coefficient of wind velocity pressure**

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

NOTE 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.

**3.6****recirculation factor**

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

**3.7****wind direction characteristics**

range of the angles of wind directions in a vertical plane

**3.8****rainwater ingress**

water which enters the flue duct or the air duct

**3.9****icing behaviour**

ice sticking to the terminal caused by condensing flue gas under freezing conditions

**3.10****room-sealed appliance**

appliance, in which the combustion circuit (air supply, combustion chamber, heat exchanger and evacuation of the products of combustion) is sealed with respect to the room in which the appliance is installed

**3.11****balanced flue terminal**

terminal where the air entry to the combustion air supply duct is adjacent to the discharge of combustion products from the flue

NOTE The inlet and outlet being so positioned that wind effects are substantially balanced.

**4 Manufacturers declaration for a type test**

The following information is required for type testing:

- materials from which the terminal is made;
- declared internal diameter and tolerances of manufacture;
- the nominal product size;
- the use of the terminal, e.g. for one flue or for multiple flues or balanced flue applications;
- the intended designation of the terminal.

## 5 Characteristics of a terminal

### 5.1 General

All material dependent characteristics of a terminal shall be in accordance with the material related product standards.

### 5.2 Types of terminals

#### 5.2.1 Type I

##### 5.2.1.1 General

The terminal may be additional tested for icing behaviour.

##### 5.2.1.2 Type Ia

A terminal for non-balanced flue applications, tested for flow resistance but not for wind velocity pressure (wind influence) and not for rainwater ingress.

NOTE The terminal is suitable for non room-sealed and non-balanced flue room-sealed applications.

##### 5.2.1.3 Type Ib

A terminal for non-balanced flue applications, tested for flow resistance but not for wind velocity pressure (wind influence). This terminal is additional tested for rainwater ingress.

NOTE The terminal is suitable for non room-sealed and non-balanced flue room-sealed applications.

#### 5.2.2 Type II

A terminal for non-balanced flue applications, tested for flow resistance and for wind velocity pressure at least. The terminal may be additional tested for rainwater ingress and icing behaviour.

NOTE The terminal is suitable for non room-sealed and non-balanced flue room-sealed applications when wind influence according to EN 13384-1:2002+A2 is covered.

#### 5.2.3 Type III

A terminal for balanced flue applications, tested for flow resistance and for wind velocity pressure and recirculation at least. The terminal may be additional tested for rainwater ingress and icing behaviour.

NOTE The terminal is suitable for room-sealed applications.

### 5.3 Wind direction characteristics

One of the following ranges of the angles of wind direction in a vertical plane shall be regarded, see Table 1.

**Table 1 — Wind direction characteristics**

Wind direction characteristic	A90	A45	A30
Wind direction in a vertical plane	-45° to + 90°	-45° to + 45°	-30° to + 30°

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## 6 Dimensions, shapes and tolerances

The dimensions, shapes and tolerances of components shall be validated in accordance with the specifications of the relevant product standards.

## 7 Requirements

### 7.1 General

The following is a list of criteria to be taken into consideration in the material related product standards.

### 7.2 Mechanical resistance and stability

For the mechanical resistance and stability the following criteria has to be taken into consideration:

- resistance to horizontal and vertical loads;
- resistance to lateral load for a reference wind velocity pressure of 1,5 kN/m<sup>2</sup>;
- resistance to freeze-thaw. When national regulations or national accepted rules are requiring it, it shall be tested according to EN 14297 or appropriate material dependent tests. When it is not tested it shall be declared NPD.

### 7.3 Thermal behaviour

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When for stability thermal testing takes place, it shall be carried out at the test temperatures under steady state conditions appropriate to the product designation given in Table 2. Steady state conditions are defined in the relevant material related test standards.

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**Table 2 — Test temperatures**

Temperature class	T 80	T 100	T 120	T 140	T 160	T 200	T 250	T 300	T 400	T 450	T 600
Test temperature °C	100	120	150	170	190	250	300	350	500	550	700

When for stability thermal testing takes place for soot fire resistance it shall be carried out at a test temperature of 1 000 °C for 30 min.

### 7.4 Hygiene, health and environment

#### 7.4.1 Gas tightness

When tested in accordance with the appropriate standardized test the leakage rate in litres/seconds per square meters of flue surface of the terminal before and after exposure to heat, (see 7.3), shall not exceed the values given in Table 3.