

TECHNICAL SPECIFICATION  
SPÉCIFICATION TECHNIQUE  
TECHNISCHE SPEZIFIKATION

CEN/TS 16134

September 2011

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.

CEN members are the national standards bodies of 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 United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents	Page
<b>Foreword.....</b>	<b>5</b>
<b>Introduction .....</b>	<b>6</b>
<b>1 Scope .....</b>	<b>7</b>
<b>2 Normative references .....</b>	<b>7</b>
<b>3 Terms and definitions .....</b>	<b>7</b>
<b>4 Manufacturers declaration for a type test.....</b>	<b>8</b>
<b>5 Characteristics of a terminal .....</b>	<b>9</b>
<b>5.1 General.....</b>	<b>9</b>
<b>5.2 Types of terminals .....</b>	<b>9</b>
<b>5.2.1 Type I.....</b>	<b>9</b>
<b>5.2.2 Type II.....</b>	<b>9</b>
<b>5.2.3 Type III.....</b>	<b>9</b>
<b>5.3 Wind direction characteristics .....</b>	<b>9</b>
<b>6 Dimensions, shapes and tolerances.....</b>	<b>10</b>
<b>7 Requirements .....</b>	<b>10</b>
<b>7.1 General.....</b>	<b>10</b>
<b>7.2 Mechanical resistance and stability.....</b>	<b>10</b>
<b>7.3 Thermal behaviour.....</b>	<b>10</b>
<b>7.4 Hygiene, health and environment .....</b>	<b>10</b>
<b>7.4.1 Gas tightness .....</b>	<b>10</b>
<b>7.4.2 Corrosion resistance .....</b>	<b>11</b>
<b>7.5 Cleaning and inspection .....</b>	<b>11</b>
<b>7.6 Flow resistance of terminals Type I, II and III .....</b>	<b>11</b>
<b>7.7 Aerodynamic properties of terminals Type II and III .....</b>	<b>11</b>
<b>7.7.1 Terminal Type II.....</b>	<b>11</b>
<b>7.7.2 Terminal Type III.....</b>	<b>11</b>
<b>7.8 Rain water ingress .....</b>	<b>12</b>
<b>7.9 Icing behaviour .....</b>	<b>12</b>
<b>7.10 Condensate resistance .....</b>	<b>12</b>
<b>8 Characteristics of the terminal .....</b>	<b>12</b>
<b>8.1 Flow resistance .....</b>	<b>12</b>
<b>8.1.1 Flue duct for terminals Type I, II, III.....</b>	<b>12</b>
<b>8.1.2 Air duct for terminal Type III .....</b>	<b>13</b>
<b>8.2 Aerodynamic properties .....</b>	<b>13</b>
<b>8.2.1 Wind velocity pressure of a terminal Type II – for non room-sealed and room-sealed appliances .....</b>	<b>13</b>
<b>8.2.2 Wind velocity pressure of a terminal, Type III – for balanced flue applications .....</b>	<b>14</b>
<b>8.2.3 Recirculation factor of a terminal, Type III, (for room sealed appliances).....</b>	<b>14</b>
<b>8.3 Rainwater ingress .....</b>	<b>15</b>
<b>8.4 Icing behaviour .....</b>	<b>15</b>
<b>8.5 Freeze-thaw behaviour .....</b>	<b>15</b>
<b>9 Designation .....</b>	<b>15</b>
<b>10 Product information.....</b>	<b>15</b>
<b>10.1 Manufacturers instructions .....</b>	<b>15</b>
<b>10.2 Information to be included.....</b>	<b>16</b>
<b>10.2.1 General.....</b>	<b>16</b>

<b>10.2.2 Terminal Type I .....</b>	<b>16</b>
<b>10.2.3 Terminal Type II .....</b>	<b>16</b>
<b>10.2.4 Terminal Type III .....</b>	<b>16</b>
<b>Annex A (normative) Test methods for flow resistance .....</b>	<b>17</b>
<b>A.1 For terminal Type I, II and III, test method for flow resistance .....</b>	<b>17</b>
<b>A.1.1 Test apparatus .....</b>	<b>17</b>
<b>A.1.2 Test sample .....</b>	<b>17</b>
<b>A.1.3 Measurement parameters .....</b>	<b>17</b>
<b>A.1.4 Test condition .....</b>	<b>18</b>
<b>A.1.5 Test procedure.....</b>	<b>18</b>
<b>A.1.6 Test result.....</b>	<b>18</b>
<b>Annex B (normative) Test methods for wind effects.....</b>	<b>21</b>
<b>B.1 For terminal Type II, test method for wind velocity pressure .....</b>	<b>21</b>
<b>B.1.1 Test apparatus .....</b>	<b>21</b>
<b>B.1.2 Test sample.....</b>	<b>21</b>
<b>B.1.3 Measurement parameters .....</b>	<b>21</b>
<b>B.1.4 Test condition .....</b>	<b>22</b>
<b>B.1.5 Test procedure.....</b>	<b>22</b>
<b>B.1.6 Test result.....</b>	<b>22</b>
<b>B.2 For a terminal Type III, test method for wind velocity pressure .....</b>	<b>22</b>
<b>B.2.1 Test apparatus .....</b>	<b>22</b>
<b>B.2.2 Test sample .....</b>	<b>23</b>
<b>B.2.3 Measurement parameters .....</b>	<b>23</b>
<b>B.2.4 Test condition .....</b>	<b>24</b>
<b>B.2.5 Test procedure.....</b>	<b>24</b>
<b>B.2.6 Test result.....</b>	<b>24</b>
<b>Annex C (normative) Test methods for wind effects on recirculation .....</b>	<b>25</b>
<b>C.1 For terminal Type III, test method for recirculation .....</b>	<b>25</b>
<b>C.1.1 Test apparatus .....</b>	<b>25</b>
<b>C.1.2 Test sample .....</b>	<b>25</b>
<b>C.1.3 Measurement parameters .....</b>	<b>25</b>
<b>C.1.4 Test condition .....</b>	<b>26</b>
<b>C.1.5 Test procedure.....</b>	<b>26</b>
<b>C.1.6 Test result.....</b>	<b>26</b>
<b>Annex D (normative) Test method for rain water ingress .....</b>	<b>27</b>
<b>D.1 For terminal Type Ib, II and III, test method without wind.....</b>	<b>27</b>
<b>D.1.1 Test apparatus .....</b>	<b>27</b>
<b>D.1.2 Test sample .....</b>	<b>27</b>
<b>D.1.3 Measurement parameters .....</b>	<b>27</b>
<b>D.1.4 Test condition .....</b>	<b>27</b>
<b>D.1.5 Test procedure.....</b>	<b>28</b>
<b>D.1.6 Test result.....</b>	<b>28</b>
<b>D.2 For terminal Type Ib, II and III, test method with wind.....</b>	<b>29</b>
<b>D.2.1 Test apparatus .....</b>	<b>29</b>
<b>D.2.2 Test sample .....</b>	<b>30</b>
<b>D.2.3 Measurement parameters .....</b>	<b>30</b>
<b>D.2.4 Test condition .....</b>	<b>30</b>
<b>D.2.5 Test procedure.....</b>	<b>30</b>
<b>D.2.6 Test result.....</b>	<b>31</b>
<b>Annex E (normative) Test method of icing effects .....</b>	<b>33</b>
<b>E.1 For terminal Type II and III, test method for icing behaviour.....</b>	<b>33</b>
<b>E.1.1 Test apparatus .....</b>	<b>33</b>
<b>E.1.2 Test sample .....</b>	<b>33</b>
<b>E.1.3 Measurement parameters .....</b>	<b>33</b>
<b>E.1.4 Test condition .....</b>	<b>34</b>
<b>E.1.5 Test procedure.....</b>	<b>34</b>
<b>E.1.6 Test result.....</b>	<b>34</b>

Bibliography .....	36
--------------------	----

## 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.

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

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.

## 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