



# SLOVENSKI STANDARD

## kSIST FprEN 16445:2012

01-september-2012

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### **Prezračevanje stavb - Difuzija zraka - Aerodinamično preskušanje in ocenitev aplikacij toka zraka: neizotermni postopek s hladnim curkom**

Ventilation for buildings - Air diffusion - Aerodynamic testing and rating for mixed flow application: non-isothermal procedure for cold jet

Lüftung von Gebäuden - Luftverteilung - Aerodynamische Prüfung und Bewertung von Mischstromanwendungen: Nicht-isothermes Verfahren für einen Kaltluftstrahl

Ventilation des bâtiments - Bouches d'air - Essais aérodynamiques et étalonnage pour applications de fluides mixtes pour les essais non-isothermes pour jet froid

**Ta slovenski standard je istoveten z: FprEN 16445:2012**

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#### **ICS:**

91.140.30	Prezračevalni in klimatski sistemi	Ventilation and air-conditioning
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**kSIST FprEN 16445:2012**

**en,fr,de**



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**FINAL DRAFT**  
**FprEN 16445**

June 2012

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ICS 91.140.30

English Version

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This draft European Standard is submitted to CEN members for formal vote. It has been drawn up by the Technical Committee CEN/TC 156.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
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## Foreword

This document (FprEN 16445:2012) has been prepared by Technical Committee CEN/TC 156 “Ventilation for buildings”, the secretariat of which is held by BSI.

This document is currently submitted to the Unique Acceptance Procedure.

## FprEN 16445:2012 (E)

### 1 Scope

This European Standard specifies methods for the laboratory aerodynamic testing and rating of air terminal devices for mixed flow applications, including the specification of suitable test facilities and measurement techniques. This standard applies to laboratory testing of ATD for technical characterisation.

The standard gives only tests for the assessment of characteristics of the air terminal devices for mixed flow applications, under non-isothermal conditions with a cold jet. It does not cover the testing of isothermal or low velocity terminal devices which are covered by other published standards.

This European Standard applies to ventilation or air conditioning systems designed for the maintenance of comfort conditions for buildings. It is not applicable in the case of systems for the control of industrial or other special process environments. In the latter case however, it may be referred to if the system technology is similar to that of the above mentioned ventilation and air conditioning systems.

The principles described in this European Standard can also be used on site or in a lab for full-scale measurements.

### 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 12238, *Ventilation for buildings — Air terminal devices — Aerodynamic testing and rating for mixed flow application*

EN 12239, *Ventilation for buildings — Air terminal devices — Aerodynamic testing and rating for displacement flow applications*

EN 13182, *Ventilation for buildings — Instrumentation requirements for air velocity measurements in ventilated spaces*

### 3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply:

#### 3.1

##### **supply air**

air entering a supply air terminal device from an upstream duct

#### 3.2

##### **induced air**

airflow induced by the supply air from a supply air terminal device

#### 3.3

##### **exhaust air**

air leaving an exhaust air terminal device into a downstream duct

#### 3.4

local measured mean air velocity  
measured value of local air velocity

Note 1 to entry: Local mean air velocity is as EN 12238

**3.5****treated space**

an enclosure served by an air distribution system.

Note 1 to entry: In this standard, the test room described is meant

**3.6****envelope**

geometrical surface in a treated space where the local measured air velocity has the same value and is the reference velocity (generally 0.5 m/s) associated with this envelope

**3.7****throw (for a supply air terminal device)**

maximum distance between the centre of the core and a plane which is tangent to a specified envelope, such as 0,25 m.s<sup>-1</sup>, 0,5 m.s<sup>-1</sup>, etc. and the centre of the ATD

**3.8****drop (for a supply air terminal device)**

vertical distance between the lowest horizontal plane tangent to a specified envelope, such as 0,25 m.s<sup>-1</sup>, 0,5 m.s<sup>-1</sup>, etc., and the centre of the ATD

**3.9****rise (for a supply air terminal device)**

vertical distance between the highest horizontal plane tangent to a specified envelope, such as 0,25 m.s<sup>-1</sup>, 0,5 m.s<sup>-1</sup>, etc., and the centre of the ATD

**3.10****spread (for a supply air terminal device)**

maximum distance between two vertical planes tangent to a specified envelope, such as 0,25 m.s<sup>-1</sup>, 0,5 m.s<sup>-1</sup>, etc., and perpendicular to a plane through the centre of the ATD

Note 1 to entry: There may be two different spreads, not always equal: One for the left side, the other for the right side (considered when looking at the treated space from the supply air terminal device).

**3.11****distance to maximum spread**

distance from the centre of the ATD to the maximum spread determined

**3.12****separation distance**

for cold jet with Coanda effect on ceiling, distance between the centre of the ATD and the point where the jet separates from the ceiling to drop

**3.13****supply temperature**

temperature of air in supply ATD

**3.14****room air temperature**

arithmetical average value of room air temperature measured in the occupied zone outside the envelope of the jet.

**FprEN 16445:2012 (E)****3.15****temperature quotient**

the ratio of the local temperature difference at point x and at the point of discharge

$$\vartheta_Q = \Delta\vartheta_x / \Delta\vartheta_0$$

where

$\Delta\vartheta_0$  = temperature difference between supply and room air

$\Delta\vartheta_x$  = temperature difference between the point of maximum velocity in the distance x from the ATD and room air

**3.16****free area ( $A_f$ )**

sum of the minimum measured areas at each opening in the ATD through which air can pass

**3.17****effective area ( $A_k$ )**

effective area in the ATD measured as described in EN 12238

**3.18****effective velocity ( $v_k$ )**

effective velocity in the ATD measured as described in EN 12238