



# SLOVENSKI STANDARD

## SIST EN 16282-5:2017

01-oktober-2017

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### Oprema za profesionalne kuhinje - Sestavni deli za prezračevanje kuhinj - 5. del: Kanali - Projektiranje in dimenzioniranje

Equipment for commercial kitchens - Components for ventilation in commercial kitchens -  
Part 5: Air duct - Design and dimensioning

Großküchengeräte - Einrichtungen zur Be- und Entlüftung von gewerblichen Küchen -  
Teil 5: Luftleitungen - Gestaltung und Dimensionierung

Équipement pour cuisines professionnelles - Éléments de ventilation pour cuisines  
professionnelles - Partie 5: Conduit d'air - Conception et dimensionnement

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**Ta slovenski standard je istoveten z: EN 16282-5:2017**

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#### **ICS:**

91.140.30	Prezračevalni in klimatski sistemi	Ventilation and air-conditioning systems
97.040.99	Druga kuhinjska oprema	Other kitchen equipment

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EUROPEAN STANDARD

EN 16282-5

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2017

ICS 97.040.99

English Version

## Equipment for commercial kitchens - Components for ventilation in commercial kitchens - Part 5: Air duct; Design and dimensioning

Équipement pour cuisines professionnelles - Éléments de ventilation pour cuisines professionnelles - Partie 5: Conduit d'air - Conception et dimensionnement

Bauelemente in gewerblichen Küchen - Einrichtungen zur Be- und Entlüftung - Teil 5: Luftleitungen; Gestaltung und Dimensionierung

This European Standard was approved by CEN on 11 May 2017.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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## European foreword

This document (EN 16282-5:2017) has been prepared by Technical Committee CEN/TC 156 "Ventilation for buildings", the secretariat of which is held by BSI.

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 January 2018, and conflicting national standards shall be withdrawn at the latest by January 2018.

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.

The activities of CEN/TC 156/WG 14, cover the calculation of the air volume and the design and testing of major components of ventilation equipment for commercial kitchens.

The structure of the standard series is as follows:

EN 16282 *Equipment for commercial kitchens – Components for ventilation in commercial kitchens*

- *Part 1: General requirements including calculation method*
- *Part 2: Kitchen ventilation hoods; Design and safety requirements*
- *Part 3: Kitchen ventilation ceilings; Design and safety requirements*
- *Part 4: Air inlets and outlets; Design and safety requirements*
- *Part 5: Air duct; Design and dimensioning*
- *Part 6: Aerosol separators; Design and safety requirements*
- *Part 7: Installation and use of fixed fire suppression systems*
- *Part 8: Installations for treatment of cooking fumes; Requirements and testing*

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

**EN 16282-5:2017 (E)****1 Scope**

This European Standard specifies requirements for the design, construction and operation of the air duct in commercial kitchens, including technical safety, ergonomic and hygienic features.

This European Standard is applicable to ventilation systems in commercial kitchens, associated areas and other installations processing foodstuffs intended for commercial use. Kitchens and associated areas are special rooms in which meals are prepared, where tableware and equipment is washed, cleaned and food is stored and food waste areas.

This European Standard is applicable to kitchen ventilation systems except those used in domestic kitchens.

A method of verification of each requirement is also specified.

Unless otherwise specified, the requirements of this standard should be checked by way of inspection and/or measurement.

NOTE Please note the possible existence of additional or alternative local national regulations on installation, appliance requirements and inspection, maintenance and operation.

**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 779, *Particulate air filters for general ventilation — Determination of the filtration performance*

EN 1507, *Ventilation for buildings - Sheet metal air ducts with rectangular section - Requirements for strength and leakage*

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EN 10088-1, *Stainless steels - Part 1: List of stainless steels*

EN 12097, *Ventilation for Buildings - Ductwork - Requirements for ductwork components to facilitate maintenance of ductwork systems*

EN 12237, *Ventilation for buildings - Ductwork - Strength and leakage of circular sheet metal ducts*

EN 12599, *Ventilation for buildings - Test procedures and measurement methods to hand over air conditioning and ventilation systems*

EN 13779, *Ventilation for non-residential buildings - Performance requirements for ventilation and room-conditioning systems*

**3 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.

**3.1****kitchen extract air**

air discharged out of the kitchen (negative pressure)

**3.2****fire damper**

device limiting the spread of fire and/or fumes through air ducts, alone or together with other elements, for a specified period of time

**3.3****outside air**

air drawn from outside the building

**3.4****air leakage class**

measure for the air leakage of an air duct system, defined by the upper limit of the air leakage rate

Note 1 to entry: The air leakage of air ducts is classified in accordance with EN 12237.

**3.5****fire resistance period**

minimum time in minutes which an element of the ventilation air ducts meet the specified requirements

**3.6****outlet air**

air discharged to the outside (positive pressure)

**3.7****air leakage rate**

leakage of air from ductwork

**3.8****air duct**

conduit for transporting air

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**3.9****volumetric air flow rate**

volume of matter, which passes a given surface, divided by time

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**3.10****components**

elements installed in air ducts

EXAMPLE Fans, silencers, sensors, filters, flaps

**3.11****kitchen**

part of a building where cooking processes are carried out, their connecting floors and distribution corridors, ancillary rooms such as food stores, cold rooms, food preparation areas and appliances are being cleaned

**3.12****flexible air duct**

duct which can be manually longitudinally compressed or decompressed and flexed without permanently damaging the cross section area

**3.13****aerosol**

separated grease/oil/water mixture

## 4 Construction and function

### 4.1 General

Unless otherwise specified, the requirements shall be in accordance with EN 12237.

### 4.2 Functional requirements

#### 4.2.1 General

Air ducts shall be planned and constructed in such a way to ensure low energy consumption, low leakage, low heat loss and favourable sanitary conditions during their operation.

Any adverse hygienic effects of the food shall be avoided.

The stability of the air ducts, their connection and mounting elements shall be dimensioned appropriately to ensure that it will permanently withstand the stress and load caused by operation.

Flexible supply air ducts shall be avoided as far as possible due to difficulty in cleaning.

#### 4.2.2 Design and loss of pressure

Air ducts shall be designed in such a way to ensure minimum loss of pressure.

This may be achieved by:

- a) longitudinal and cross-connections which are flush at the inside,
- b) stiffening elements that are placed on the outside to avoid high air resistance,
- c) air rerouting without sharp edges, inner radius at least 100 mm, junctions preferably with guiding elements,
- d) no sudden changes in cross section,
- e) in the case of changes in the cross-sectional angle of inclination shall be less than 45°
- f) smooth internal walls and joints.

#### 4.2.3 Special requirements for extract and outlet air ducts

Extract and outlet air ducts and their connections shall be aerosol-proof and visible escape of aerosol is not permitted.

Soldered/brazed or welded connections or connections with permanently elastic and aerosol-resistant sealing materials are deemed appropriate and may be used.

The use of flexible air ducts is not permitted.

Chinamans hat type exhaust air outlets shown in Figure 1 shall not be used.

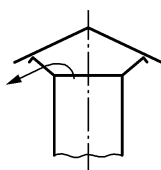


Figure 1 — Chinamans hat type air outlet



#### 4.2.4 Air leakage

Outside and supply air ducts with round and rectangular cross section shall meet at least the requirements of EN 12237 or EN 1507, air leakage class B.

Extract and outlet air ducts with round and rectangular cross section shall conform to the requirements of EN 12237 or EN 1507 or EN 13779, air leakage class C.

#### 4.2.5 Silencers

Materials which are harmless for health and which cannot become a culture medium for microorganisms shall be used for the fabrication of silencers.

Silencer materials shall not release any harmful substances, such as gases or parts of fibres.

The surface of silencers shall be abrasion-proof, smooth, easy to clean and when installed in extract and outgoing air ducts they shall be liquid-proof, water-resistant, and resistant to aerosol.

Silencers shall be packaged appropriately for transport and storage to avoid any contamination.

It shall be possible to dismantle silencers using basic tools.

#### 4.2.6 Dimensioning of air ducts

##### 4.2.6.1 Flow velocity guide values

For dimensioning of air ducts, the flow velocity guide values as shown in Table 1 shall be used, subject to the permissible sound pressure and pressure loss.

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