
**Oprema za profesionalne kuhinje - Sestavni deli za prezračevanje v kuhinjah - 3.
del: Prezračevanje kuhinjskih stropov - Projektiranje in varnostne zahteve**

Equipment for commercial kitchens - Components for ventilation in commercial kitchens -
Part 3: Kitchen ventilation ceilings; design and safety requirements

Bauelemente in gewerblichen Küchen - Einrichtungen zur Be- und Entlüftung - Teil 3:
Küchenlüftungsdecken; Gestaltungs- und Sicherheitsanforderungen

Équipement pour cuisines professionnelles - Éléments de ventilation pour cuisines
professionnelles - Partie 3 : Plafonds de ventilation de cuisine - Conception et exigences
de sécurité

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EUROPEAN STANDARD

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Equipment for commercial kitchens - Components for ventilation in commercial kitchens - Part 3: Kitchen ventilation ceilings; design and safety requirements

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European foreword

This document (EN 16282-3:2016) 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of an identical text or by endorsement, at the latest by May 2017, and conflicting national standards shall be withdrawn at the latest by May 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN 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 organizations 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 16282-3:2016 (E)**1 Scope**

This European Standard specifies requirements for the design, construction and operation of kitchen ventilation ceilings, 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.

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

A method of verification of each requirement is also specified.

Unless otherwise specified, the requirements of this standard need to 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 573-3, *Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 3: Chemical composition and form of products*

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

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EN 12464-1:2011, *Light and lighting - Lighting of work places - Part 1: Indoor work places*

prEN 16282-6, *Equipment for commercial kitchens - Components for ventilation of commercial kitchens - Part 6: Aerosol separators; design and safety requirements*

EN 50164 (all parts), *Lightning Protection Components (LPC)*

EN 50274, *Low-voltage switchgear and controlgear assemblies - Protection against electric shock - Protection against unintentional direct contact with hazardous live parts*

EN 50525-2-(all parts), *Electric cables Low voltage energy cables of rated voltages up to and including 450/750 V (U0/U)*

EN 60204-1, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements*

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

EN ISO 3274, *Geometrical product specifications (GPS) - Surface texture: Profile method - Nominal characteristics of contact (stylus) instruments (ISO 3274)*

EN ISO 4287, *Geometrical product specifications (GPS) - Surface texture: Profile method - Terms, definitions and surface texture parameters (ISO 4287)*

EN ISO 4288, *Geometrical product specifications (GPS) - Surface texture: Profile method - Rules and procedures for the assessment of surface texture (ISO 4288)*

EN ISO 13565-1, *Geometrical product specifications (GPS) - Surface texture: Profile method; surfaces having stratified functional properties - Part 1: Filtering and general measurement conditions (ISO 13565-1)*

EN ISO 13565-2, *Geometrical product specifications (GPS) - Surface texture: Profile method; surfaces having stratified functional properties - Part 2: Height characterization using the linear material ratio curve (ISO 13565-2)*

3 Terms and definitions

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

3.1

kitchen ventilation ceiling

ventilation system that incorporates the air inlets, air outlets, separators, light fittings and additional hoods which can be integrated

3.2

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

3.3

air inlet

final mechanical element for supplying air into kitchen

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3.4

air outlet

ceiling installation element without aerosol separation function for flush installation with added air collection box and air duct connecting branches or for direct installation into existing extract air ducts

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3.5

ceiling panel

fixed or removable elements of a ceiling installed horizontally, vertically or at any angle on a sub-construction

3.6

aerosol

separated grease/oil/water mixture

3.7

collection channel

channel system for collection of separated parts from the extract air and for controlled removal of liquid components and of cleaning fluid

3.8

discharge device

device used to remove aerosol and cleaning fluid at the lowest point of the channel system using drain cocks, stoppers, drawers (pots) or water-removal lines connected firmly with the channel system

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3.9 separator
device for the efficient separation of airborne solid or liquid particles, based on the effect of mechanical forces that deflect the particles out of the airflow

3.10 filter
specific design of storage separators comprising an ordered and/or unordered structure of a number of individual fibres, wire mesh or porous surfaces/bodies

EXAMPLE An example of fibres/wires filter is fabric filters and an example of porous surfaces/bodies is activated carbon.

3.11 blanking panel
plate serving to adjust the airflow volume of the individual appliance

3.12 supply air zone
area in ceilings for introduction of supply air

3.13 extract air zone
area in ceilings for capture and containment of extract air

3.14 air chamber
enclosed area with positive or negative pressure above supply air or extract air areas

3.15 ceiling pressure room
air chamber formed by the ceiling of the building, upper parts of the limiting walls or vertical/horizontal bulkheads and ceiling panels or air in/outlet areas

3.16 air housing
enclosed air chamber formed by horizontal bulkheads, vertical bulkheads and ceiling panels or air in and/or outlet areas

3.17 plenum chamber
enclosed compartment for supply and extract air – integrated into the ceiling – with positive pressure for distribution of supply air or negative pressure for collection of extract air

3.18 open ceiling system
ceiling system in which the supply and/or extract air is guided – totally or partly – via a ceiling pressure room

3.19 closed ceiling system
ceiling system in which the supply and/or extract air is guided via an air housing or a plenum chamber and duct

3.20

extract air connection

connection between the air housing and the ducts

4 Ceiling types and configurations

Table 1 shows examples of typical ceiling types and configurations and design criteria. However, manufacturers are free to use alternative types and configurations, providing that they comply with the essential requirements of the relevant directives and/or national regulations.

Table 1 — Examples for different ceiling design

Design	Schematic portrayal	Standard designation		
		Designations	EN number	Classification
Open ceiling system with ceiling pressure room		Kitchen ventilation ceiling	EN 16282-3	-C1
Closed ceiling system with air housing		Kitchen ventilation ceiling	EN 16282-3	-C2
Plenum ceiling system with plenum chamber		Kitchen ventilation ceiling	EN 16282-3	-C3

EXAMPLE The designation of a kitchen ventilation ceiling on the supply air side in closed ceiling system with air housing (supply air C2), on the extract air side with closed ceiling system with plenum chamber (extract air C3) is the following:

Kitchen ventilation ceiling EN 16282-3 — supply air C2 – extract air C3

5 Construction and function

5.1 General

Polluted exhaust air from kitchens shall be treated prior to entering the air duct using effective aerosol filtration equipment.

Ventilation ceilings shall be arranged over the entire area of the rooms in question. Materials shall be used according to Table 2.

5.2 Features of ceiling components

Supply air housings/plenum chambers and extract air housings/plenum chambers shall be provided with volume flow setting devices on the connections for even distribution/correct collection of extract air.

5.3 Air supply (into the kitchen)

Supply air zones shall be equipped with removable air inlets for cleaning and access to ductwork.

The supply air from the ceiling shall be introduced at a low velocity. Supply air panels shall be arranged in such a way that undisturbed collection of the rising thermal flow is ensured.

NOTE Supply air zones can be arranged within the ceiling or separately (displacement air passage component).

Supply air zones shall not be located above thermal cooking equipment.

Supply air zones shall not disturb the thermal airflow.

5.4 Capturing extract air

The arrangement of the extract parts of the ceiling shall facilitate the removal of the condensate from the underside.

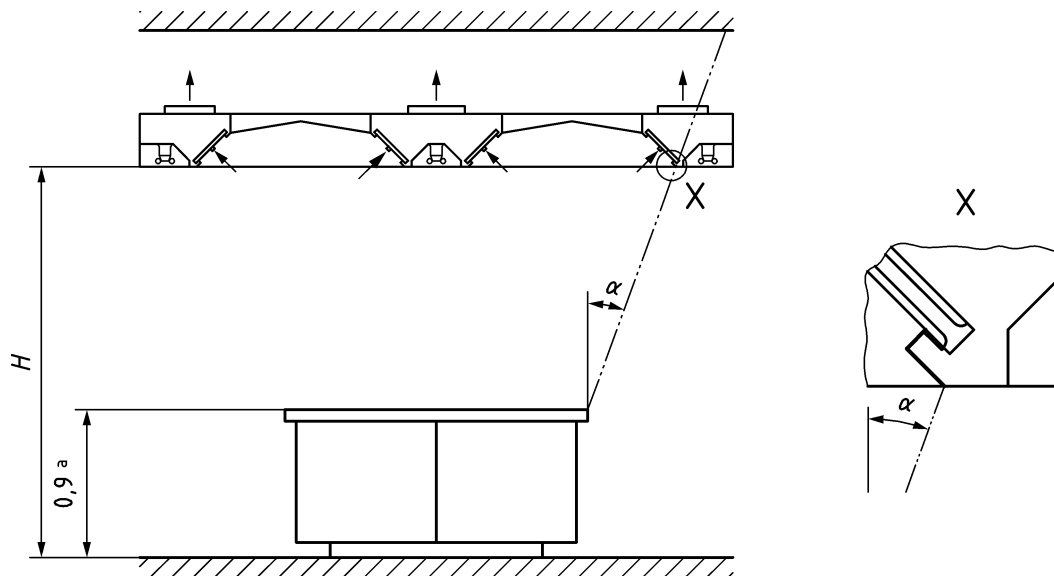
This requirement shall be fulfilled by using concave ceiling elements or ceiling coatings and manifest aerosol collection channel systems at low contact points of the aforementioned parts. This shall ensure that aerosol is discharged efficiently or in another way by a suitable design or construction.

If horizontal extract ceiling elements are used any device (e.g. a horizontal directional air) shall prevent condensation on the underside.

Aerosol collection channel systems shall be built in such a way that condensation on the underside is prevented in normal use.

The extract air zone shall be sized according to Figure 1 that the flow of thermal air is completely collected and is not transported back into working areas via the supply air.

Dimensions in m

**Key** H installation height a height of the equipment α angle 20°

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Figure 1 — Ceiling dimensions
(standards.iteh.ai)**5.5 Materials and their surfaces for ceilings**

<https://standards.iteh.ai/catalog/standards/sist/026eaa75-ad2c-4a8e-aff6-f05133103638/roqs-16282-3-sist>

The materials used shall be rot proof, non-porous, wear resistant, inert to foods and beverages as well as to detergents and disinfectants.

Materials such as glass wool and rock wool, which are used as insulating material, shall be prevented from coming into contact with food, at all times, and kitchen personal shall be protected from the dangers of inhalation.

Materials of Table 2 shall be used.