BS EN 16282-3:2016

BSI Standards Publication

Equipment for commercial kitchens — Components for ventilation in commercial kitchens

Part 3: Kitchen ventilation ceilings; design and safety requirements

bsi.

National foreword

This British Standard is the UK implementation of EN 16282-3:2016.

The UK participation in its preparation was entrusted to Technical Committee RHE/2/-/1, Ventilation of commercial kitchens.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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

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

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

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Contents

Page

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of an identical text or by endorsement, at the latest by May 2017, and conflicting national standards shall be withdrawn at the latest by May 2017.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.

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*

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 cablesLow 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

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

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

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

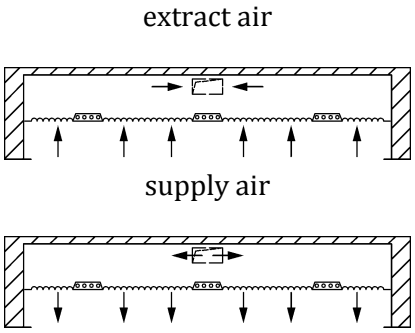
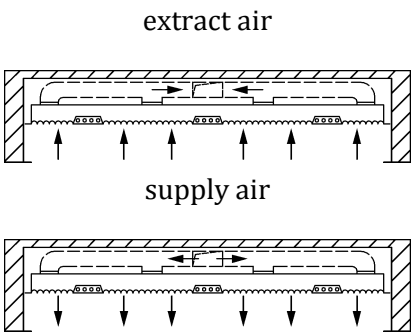
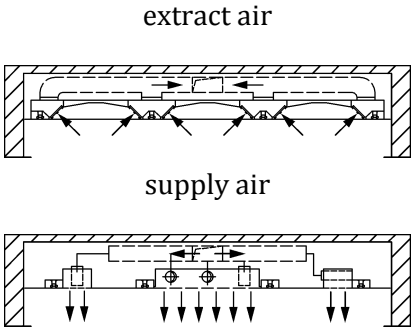
3.19
closed ceiling system
ceiling system in which the supply and/or extract air is guided via an air housing or a plenum chamber and duct

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.

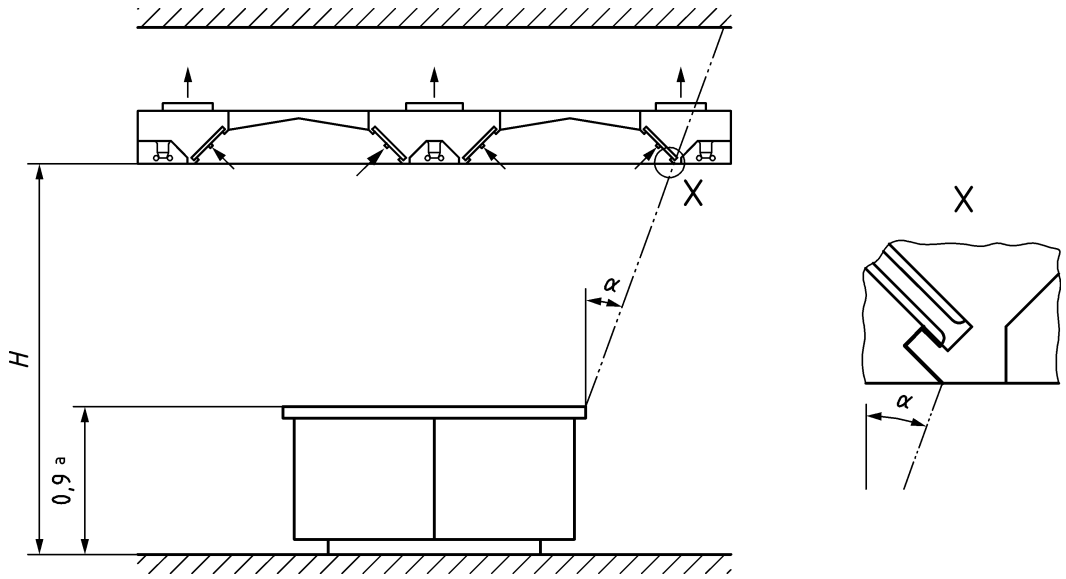
This requirement shall be fulfilled by using concave ceiling elements or ceiling coatings and manifest aerosol collection channel systems at low contact points of the aforementioned parts. This shall ensure that aerosol is discharged efficiently or in another way by a suitable design or construction.

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°

Figure 1 — Ceiling dimensions

5.5 Materials and their surfaces for ceilings

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.

Table 2 — Materials

Component element/part	Material	Surface
Light fittings	stainless steel	
	aluminium	anodised or coated
	steel[c]	galvanised
Cover fitted lighting	safety glass	
	polycarbonate[e]	
Fixings	stainless steel	
	steel	galvanised
Sub-construction	stainless steel	
	steel	galvanised
Division plenums	stainless steel	blank
	aluminium	anodised or coated
	aluminium	galvanised
	steel	
Air chamber	stainless steel	
	aluminium	blank
	aluminium	anodised or coated
	steel	galvanised
Ceiling pressure room	stainless steel	
	aluminium	blank
	aluminium	anodised or coated
	steel	galvanised
	concrete	see 6.4
	plasterboard/Aquapanel®[1]	blank, water-resistant
Installations visible on the room side such as channel sections, wall sections and other bearing sections and bearing heads	stainless steel	brushed or ground or coated
	aluminium	anodised or coated
Ceiling cassettes, ceiling panels and ceiling coatings[a]	stainless steel	brushed, ground or coated
		anodised or coated
	aluminium	coated
	aluminised steel	

[1] Aquapanel® is a product supplied by Knauf Aquapanel GmbH & Co. KG. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by CEN of the product named. Equivalent products may be used if they can be shown to lead to the same results

Component element/part	Material	Surface
Extract and supply air boxes[a] [d]	stainless steel	brushed or ground
	steel[c]	galvanised
	aluminium[c]	blank
	aluminium	anodised or coated
Aerosol separators[a] [b]	stainless steel	blank
	stainless steel	brushed
	stainless steel	polished
	stainless steel	coated
	aluminium	anodised or coated
	aluminised steel	coated
Aerosol collecting channel	stainless steel	brushed
	stainless steel	polished
	stainless steel	coated
	aluminium	anodised or coated

[a] attention to problem with corrosion in the area of rinsing tanks

[b] in production kitchens, anodised or coated aluminium is not admissible. The exceptions to this rule are extruded profiles which, however, shall not be used in the form of separating modules (aerosol separators)

[c] if in a non-visible area

[d] if used as a displacement air passage component, stainless steel, aluminium anodised or coated shall be used exclusively

[e] the material shall be self-extinguishing

NOTE The attention of the user of this standard is drawn to the existence of national food-hygiene regulations and Regulation No 1935/2004/EC.

A grade of stainless steel that is in accordance with EN 10088-1 shall be used.

Visible stainless steel surfaces shall be polished or have a uniform finish with a roughness of Ra 1,1 µm in accordance with EN ISO 3274, EN ISO 4287, EN ISO 4288, EN ISO 13565-1 and EN ISO 13565-2.

For aluminium blank material, No. 3.3535 (AlMg3) or higher quality aluminium alloys shall be used in accordance with EN 573-3.

The material and ceiling construction shall be strong enough to prevent the ceiling from creating vibration or drumming.

5.6 Separators

Separators of differing finishes and sizes shall have an identification which ensures that they are inserted into the ceiling at the planned position after cleaning.

NOTE The identification of the ceiling side can be done when the ceiling is put into operation.

The design of the separator shall result in a self-draining effect of the aerosol and avoid dripping of aerosol onto areas of the kitchen underneath. If required, information shall be included in the installation instructions if separators shall be installed at a certain angle to the horizontal in order to ensure this self-draining effect.

In particular, separators shall be designed in such a way that aerosol does not remain in the aerosol separation area, i.e. that the aerosol separator does not have a storage effect.

Aerosol collecting devices can be integrated directly at the separator. However, the aerosol collecting devices shall not lead to a back draught of aerosol in the separator. If necessary, a corresponding note shall be included in the installation instructions.

Separators shall be mounted so that there are no gaps between them and the filter housing.

At least the first stage of a separator shall be designed as an aerosol separator.

Filters are not admissible unless they are used in combination separators.

Separators shall be in accordance with prEN 16282-6.

5.7 Blanking panel

Blanking panels shall be designed so that they can be used to replace a separator (exception: compensating elements). They shall be fitted flush.

Blanking panels of different design and size shall be permanently marked to ensure that they can be re-fitted in the right position in the ceilings following cleaning.

5.8 Integrated lighting

The lighting requirements of indoor workspaces shall be according to EN 12464-1:2011, 5.3.

The number of lights required in order to achieve the mean horizontal illuminance on the useful level selected is the degree of efficiency method as specified in EN 12665 and EN 12464-1:2011.

The type of protection for the lighting shall be at least IP54, preferably IP65 and IP20 for the parts of the light which are out of the air stream in accordance with EN 60529.

The series-connected devices for lamps shall be finished at least as low-loss series-connected devices, preferably as electronic series-connected devices. Lamps with low-loss series-connected devices shall be given a safety starter.

If a kitchen ventilation ceiling is equipped with lighting, the lighting shall be flush integrated into the ceiling. Ceiling lighting as a surface-mounted lighting is not permitted in the cooking area.

Lamps shall be designed in such a way that they are stable in the thermal situation of the location as well as comply with the temperature limits stated by the manufacturer in the area of the lighting. Light fittings shall meet Table 2 requirements of materials.

The electrical connections shall be connecting terminals in a terminal box.

For grease and heat resistant cabling, silicon sheathed power lines and isolated cables in accordance with the EN 50525-2 series shall be used.

Light switches/buttons and control panels mounted directly on the ceiling shall be flush mounted and hygienically sealed. The power supply lines shall be laid out so that they do not pass through the parts of the ceiling where aerosol is directed.

5.9 Integrated cleaning device

Integrated cleaning devices shall clean aerosol separators without dismantling them.

It shall be possible to trigger the washing or cleaning process automatically and manually with time control via an external control unit. Actuation of the washing or cleaning process for various kitchen areas at separate times as a function of their extract air load shall be possible.

The overflowing of the extract collection channel shall be prevented, dirty water and cleaning water shall not enter the device or kitchen area underneath the ceiling or the extract air system (except for defined overflow systems).

If a washing or cleaning process is planned during the cooking process, it shall be possible without limitation of the extract air flow volume.

A check of the cleaning effect as maintenance of the integrated cleaning device shall be possible without special tools.

A washing or cleaning process shall not be possible if there is a lack of water and if the extract air system is not in operation.

The operating instructions shall include information of the necessary cleaning agents, water temperatures and requirements of the necessary water quality.

For ceilings with integrated cleaning devices the drain system shall ensure that water, aerosol and/or cleaning detergents are drained completely.

NOTE The attention of the user of this standard is drawn to the possible existence of national regulations for connection to drinking water mains.

The hood shall be connected to drinking water mains in accordance with EN 1717.

If cleaning agents are used as well, in order to achieve effective cleaning, a water temperature of at least 50 °C (on the separator) is necessary in discontinuous cleaning systems.

6 Technical safety requirements

6.1 General

Unless otherwise specified, the requirements shall be checked by inspection and/or measurement.

The shape and dimensions of the elements and materials shall ensure that ceilings and their accessories are safe to operate, in accordance with mechanical, chemical and thermal loads.

All parts of a ceiling shall be designed in such a way that there is no risk of injuries. All cut sections shall be deburred or folded.

For supply lines in the ceiling pressure room, the possiblity of condensation and aerosol deposits shall be taken into consideration. If applicable, the surfaces shall be treated.

6.2 Housing and boxes

The body of air housings and boxes in the extract air shall be completely aerosol-proof, preferably welded.

6.3 Separator – installation, dismantling and maintenance

It shall be possible to install and dismantle separators easily and without danger. If the system is not designed for dismantling then cleaning instructions and technical information shall be provided.

6.4 Requirements of open-construction ceilings

Concrete plenums shall be manufactured with a smooth surface that is easy to clean.

Concrete surfaces or other porous surfaces of open ceilings plenums shall be covered with an appropriate protective layer to protect the surface against process pollutants.

For building walls and ceilings forming the ceiling pressure room, the possibility of condensation and aerosol deposits shall be taken in to consideration. If necessary, the surfaces shall be treated.

The building walls and ceiling forming the ceiling pressure room shall not be comprised of combustible materials.

Wherever possible, running mechanical and electrical services including ductwork within extract plenum areas shall be avoided to maintain pressure integrity, ease of cleaning and reduce fire risk.

Flexible air lines shall not be used for extract air in the ceiling pressure room.

Fire-protection casings of lines not forming part of the ceiling (e.g. gas, electricity, water) in the ceiling pressure room shall be protected against penetration by aerosol.

6.5 Ceiling height

The height (lower edge of the ceiling) shall be between 2,5 m and 3,5 m in a new-build. For renovation or limited room height, the height shall be according to the construction situation of the kitchen.

6.6 Ceiling installation

Ceilings shall be fitted to the supporting structure and fitting elements permitted by the construction supervising authorities. All the connections shall have a positive fit.

Sections (support sections, grid sections etc.) shall ensure compliance with the required ceiling grid with their product-specific holding devices and bear the load of the ceiling coatings, ceiling panels, ceiling cassettes and the lighting devices.

6.7 Extract air connection

An extract air connection shall be fitted in accordance with Table 1 featuring C2 or C3 and in the required number to the plenum so that an evenly distributed extraction effect is ensured along the entire air housing. Air housing more than 2,5 m in length require several extract air connections.

The rate of airflow at the extract air connection outlet shall ideally be 4 m/s and shall not exceed 6 m/s. Each extract air connection shall be equipped with an airflow volume adjusting device to adjust the volume flow. The airflow volume adjustment device shall be lockable.

NOTE Adjustment does not substitute air balancing damper of ductwork.

The extract air connection shall be air-tight. Rivet and screw connections are only permissible if used in conjunction with an air-tight sealant.

For ceilings designed according to Table 1 classification -C1, the maximum velocity of the extract air at the extract duct mouth shall not exceed 3 m/s.

6.8 Air flow control devices

If extract air connections have been provided with an air flow control device (throttle valve, high-quantity slide), these shall be designed and finished in such a way that they can easily be cleaned without special tools and the risk of injury is minimized. Corners shall be connected in a way to facilitate the joint cleaning and to limit the bacteria development.

6.9 Electrical equipment

Electrical systems and operating equipment shall fulfil the general acknowledged rules of electrical safety namely:

— EN 50274;

— EN 60204-1.

Electrical power lines not belonging to the ceiling shall not be fixed on the elements of the ceiling.

NOTE Please note the possible existence of national regulations on electrical installations.

6.10 Earth bonding

The relevant requirements of the EN 50164 series shall be observed.

7 Hygienic requirements

7.1 General

Unless otherwise specified, the requirements shall be checked by inspection and/or measurement.

7.2 General hygienic requirements

All materials coming into contact with foodstuffs shall be free of contaminants.

Ceiling surfaces shall be smooth, cleanable and disinfection-capable surfaces.

Removal of the aerosol/washing water mixture shall be ensured and the water-removal line shall be secured against blockage and designed to match the through flow of washing water and it shall be possible to maintain the syphon for cleaning purposes.

7.3 Aerosol removal elements

Discharge devices (stoppers, cocks) to remove aerosol on ceilings as well as direct connections (lines) shall be easily accessible and easy to clean. Aerosol collection elements (vessels, drawers) shall be easy to remove and dishwasher-safe.

An aerosol disposal line should have a nominal diameter of at least DN 40 with freely accessibly laying and it shall be possible to dismantle it for cleaning purposes. If the aerosol disposal line is laying under the plaster or floor the design should be at least DN 50.

7.4 Cleaning

The ceilings shall be constructed so that maintenance and cleaning work on the ceilings, ceiling pressure rooms and any air lines arranged above them is possible without serious risks. The installation position of all the inspection and cleaning openings shall be visible from the assembly plans and workshop drawings.

Parts that are removable for cleaning shall be able to be put back again in the correct position without any problems.

Ceilings and their components shall be checked monthly for contamination and cleaned at least once per year.

8 Instructions

8.1 Installation instructions

Installation instructions shall be in the national language of the country of the place of use and shall be enclosed for assembly with each ventilated ceiling.

They shall be kept brief and contain all the important information for installation and maintenance in an easy-to-understand way. The installation instructions shall contain at least the following information:

— reference to national regulations on installation in place of use;

— general information about installation equipment if it is not part of delivery;

— instructions on the necessary marking of the blanking panel and aerosol separators;

— instructions on aerosol-proof connection of the connection pieces with the ceiling pressure rooms if the latter are delivered separately;

— instructions on temperature limits in the area of the light fixtures;

— instructions on necessary information of the amount of the air flow volume;

— instructions of the air velocity on the separator;

— supply and extract air volume of the system;

— loss of pressure by the separator;

— air velocity at the connecting points;

— information of laying electric lines or other supply lines in the ceiling pressure room.

8.2 Operating instructions

Operating instructions shall be in the national language of country of destination and shall be enclosed for assembly with each ventilated ceiling.

They shall be kept brief and contain all the important information for operation and cleaning in an easy-to-understand way. The operating instructions shall at least contain the following information:

— instructions on cleaning and cleaning intervals (e.g. by reference to the HACCP guidelines, which are covered by the Regulation (EC) 852/2004) also in connection with the loss of pressure of the aerosol separators;

— instructions on suitable cleaning agents;

— instructions on cleaning the demountable separators and their suitability for dishwashers;

— instructions on marking baffle plates and aerosol separators;

— instructions on setting the marked air flow volume setting device (throttle valve, high-quantity slides) after cleaning work;

For ceilings with integrated cleaning device the following additional instructions shall be included:

— instructions on operation and maintenance;

— instructions on the rinsing process during cooking;

— instructions on operation of the extract air during the cleaning process;

— instructions on the necessary cleaning agents;

— instructions on the required water temperatures;

— instructions on the necessary water quality.

9 Marking

Every ceiling shall be permanently marked on its exterior in an easily visible place.

The device plate shall contain the following information:

a) the name of the manufacturer, supplier or importer and /or the registered trademark;

b) type designation or order number or identification number of the manufacturer;

c) identifier of this European Standard.

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EN 547-3, *Safety of machinery - Human body measurements - Part 3: Anthropometric data*

EN 894-3, *Safety of machinery - Ergonomics requirements for the design of displays and control actuators - Part 3: Control actuators*

EN 1825-2, *Grease separators - Part 2: Selection of nominal size, installation, operation and maintenance*

EN 12665, *Light and lighting - Basic terms and criteria for specifying lighting requirements*

prEN 16282-1, *Equipment for commercial kitchens - Components for ventilation of commercial kitchens - Part 1: General requirements including calculation method*

EN 16282-2, *Equipment for commercial kitchens - Components for ventilation of commercial kitchens - Part 2: Kitchen ventilation hoods; design and safety requirements*

EN 16282-4, *Equipment for commercial kitchens - Components for ventilation in commercial kitchens - Part 4: Air inlets and outlets - Design and safety requirements*

prEN 16282-5, *Equipment for commercial kitchens - Components for ventilation in commercial kitchens - Part 5: Air duct; design and dimensioning*

prEN 16282-7, *Equipment for commercial kitchens - Components for ventilation in commercial kitchens - Part 7: Installation and use of fixed fire suppression systems*

prEN 16282-8, *Equipment for commercial kitchens - Components for ventilation - Part 8: Installations for treatment of cooking fumes; requirements and testing*

EN ISO 7250-1, *Basic human body measurements for technological design - Part 1: Body measurement definitions and landmarks (ISO 7250-1)*

EN ISO 12100, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100)*

Regulation 1935/2004/EC, Materials and articles intended to come into contact with food and repealing Directives 80/590/EEC and 89/109/EEC

Regulation 852/2004/EC, on the hygiene of foodstuffs (HACCP Guidelines)

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