SLOVENSKI STANDARD
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Oprema za komercialne kuhinje - Sestavni deli za prezračevanje v komercialnih kuhinjah - 6. del: Zračni separator - Projektiranje in varnostne zahteve

Equipment for commercial kitchens - Components for ventilation of commercial kitchens - Part 6: Aerosol separators - Design and safety requirements

Großküchengeräte - Einrichtungen zur Be- und Entlüftung von gewerblichen Küchen - Teil 6: Abscheider - Anforderungen und Prüfung

Équipement pour cuisines professionnelles - Éléments de ventilation pour cuisines professionnelles - Partie 6: Séparateurs d'aérosols - Conception et exigences de sécurité

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Equipment for commercial kitchens - Components for ventilation of commercial kitchens - Part 6: Aerosol separators - Design and safety requirements

Équipement pour cuisines professionnelles - Éléments de ventilation pour cuisines professionnelles - Partie 6: Séparateurs d'aérosols - Conception et exigences de sécurité

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This draft European Standard is submitted to CEN members for enquiry. 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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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (prEN 16282-6:2011) 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 CEN Enquiry.

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:

prEN 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: Outlets; Design and safety requirements***

— ***Part 5: Air ducts***

— ***Part 7: Installation and use of fixed fire suppression systems***

— ***Part 8: Installation for treatment of cooking fumes; Requirements and testing***

— ***Part 9: Ventilation of buildings – capture and containment performance of extraction systems for commercial kitchen – test methods***

1 Scope

This standard applies to fixed fire protection systems, designed and installed to comply with the requirements of professional kitchens and food processing enterprises. It is applicable to foodstuff companies, not for domestic kitchens.

This standard identifies the requirements for fixed fire protection systems for local applications including all relevant hygiene and safety characteristics. This standard is not valid for total flooding room protection systems.

This standard contains decision making aids as relating to, whether a fixed fire protection system should be installed.

Additional alternative national regulations installation, appliance requirements and inspection, maintenance and operation have to be complied with.

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.

prEN 16282-2, *Equipment for commercial kitchens – Components for ventilation in commercial kitchens – Part 2: Kitchen ventilation hoods, Design and safety requirements*

prEN 16282-3, *Equipment for commercial kitchens – Components for ventilation in commercial kitchens – Part 3: Kitchen ventilation ceilings, Design and safety requirements*

prEN 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 in commercial kitchens – Part : Installations for treatment of cooking fumes*

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

EN 61591:1999-05, *Household range hoods - Methods for measuring performance*

EN ISO 3274, *Geometric product specifications (GPS) – Surface texture: profile method – nominal characteristics of contact (stylus) instruments*

EN ISO 4287, *Geometric product specifications (GPS) – Surface texture: profile method – terms, definitions and surface texture parameters*

EN ISO 4288, *Geometric product specification (GPS) – Surface texture: profile method – rules and procedures for the assessment of surface texture*

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

EN ISO 13565-2, *Geometric product specifications (GPS) – Surface texture: profile method - surfaces having stratified functional properties - Part 2: Height characterisation using the linear material ratio curve*

EN ISO 17025, *General requirements for the competence of testing and calibration laboratories*

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

3 Terms and definitions

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

3.1
kitchen
rooms and parts of a building in which food is stored, meals are prepared, despatched and distributed as well as where crockery and appliances are cleaned

3.2
separator
device, according to 3.2.1 to 3.2.3 for separation of airborne firm or liquid particles

3.2.1
aerosol separator
device for efficient separation of airborne firm or liquid particles. It is based on the effects of force (mechanical force or electrical field force) which bring about a deflection of the particles from the paths of the current

3.2.2
filters
special structural shape of storing separators which consist of an ordered and/or disordered structure of many isolated fibres/wires (e.g. knitted filters) or porous surfaces/bodies (e.g. active carbon)

3.2.3
combined separator
combination of aerosol separator (no storage) and filter (storage)

3.3
aerosolate (Cooking fumes)
separated aerosol (in this standard, the separated grease/oil/water mixture)

3.4
gravimetric efficiency
quotient from aerosolate mass separated and aerosolate mass introduced in percent

3.5
flame penetration
penetration of flames through separator according to 3.2

4 Designation

Separators and their designation are shown in Table 1:

Table 1 — Designation for Separator

Design	Standard		
	Term	DIN-Number	Specification
Separators for Ceilings/Hoods	Separator	EN xxx-6	-F

EXEMPLE Separator of construction type A (according to 6.2), which is suitable for hoods and ceilings

Separator EN xxx-F-A

NOTE The distribution of separators is subject to aspects of fire protection

5 Design and Function

5.1 General

Unless otherwise specified the requirements will be checked by way of inspection and/or subsequent measurement.

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

At least the first stage of a separator has to be designed as aerosol separator (separator of forces of gravity) according to VDI 3676.

Separators of different design and/or size have to be provided with a durable identification mark which ensures that after the cleaning they can be put back in their intended place in the hood/ceiling. The marking can be applied during commissioning of the hood/ceiling.

The separator must be constructed in such a way as to ensure self-drainage of the aerosol. Aerosol ate must not drip down onto areas of the kitchens located down below. If necessary, directions should be included in the assembly and operating instructions in case the separator has to be installed at a certain angle to the horizontal level in order to assure this self-drainage effect.

Special care has to be taken that separators are designed in such a way as to ensure that aerosol ate does not remain in the area of aerosol separation, i.e. that the separator has no storing effect.

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

5.2 Materials

Manufacturers have to use the materials shown in table 2:

Table 2 — Materials

Component element/ Part	Material	Surface
Separators in hoods according to prEN 16282-2	chrome-nickel steel	
Separators [a] [b] in ceilings according to prEN 16282-3	chrome-nickel steel aluminium fire-illuminated steel	 anodized or paint-coated paint-coated
Separators in exhaust air passages according to prEN 16282-4	chrome-nickel steel	

[a] in the area of washing-up kitchens attention has to be paid to increase of corrosion problems

[b] In the thermal area of production kitchens eloped or paint-coated aluminium is inadmissible, with exception of extruded profiles which, however, must not be used as separator modules

Concerning stainless steel, material No. 1. 4301 as per EN 10088-1 or higher quality stainless steel is to be used.

In case filters are used in combination separators, these filters must be made of chrome-nickel steel.

Surfaces of stainless steel are permitted to display a surface roughness Ra of 1.6 µm at the most measured according to EN ISO 3274, EN ISO 4287, EN ISO 4288, EN ISO 13565-1 and EN ISO 13565-2. The surface is to be manufactured to produce a harmonised surface appearance.

6 Requirements of Technical Safety

6.1 General Information

The shape and dimensioning of the component parts in connection with the quality of the individual materials have to ensure that separators with their accessories are of lasting safety and operative in their predetermined fitting position when used as scheduled and exposed to mechanical, chemical and thermal stress with regular maintenance and cleaning.

The separator shall not have any sharp edges.

Separators which are to be taken out for cleaning purposes must have handles so that they can be taken out and put back in place easily. Access must be possible in any case to all separators or to the separating system for the purpose of inspection of the status of contamination

6.2 Flame Penetration

With separators, construction type A, no flame penetration according to examination 8.2 shall take place. Separators with flame penetration according to examination 8.2 or separators without examination 8.2 are of construction type B.

Separators, construction type B, shall not be used above thermal appliances with elevated risk of fire.

Table 3 — Ranges of Application for Separators of Construction Types A and B

Kitchen areas for which construction type A is exclusively admissible	Kitchen areas for which construction type B is admissible (examples)
– kitchen areas with thermal appliances e.g. kitchens with cooking facilities, Cook and Chill	– kitchen areas for preparation of meals
– front cooking area	– kitchen areas for distribution of meals
	– kitchen areas for storage of meals
	– washing-up kitchen

7 Hygienic Requirements

7.1 General Remarks

Insofar as nothing to the contrary is stipulated the requirements are checked by inspection and/or measuring.

7.2 General hygienic requirements

All materials coming into contact with foodstuffs shall be free of contaminants in accordance with the national regulation and regulation 1935/2004/EC.

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

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

8 Flame Penetration and Efficiency of the Separator

8.1 General Information

8.1.1 Execution of Inspection

Inspection according to this standard has to be effected by an inspection institute accredited according EN ISO 17025.

8.1.2 Testing Device

The testing device has to be equipped with an adjusting facility by means of which the air volume flow can be set at a value between 70 and 1500 m³/h.

For gravimetric measurement within the scope of the efficiency test removable back walls and a receptacle for collection of the aerosol ate which has deposited are to be provided for.

A suitable video recorder to document the flame penetration shall be part of the testing devices.

For flame penetration test a gas fired surface burner has to be installed at position 1 according to picture 1. This burner must have a surface of 600 mm width, 200 mm depth and it has to guarantee a min. flame height