



SLOVENSKI STANDARD
oSIST prEN 16282-1:2025
01-april-2025

Oprema za profesionalne kuhinje - Sestavni deli za prezračevanje profesionalnih kuhinj - 1. del: Splošne zahteve, vključno z metodo za izračun

Equipment for commercial kitchens - Components for ventilation in commercial kitchens - Part 1: General requirements including calculation method

Einrichtungen in gewerblichen Küchen - Elemente zur Be- und Entlüftung - Teil 1: Allgemeine Anforderungen einschließlich Berechnungsmethoden

Équipement pour cuisines professionnelles - Éléments de ventilation pour cuisines professionnelles - Partie 1 : Exigences générales et méthode de calcul

Ta slovenski standard je istoveten z: prEN 16282-1

[oSIST prEN 16282-1:2025](https://standards.sist.si/standards/sist-16282-1-2025)

<https://standards.sist.si/standards/sist-16282-1-2025>

ICS:

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

oSIST prEN 16282-1:2025

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 16282-1

February 2025

ICS 97.040.99

Will supersede EN 16282-1:2017

English Version

Equipment for commercial kitchens - Components for ventilation in commercial kitchens - Part 1: General requirements including calculation method

Équipement pour cuisines professionnelles - Éléments
de ventilation pour cuisines professionnelles - Partie 1
: Exigences générales et méthode de calcul

Einrichtungen in gewerblichen Küchen - Elemente zur
Be- und Entlüftung - Teil 1: Allgemeine Anforderungen
einschließlich Berechnungsmethoden

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.

This draft European Standard was established by CEN 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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

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.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword.....	4
1 Scope.....	5
2 Normative references.....	5
3 Terms, definitions, symbols and abbreviated terms.....	5
3.1 Terms and definitions.....	5
3.2 Symbols and abbreviated terms.....	6
4 Objectives of kitchen ventilation.....	7
5 Classification of kitchens.....	7
6 Design principles.....	8
6.1 General requirements.....	8
6.2 Heat and pollutant loads.....	10
7 Ergonomic and hygiene requirements.....	11
7.1 Thermal comfort, tolerance.....	11
7.2 Temperature of room air.....	12
7.3 Humidity of room air.....	12
7.4 Air velocity in the room.....	12
7.5 Noise control.....	13
7.6 Hygiene requirements.....	13
8 Design principles.....	13
8.1 General.....	13
8.2 Preliminary calculations.....	14
8.2.1 General.....	14
8.2.2 Hourly air change rate method based on the kitchen size and type of kitchen.....	14
8.2.3 Method based on the capture velocity.....	15
8.2.4 Guide values for ancillary rooms.....	15
8.3 Airflow calculation - detailed method.....	16
8.3.1 Thermally induced airflow.....	16
8.3.2 Capture airflows for kitchen extraction hoods.....	17
8.3.3 Extract airflows in connection with kitchen extraction hoods.....	18
8.3.4 Extract airflows in connection with kitchen air extraction ceilings.....	19
8.3.5 Check calculation.....	19
9 Exhaust and supply air systems.....	20
9.1 Exhaust air systems.....	20
9.2 Supply air systems.....	20
9.3 System components.....	20
9.3.1 System cleaning.....	20
9.3.2 Supply and extract air components.....	21
9.3.3 Filters.....	21
9.3.4 Air openings for outside and outgoing air.....	21
10 Fossil fuelled catering kitchen appliances.....	21
Annex A (normative) Tables for calculation.....	22
Annex B (informative) Air circulation within the room.....	27

Annex C (informative) Calculation example	29
Bibliography	34

iTeh Standards
(<https://standards.itih.ai>)
Document Preview

[oSIST prEN 16282-1:2025](https://standards.itih.ai/catalog/standards/sist/4db5317f-2a44-4b38-b706-76bdd230fb21/osist-pren-16282-1-2025)

<https://standards.itih.ai/catalog/standards/sist/4db5317f-2a44-4b38-b706-76bdd230fb21/osist-pren-16282-1-2025>

prEN 16282-1:2025 (E)

European foreword

This document (prEN 16282-1:2025) has been prepared by Technical Committee CEN/TC 156 “Ventilation for buildings”, the secretariat of which is held by BSI.

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

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 16282-1:2017.

prEN 16282-1:2025 includes the following significant technical changes with respect to EN 16282-1:2017:

- General editorial improvement and clarifications throughout the document;
- Adding requirements for small kitchens under 25 kW in 6.1;
- 7.5 Revision of entire clause;
- 8.2.2 replacement of table;
- 9.3.3 update of reference;
- Table A.1, deletion of restricted operating mode and revision/correction of values.

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 aerosols; Requirements and testing*

1 Scope

This document specifies general requirements, such as ergonomic aspects in relation to ventilation of the kitchen (temperature, air aspects, moisture, noise, etc.), including a method for calculating the airflows.

This document 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 document is applicable to kitchen ventilation systems excluding those in domestic kitchens.

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

NOTE Please note the possible existence of additional or alternative national regulations on installation, appliance requirements and inspection, maintenance, 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 12792, *Ventilation for buildings — Symbols, terminology and graphical symbols*

EN 15780, *Ventilation for buildings — Ductwork — Cleanliness of ventilation systems*

EN 16798-3:2017, *Energy performance of buildings — Ventilation for buildings — Part 3: For non-residential buildings — Performance requirements for ventilation and room-conditioning systems (Modules M5-1, M5-4)*

EN 16282-5:2017, *Equipment for commercial kitchens — Components for ventilation in commercial kitchens — Part 5: Air duct; Design and dimensioning*

EN ISO 7730, *Ergonomics of the thermal environment - Analytical determination and interpretation of thermal comfort using calculation of the PMV and PPD indices and local thermal comfort criteria (ISO 7730)*

3 Terms, definitions, symbols and abbreviated terms

For the purposes of this document, the terms, definitions, symbols and abbreviated terms given in EN 12792 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 Terms and definitions

3.1.1

capture velocity

airflow velocity in the free area between the lower part of the hood and the cooking appliance required to extract the aerosols

prEN 16282-1:2025 (E)**3.1.2****sensible heat** \dot{Q}_s

heat which results in a change in temperature and is therefore measurable

3.1.3**simultaneity factor** φ

ratio of actual power consumption divided by total power of appliances

3.1.4**mixed airflow**

air which contains two or more streams of air

3.1.5**extract airflow**

air discharged from the room by means of negative pressure

3.1.6**ACH**

air changes per hour

3.1.7**ATD**

air terminal device

3.1.8**aerosol**

suspended fine solid or liquid particles in the extract and exhaust air, such as grease, oil, water and smoke

3.2 Symbols and abbreviated terms<https://standards.iteh.ai/catalog/standards/sist/4db5317f-2a44-4b38-b706-76bdd230fb21/osist-pren-16282-1-2025>

a	air diffusion factor	-
b	width	m
D	moisture emission	g/(h kW)
d_{hydr}	hydraulic diameter	m
h_f	height above the floor	m
h_a	appliance height	m
h_d	height above the heat source to the hood/ventilated ceiling	m
k	empirically determined coefficient	$m^{4/3}W^{-1/3}h^{-1}$
L	length	m
q_m	mass flow	kg/h
P	power consumption	kW
ρ	density	kg/m ³
$\dot{Q}_{S,K}$	convectively transmitted proportion of the sensible heat load	W
$q_{v-t,ext}$	total hood extract volume	m ³ /h

r	reduction factor for thermal airflow	-
U	unobstructed perimeter of the hood	m
q_{v-th}	thermal airflow	m ³ /h
q_v	volumetric airflow	m ³ /h
q_{v-ext}	extract airflow	m ³ /h
q_{v-com}	compensation airflow	m ³ /h
q_{v-cap}	capture airflows for extraction hoods	m ³ /h
$q_{v-th,ne}$	thermal airflow not extracted	m ³ /h
Δq_v	difference in airflow volume	m ³ /h
q_{v-dir}	supply airflow blown directly into the hood	m ³ /h
v	capture air velocity	m/s
X_{ext}	absolute water content of air, extract air	kg/kg _{dry air}
X_{sup}	absolute water content of air, supply air	kg/kg _{dry air}
φ	simultaneity factor	-

4 Objectives of kitchen ventilation

The ventilation system's purpose is to ensure indoor air quality.

The system shall ensure extraction of odours, pollutants and humidity so the indoor air quality shall not be affected negatively by the cooking operation. If the extract and supply airflows are designed according to this document, this requirement concerning the air quality is assumed to be fulfilled.

The ventilation system shall be capable of separating aerosol from the extract air.

Extract and supply air systems are necessary in commercial kitchens because:

- the air is polluted by odours, particles of grease and gaseous products of combustion and other particulates, this pollution must be removed;
- indoor air quality must be suitable for peoples' health, hygiene and comfort;
- heat is emitted during kitchen operation due to convection and radiant heat. The temperature in the kitchen must be kept at acceptable levels;
- moisture is generated during kitchen operation. The indoor humidity must be kept at an acceptable level;
- it is necessary to renew the air in the rooms by an exchange with outside air and maintain comfortable or specified room air conditions.

5 Classification of kitchens

Kitchens are classified according to the following features:

- spatial arrangement of appliances;
- types of meal preparation;

prEN 16282-1:2025 (E)

- number of portions to be prepared per time unit;
- variety of meals to be prepared;
- work process;

The kitchen shall be classified in accordance with Table A.2 in normative Annex A.

The following are possible ways of connecting the kitchen to the meal dispatch point:

- kitchens with a directly-connected meal dispatch point to the dining room;
- kitchens with a separately-arranged meal dispatch point or with a distribution kitchen;
- kitchens within dining areas without a spatial separation, e.g. snack bars.

There are zones within kitchens which can be subject to special hygiene needs. These are for example.

- cold areas;
- hot areas;
- meat preparation areas;
- fish preparation areas;
- food distribution area.

6 Design principles

6.1 General requirements

Kitchens of a nominal power supply exceeding 25 kW of all heat and moisture emitting appliances shall have mechanical extract and supply air. All other kitchens shall have at least a mechanical exhaust air system (one passive air inlet may be tolerated).

Table 1 lists small kitchens under 25 kW and their respective requirements.

Table 1 — Classification and requirements for small kitchens

Type of kitchen	Description	Requirements
Office kitchen	Comparable to a household kitchen; primarily used for reheating food and drinks, no food preparation	No special precautions required, in addition to general ventilation.
Coffee/tea kitchen	Primarily used for preparing coffee, tea, and beverages; equipped with a dishwasher or glasswasher	No special precautions required, in addition to general ventilation. Attention may need to be paid to heat or moisture discharge.
Temporary catering kitchen	Used for reheating and keeping pre-cooked food warm	Odours and cooking fumes shall be properly extracted.

Type of kitchen	Description	Requirements
Breakfast kitchen	Only occasional, limited cooking, no frying; example: bed and breakfast hotel	The exhaust air volume flow shall be calculated according to this document.
Snack stand with cooking	Example: sausage stand (cooking and frying sausages)	No mechanical ventilation required up to a connection power of 15 kW, provided there is natural ventilation available.
Snack stand with frying and grilling	Sales container with grill, frying, and cooking equipment; example: chicken grill, kebab grill	The exhaust air volume flow for the range hood shall be calculated according to this document. Exhaust air shall be routed through the roof.
Commercial small kitchen without mechanical supply air	Cooking operations similar to a commercial kitchen with minor frying and grilling	Attention shall be paid to the protection of residents, especially regarding odours and noise. ^a
^a Refers to specific considerations for protecting nearby residents from disturbances such as odours and noise.		

NOTE 1 Please note the possible existence of national regulations regarding exhaust and supply air to kitchens.

NOTE 2 Typical kitchen equipment emitting critical air pollution:

- dish washer;
- microwave oven/toaster;
- bain-marie/hot cupboard;
- induction hob/glass ceramic hob;
- pastry/bakery oven;
- oven;
- boiling pan/tilting kettle;
- bratt pan/tilting skillet;
- open top range and oven;
- griddle;
- fryer;
- rotisserie;
- chain broiler (burger conveyor);
- salamander/steak grille;
- chargrill/charbroiler (electric or gas fired)