
Hladilne omare in pulti za kuhinje v gostinstvu - Opredelitev zahtevanih lastnosti in energijske zmogljivosti

Commercial Service Refrigerated Cabinets and Counters intended for use in commercial kitchens - Definition of performance characteristics and energy consumption

Servicekühlthecken- und -tische für gewerbliche Küchen - Bestimmung von Leistungsmerkmalen und Energieverbrauch

Armoires et comptoirs frigorifiques à usage commercial pour cuisines professionnelles - Définition des caractéristiques de performance et de la consommation d'énergie

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EUROPEAN STANDARD

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Refrigerated storage cabinets and counters for professional use - Classification, requirements and test conditions

Armoires et comptoirs frigorifiques à usage professionnel - Classification, prescriptions et conditions d'essai

Servicekühltheken- und -tische für gewerbliche Küchen - Klassifikation, Anforderungen und Prüfbedingungen

This European Standard was approved by CEN on 15 April 2016.

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European foreword

This document (EN 16825:2016) has been prepared by Technical Committee CEN/TC 44 “Commercial and Professional Refrigerating Appliances and Systems, Performance and Energy Consumption”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by February 2017, and conflicting national standards shall be withdrawn at the latest by February 2017.

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For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are an integral part of this document.

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EN 16825:2016 (E)**1 Scope**

This European Standard specifies requirements for the construction, characteristics, performance including energy consumption of refrigerated storage cabinets and counters for professional use in commercial kitchens, hospitals, canteens, preparation areas of bars, bakeries, gelateria, institutional catering and similar professional areas.

The products covered in this European Standard are intended to store foodstuffs. It specifies test conditions and methods for checking that the requirements have been satisfied, as well as classification of the cabinets and counters, their marking and the list of their characteristics to be declared by the manufacturer.

It is not applicable to:

- refrigerated cabinets used in the direct sale of foodstuffs;
- cabinets that carry out food processing and not just storage function (e.g. bakery cabinets that chill, heat and humidity);
- cabinets with water cooled condenser;
- appliances with remote condensing unit;
- appliances with open top tables and saladettes for preparation or storage of foodstuffs;
- cabinet specifically intended for storage of specific foodstuffs (i.e. fresh meat, fresh fish, etc.) operating at a temperature different from those specified in Table 1;
- chest freezers;
- appliances intended for short time / intermittent normal operation during the full day;
- built-in cabinet;
- roll-in cabinet;
- pass-through cabinet.

2 Normative references

Not applicable.

3 Terms and definitions

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

3.1 refrigerated storage cabinet
cabinet cooled by an incorporated refrigerating system which enables chilled and frozen foodstuffs placed therein to be maintained within prescribed temperature limits

Note 1 to entry: Refrigerated storage cabinets is supplied with:

- transparent door: door where the transparent part is more than 20 % of the surface of the door
- solid door: door where the transparent part is less than 20 % of the surface of the door.

3.1.1**vertical cabinet**

refrigerated storage cabinet, having overall height equal or higher than 1 050 mm with one or more front doors or drawers accessing the same compartment

3.1.2**counter cabinet**

refrigerated storage cabinet, having overall height lower than 1 050 mm, with one or more front doors or drawers accessing the same compartment

3.1.3**roll-in cabinet**

refrigerated cabinet intended to be loaded with trolleys with shelves and designed to be introduced as such in the compartment

3.1.4**pass-through cabinet**

refrigerated cabinet accessible from both sides

3.1.5**semi-professional or light duty cabinet**

refrigerated cabinet for which the measurement of energy consumption and the capability of maintaining temperature in the compartment are verified when tested at test room climate class 3

3.1.6**normal duty cabinet**

refrigerated cabinet for which the measurement of energy consumption and the capability of maintaining temperature in the compartment are verified when tested at test room climate class 4

3.1.7**heavy duty cabinet**

refrigerated cabinet for which the verification of the capability of maintaining the temperature in the compartment is performed when tested at test room climate class 5 and the measurement of energy consumption is verified when tested at test room climate class 4

3.1.8**static air cabinet**

cooling system without fan inside the cabinet, or system in which the fan can be switched off by the user

3.1.9**built-in cabinet**

refrigerated storage cabinet intended to be installed into a prepared recess in a wall or similar location and requiring furniture finishing

3.1.10**refrigerator**

appliance where the chilled foodstuff is stored at temperature corresponding to that of class M1

3.1.11**freezer**

appliance where the frozen foodstuff is stored at temperature corresponding to that of class L1

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EN 16825:2016 (E)**3.1.12****combined refrigerated cabinet**

refrigerated cabinet with different temperatures for chilled and/or frozen foodstuffs in separate compartments of the same cabinet

3.1.13**multi use refrigerated cabinet**

refrigerated cabinet or separate compartment of the same cabinet that may be set at different temperatures for chilled or frozen foodstuffs

3.2**commercial kitchen**

area in commercial premises where foodstuffs are processed and stored

Note 1 to entry: This area also includes counter area in a bar.

3.3**overall external dimensions**

dimensions of the right parallelepiped bounded by the length, depth and height of the cabinet, including its projecting accessories

3.4**net volume**

volume containing foodstuffs within the load limit

3.5**shelf**

surface, excluding the base deck, on which the goods are stored

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Note 1 to entry: When GN is mentioned, it means a shelf with dimensions according to the EN 631 series.

3.6**shelf sham**

device intended to limit the loading of a shelf surface

3.7**shelf area**

area defined by the external dimensions of the shelf or internal dimensions of the base of the drawer

Note 1 to entry: The shelf area used for the calculation of volume is different from the area loaded with packages as given in 5.3.3.3.

Note 2 to entry: In case of shelves that are recessed into the cabinet walls the recess part is not considered for the calculation of the surface area.

3.8**load limit**

part of the cabinet boundary surface consisting of a plane or several planes within which foodstuffs can be loaded

3.9**load limit line**

permanently marked boundary line denoting the limit of the loading surface

3.10 operating conditions

conditions which exist when the cabinet, including all permanently located accessories, has been set up with the recommendations of the manufacturer and is in service

Note 1 to entry: Specific operating conditions are defined in Clause 5.

3.11 defrosting

removal of frost, snow and ice from a refrigerated cabinet

3.11.1 automatic defrosting

defrosting where no action is necessary by the user to initiate the removal of frost accumulation and to restore normal operation

Note 1 to entry: It includes automatic removal of defrost water.

3.11.2 semi-automatic defrosting

defrosting where an action is necessary by the user to initiate the removal of frost accumulation and operating condition is restored automatically

Note 1 to entry: It either includes automatic removal of defrost water or entails manual removal of defrost water.

3.11.3 manual defrosting

defrosting where an action is necessary by the user to initiate the removal of frost accumulation and restoration to normal operation requires a further action by the user

Note 1 to entry: It either includes automatic removal of defrost water or entails manual removal of defrost water.

3.12 defrost water removal

process through which defrost water is removed from a refrigerated cabinet

3.12.1 automatic removal of defrost water

removal and/or evaporation of defrost water that does not require any action by the user

3.12.2 manual removal of defrost water

removal of defrost water that requires an action by the user

3.13 condensing unit

combination of one or more compressors, condensers and liquid receivers (when required) and common accessories

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3.14

compression-type refrigerating system

system in which refrigeration is effected by the vaporization at low pressure in a heat exchanger (evaporator) of a liquid refrigerant, the vapour thus formed being restored to the liquid state by mechanical compression to a higher pressure and subsequent cooling in another heat exchanger (condenser)

3.15

indirect-type refrigerating system

system in which a secondary refrigerant circulating system is installed between a central refrigerating system and a refrigerated cabinet

3.16

frame heating

system to avoid condensation on the frame surface and freezing of the gasket of the refrigerated cabinet

3.17

Energy consumption (E24h)

energy consumption of the refrigerated cabinet in kWh

3.18

M-package

test package fitted with a temperature measuring sensor at its geometric centre

3.19

M-package temperature class

classification of M-package temperature according to temperatures of M-packages during the temperature test

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3.20

climate class

classification of the test room climate according to the dry bulb temperature and relative humidity

3.21

drawer

retractable device for food storage, not located behind a door and accessible directly from the front of the cabinet

3.22

cabinet section

vertical part of a cabinet compartment containing one or more doors or drawers placed above each other

4 Requirements**4.1 Condensate drainage**

Where drains, drip trays or evaporation receptacles are fitted, they shall have a capacity such to avoid overflow immediately during the testing period of 5.3.3.6.1 and whenever relevant (e.g. in case of manual cleaning), specific instructions shall be given on how to access and clean them.

4.2 Operating characteristics

4.2.1 Classification according to temperature

The temperatures measured in the compartment(s) shall comply with the values specified in Table 1 and the tests shall be carried out as specified in 5.3.4.

Table 1 — M-package temperature classes

Class	Highest temperature, θ_{ah} , of warmest M-package less than or equal to (see Figure 11)	Lowest temperature, θ_b , of coldest M-package greater than or equal to (see Figure 11)	Lowest temperature, θ_{al} , of warmest M-package less than or equal to (see Figure 11)
	°C		
L1	- 15	—	- 18
M1	+ 5	- 1	—

4.2.2 Defrosting

The proposed defrosting procedures (automatic or manual) shall not affect the temperature requirements (see 5.3.4).

4.2.3 Water vapour condensation

The presence of water vapour condensation shall be verified according to the conditions and test methods specified in 5.3.5.

4.2.4 Electrical energy consumption

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The electrical energy consumption (E_{24h}) shall be measured over 24 h period according to the conditions and the test methods specified in 5.3.6.

The energy consumption shall be expressed in kWh/24h rounded to two decimal places.

5 Test conditions

5.1 General

When the characteristics of a cabinet are to be verified, all the tests and inspections shall be applied to one and the same cabinet. These tests and inspections may also be made individually for the study of a particular characteristic.

Compartment(s) of a combined refrigerated cabinet that are not foreseen for storage of foodstuffs are not subjected to tests and verifications of this standard.

Table 2 lists the tests and verifications.