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SIST EN 441-1:2000

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN 441-1

October 1994

ICS 97.040.30

Descriptors: Refrigerators, furniture, commerce, vocabulary

English version

Refrigerated display cabinets —  
Part 1: Terms and definitions

Meubles frigorifiques de vente —  
Partie 1: Termes et définitions

Verkaufskühlmöbel —  
Teil 1: Begriffe und Definitionen

This European Standard was approved by CEN on 1994-10-14. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists 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 Central Secretariat has the same status as the official versions.

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**CEN**

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

## Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 44, Household refrigerating appliances, 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of an identical text or by endorsement, at the latest by April 1995, and conflicting national standards shall be withdrawn at the latest by April 1995.

This European Standard is part of a series:

- Part 1 *Refrigerated display cabinets — Terms and definitions*
- Part 2 *Refrigerated display cabinets — General mechanical and physical requirements*
- Part 3 *Refrigerated display cabinets — Linear dimensions, areas and volumes*
- Part 4 *Refrigerated display cabinets — General test conditions*
- Part 6 *Refrigerated display cabinets — Classification according to temperature*
- Part 7 *Refrigerated display cabinets — Defrosting test*
- Part 8 *Refrigerated display cabinets — Water vapour condensation test*
- Part 9 *Refrigerated display cabinets — Electrical energy consumption test*
- Part 10 *Refrigerated display cabinets — Test for the absence of odour and taste*
- Part 11 *Refrigerated display cabinets — Installation, maintenance and user's guide*

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According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

**1.1** This standard specifies terminology, general mechanical and physical requirements, test conditions as well as installation, maintenance and user's guide for refrigerated display cabinets for the sale and/or display of food products.

This standard does not cover refrigerated vending machines or cabinets intended for use in catering or similar non-retail applications.

**1.2** This Part of EN 441 contains terms and definitions applicable to all parts of EN 441 for refrigerated display cabinets.

## 2 Normative references

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate place in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- EN 441-2 *Refrigerated display cabinets* — Part 2: *General mechanical and physical requirements*
- EN 441-4 *Refrigerated display cabinets* — Part 4 : *General test conditions*

## 3 Definitions

For the purposes of this standard, the following definitions apply:

### 3.1 refrigerated display cabinet

Cabinet cooled by a refrigerating system (see 3.17 and 3.18) which enables chilled and frozen foodstuff placed therein for display to be maintained within prescribed temperature limits.

### 3.2 load limit

For each part of the cabinet, boundary surface consisting of a plane or several planes within which all test packages can be maintained within the limits for the temperature class declared.

### 3.3 load limit line

Boundary line permanently marked denoting the edge of the load limit surface (see EN 441-2, fig. 2 and 3).

### 3.4 refrigerated shelf area

Shelf area where the vertical clearance above any shelf or bottom of compartment is higher than or equal to 100 mm, measured perpendicularly above the plane of the shelf or compartment and within the bounds of any load limit.

### 3.5 display opening area

Area obtained by multiplying the smallest length and width (or height as appropriate) for the opening area of the refrigerated cabinet.

### 3.6 gross volume

Volume within the inside walls of the cabinet or of a compartment without internal fittings, doors or lids if any being closed. The load limit is taken into account if the cabinet has no door or lid.

### 3.7 net volume

Volume containing food products within the load limit. Parts necessary for the proper functioning of the cabinet, including shelves used in the calculation of refrigerated shelf area, are fitted as intended and the volume representing the space occupied by these parts is deducted from the gross volume when the net volume is determined.

### 3.8 overall external dimensions at installation

Dimensions of the right parallelepiped bounded by the length, depth and height of the cabinet, including its projecting accessories. For cabinets having detachable ends, overall dimensions are given with and without ends. If the cabinet includes jacks or other components for adjustment of height, the height defined shall be the minimum height necessary at installation of the cabinet.

### 3.9 overall external dimensions in service

Dimensions which are necessary for the installation plus the space necessary for:

- circulation of the air which cools the condenser;
- opening and closing of doors and other devices for access to foodstuffs or which allow foodstuffs to be loaded;
- evacuation of defrost water;
- etc.

### 3.10 normal conditions of use

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

NOTE. The effects of actions by non-technical personnel for the purposes of loading, unloading, cleaning, defrosting, the manipulation of accessible controls and of any removable accessories etc, according to the manufacturer's instructions are within the scope of this definition.

The effect of actions resulting from interventions by technical personnel for the purposes of maintenance or repair are outside the scope of this definition.

### 3.11 M-package

Test package (see EN 441-4 , 4.2) fitted with a temperature measuring device.

### 3.12 automatic defrosting

Defrosting where no action is necessary by the user to initiate the removal of frost accumulation and to restore normal operation, and where the disposal of the defrost water is automatic.

### 3.13 semi-automatic defrosting

Defrosting where an action is necessary by the user to initiate the removal of frost accumulation and normal operation is restored automatically, the defrost water being removed manually or removed and disposed of automatically.

Defrosting is also semi-automatic where no action is necessary by the user to initiate the removal of frost accumulation nor to restore normal operation, but where the removal of the defrost water is manual.

### 3.14 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, the defrost water being removed manually or removed and disposed of automatically.

### 3.15 automatic removal of defrost water

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

### 3.16 manual removal of defrost water

Removal of defrost water that requires an action by the user.

### 3.17 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).

### 3.18 indirect-type refrigerating system

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

### 3.19 night cover

Lid, blind or other cover used to reduce the heat ingress (for example by infrared radiation or convection) into an open refrigerated display cabinet.

### 3.20 closed refrigerated cabinet

Refrigerated cabinet where access to the goods is gained by opening a door or lid.

### 3.21 condensing unit

Combination of one or more compressors, condensers or liquid receivers (when required) and the regularly furnished accessories.