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Household refrigerating appliances — Characteristics and test methods

Appareils de réfrigération à usage ménager — Caractéristiques et méthodes d'essai

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15502 was prepared by Technical Committee ISO/TC 86, *Refrigeration and air-conditioning*, Subcommittee SC 5, *Testing and rating of household refrigeration appliances*.

This first edition cancels and replaces ISO 5155:1995, ISO 7371:1995, ISO 8187:1991 and ISO 8561:1995, of which it constitutes a technical revision. It also incorporates the amendments ISO 7371:1995/Amd.1:1997, ISO 8187:1991/Amd.1:1997 and ISO 8561:1995/Amd.1:1997.

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Household refrigerating appliances — Characteristics and test methods

1 Scope

This International Standard specifies the essential characteristics of household refrigerating appliances, factory-assembled and cooled by internal natural convection or forced air circulation, and establishes test methods for checking the characteristics. These are type tests, and because of this, when verification of the performance of a refrigerating appliance of a given type in relation to this International Standard is necessary, it is preferable, wherever practicable, that all the tests specified be applied to a single unit. The tests can also be made individually for the study of a particular characteristic.

NOTE For the safety requirements applicable to household refrigerating appliances, see IEC 60335-2-24, for noise requirements applicable to household refrigerators and freezers, see ISO 8960, and for additional safety requirements applicable to the refrigerating systems of household refrigerating appliances, see in ISO 5149.

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.

ISO 534, *Paper and board — Determination of thickness, density and specific volume*

ISO 817, *Refrigerants — Designation system*

ISO 8960, *Refrigerators, frozen-food storage cabinets and food freezers for household and similar use – Measurement of emission of airborne acoustical noise*

IEC 60335-2-24:— [1)], *Household and similar electrical appliances — Safety — Part 2-24: Particular requirements for refrigerating appliances, ice-cream appliances and icemakers*

3 Terms, definitions and symbols

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

3.1
refrigerating appliance
factory-assembled insulated cabinet with one or more compartments and of suitable volume and equipment for household use, cooled by natural convection or a frost-free system whereby the cooling is obtained by one or more energy-consuming means

NOTE From the point of view of installation, there are various types of household refrigerating appliance (free-standing, wall-mounted, built-in, etc.).

1) To be published. (Revision of IEC 60335-2-24:2002)

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3.1.1
compression-type refrigerating appliance
refrigerating appliance in which refrigeration is effected by means of a motor-driven compressor

3.1.2
absorption-type refrigerating appliance
refrigerating appliance in which refrigeration is effected by an absorption process using heat as energy source

3.1.3
refrigerator
refrigerating appliance intended for the preservation of food, one of whose compartments is suitable for the storage of fresh food

3.1.3.1
frost-free refrigerator
refrigerator in which all compartments are automatically defrosted with automatic disposal of the defrosted water and at least one compartment is cooled by a frost-free system and at least one is a “frozen-food storage” compartment

NOTE A single-compartment refrigerator using a frost-free system cannot be called a frost-free refrigerator.

3.1.4
refrigerator-freezer
refrigerating appliance having at least one compartment suitable for the storage of fresh food (the fresh-food storage compartment) and at least one other (the food freezer compartment) suitable for the freezing of fresh food and the storage of frozen food under three-star storage conditions

3.1.4.1
frost-free refrigerator-freezer
refrigerator-freezer in which all compartments are automatically defrosted with automatic disposal of the defrosted water and at least one compartment is cooled by a frost-free system

3.1.5
frozen-food storage cabinet
refrigerating appliance having one or more compartments suitable for the storage of frozen food

3.1.5.1
frost-free frozen-food storage cabinet
frozen-food storage cabinet in which all compartments are automatically defrosted with automatic disposal of the defrosted water and which is cooled by a frost-free system

3.1.6
food freezer
refrigerating appliance having one or more compartments suitable for freezing foodstuffs from ambient temperature down to a temperature of − 18 °C and which is also suitable for the storage of frozen food under three-star storage conditions

NOTE In certain instances, two-star sections and/or compartments are permitted within the compartment or cabinet (see 7.2.8).

3.1.6.1
frost-free food freezer
food freezer in which all compartments are automatically defrosted with automatic disposal of the defrosted water and at least one compartment is cooled by a frost-free system

3.1.7
built-in appliance
fixed refrigerating appliance intended to be installed in a cabinet, in a prepared recess in a wall or similar location

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3.2
frost-free system
system automatically operated to prevent the permanent formation of frost, in which cooling is provided by forced air circulation, the evaporator or evaporators are defrosted by an automatic defrost system and the water from defrosting is disposed of automatically

3.3 Compartments and sections

3.3.1
fresh-food storage compartment
compartment intended for the storage of unfrozen food, which may itself be divided into sub-compartments

NOTE The storage temperatures can be maintained according to Clause 6.

3.3.2
cellar compartment
compartment intended for the storage of particular foods or beverages at a temperature warmer than that of the fresh-food storage compartment

NOTE The storage temperatures can be maintained according to Clause 6.

3.3.3
chill compartment
compartment intended specifically for the storage of highly perishable foodstuffs whose volume is capable of containing at least 2 M packages

NOTE The storage temperatures can be maintained according to Clause 6.

3.3.4
ice-making compartment
low-temperature compartment intended specifically for the freezing and storage of ice

3.3.5
frozen-food storage compartment
low-temperature compartment intended specifically for the storage of frozen food

NOTE Frozen-food storage compartments are classified according to temperature, see 3.3.5.1 to 3.3.5.5.

3.3.5.1
one-star compartment
frozen-food storage compartment in which the temperature is not warmer than − 6 °C

3.3.5.2
two-star compartment
frozen-food storage compartment in which the temperature is not warmer than − 12 °C

3.3.5.3
three-star compartment
frozen-food storage compartment in which the temperature is not warmer than − 18 °C

3.3.5.4
food freezer compartment
four-star compartment
compartment suitable for freezing foodstuffs from ambient temperature down to − 18 °C, and which is also suitable for the storage of frozen food under three-star storage conditions

NOTE Two-star sections and/or compartments are permitted within the compartment or cabinet (see 7.2.8).

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3.3.5.5
two-star section
part of a food freezer compartment or cabinet, or three-star compartment or cabinet, which is not self-contained (i.e. does not have its own individual access door or lid) and in which the temperature is not warmer than − 12 °C

3.4
rated
stated as a value (e.g. a volume) by the manufacturer

3.5 Physical aspects and dimensions

3.5.1
top-opening type
refrigerating appliance in which the compartment(s) are accessible from the top

3.5.2
upright type
refrigerating appliance in which the compartment(s) are accessible from the front

3.5.3
overall dimensions
space — height, width and depth — with doors or lids closed taken up by the refrigerating appliance

3.5.4
overall space required in use
total space — height, width and depth — with doors or lids open necessary for the refrigerating appliance for normal use

3.5.5
gross volume
volume within the inside liner of the refrigerating appliance, or of a compartment with an external door, without internal fittings and with the doors or lids closed

3.5.6
storage volume
part of the gross volume of any compartment that remains after deduction of the volume of components and spaces recognized as unusable for the storage of food

NOTE See 7.2.

3.5.7
shelf
horizontal surface (shelves, partitions, etc.) on which food can be placed

NOTE It can be formed by one component or by components fitted side by side, which can be fixed or removable.

3.5.8
storage shelf area
sum of the horizontal projections of the storage surfaces within the storage volume, including door shelves and the bottom of each compartment

NOTE See 7.3.

3.5.9
load limit
surface enveloping a frozen-food storage volume

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3.5.10
load-limit line
permanent mark indicating limit of three-star frozen-food storage volume

3.5.11
storage plan
arrangement of test packages within a refrigerating appliance

3.6 Definitions relating to performance characteristics

3.6.1
energy consumption
energy consumed by a refrigerating appliance calculated over a period of 24 h when tested according to this International Standard

3.6.2
fresh-food storage temperature
t_{ma}
mean temperature of the fresh-food storage compartment

3.6.3
frozen-food storage temperature
t^*, t^{**}, t^{***}
maximum temperature of any M package during the test period

NOTE 1 The superscript attached to the symbol t corresponds to the one-star, two-star or three-star temperature.

NOTE 2 See 8.8.3.

3.6.4
cellar compartment storage temperature
t_{cma}
mean temperature of the cellar compartment

3.6.5
chill compartment storage temperature
t_{cc}
instantaneous storage temperature of the chill compartment

3.6.6
freezing capacity
amount of food expressed in kilograms that can be frozen to a temperature of − 18 °C in 24 h when tested in accordance with Clause 17 of this International Standard

3.6.7
ice-making capacity
quantity of ice the refrigerating appliance is capable of producing within 24 h in an automatic icemaker, and/or the time necessary for the freezing of the water in the ice tray(s) supplied with the refrigerating appliance

3.6.8
automatic defrost
defrosting where no action is necessary by the user to initiate the removal of frost accumulation or to restore normal operation, and the disposal of the defrost water is automatic

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