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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Household refrigerating appliances - Characteristics and test methods -Part 1: General requirements (standards.iteh.ai)

Appareils de réfrigération à usage ménager – Caractéristiques et méthodes d'essai – https://standards.iteh.ai/catalog/standards/sist/6a1b6f28-6b78-4051-82a5-Partie 1: Exigences générales)28ec0ff07f/iec-62552-1-2015





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Household refrigerating appliances Acharacteristics and test methods – Part 1: General requirements and ards.iteh.ai)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD REFRIGERATING APPLIANCES – CHARACTERISTICS AND TEST METHODS –

Part 1: General requirements

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International Standard IEC 62552-1 has been prepared by subcommittee 59M: Performance of electrical household and similar cooling and freezing appliances, of IEC technical committee 59: Performance of household and similar electrical appliances.

IEC 62552-1, -2 and -3 cancel and replace the first edition of IEC 62552 published in 2007. IEC 62552-1, -2 and -3 constitute a technical revision and includes the following significant technical changes with respect to IEC 62552:2007:

- a) All parts of the standard have been largely rewritten and updated to cope with new testing requirements, new product configurations, the advent of electronic product controls and computer based test-room data collection and processing equipment.
- b) In Part 1 (this part) there are some changes to test room equipment specifications and the setup for testing to provide additional flexibility especially when testing multiple appliances in a single test room.
- c) For more efficient analysis and to better characterise the key product characteristics under different operating conditions, the test data from many of the energy tests in Part 3 is now

split into components (such as steady state operation and defrost and recovery). The approach to determination of energy consumption has been completely revised, with many internal checks now included to ensure that data complying with the requirements of the standard is as accurate as possible and of high quality.

- d) Part 3 now provides a method to quantify each of the relevant energy components and approaches on how these can be combined to estimate energy under different conditions on the expectation that different regions will select components and weightings that are most applicable when setting both their local performance and energy efficiency criteria while using a single set of global test measurements.
- e) For energy consumption measurements in Part 3, no thermal mass (test packages) is included in any compartment and compartment temperatures are based on the average of air temperature sensors (compared to the temperature in the warmest test package). There are also significant differences in the position of temperature sensors in unfrozen compartments.
- f) The energy consumption test in Part 3 now has two specified ambient temperatures (16°C and 32°C).
- g) While, in Part 2 test packages are still used for the storage test to confirm performance in different operating conditions, in Part 1 they have been standardised to one size (100 mm × 100 mm × 50 mm) to simply loading and reduce test variability. A clearance of at least 15 mm is now specified between test packages and the compartment liner.
- h) A load processing energy efficiency test has been added in Part 3.
- i) A tank-type ice making energy efficiency test has been added in Part 3.
- j) A cooling capacity test has been added in Part 2. PREVIEW
- k) A pull-down test has been added in Part 2. (standards.iteh.ai)
- Shelf area and storage volume measurement methods are no longer included. In Part 3 the volume measurement has been revised to be the total internal volume with only components necessary for the satisfactory operation of the refrigeration system considered as being in place. 2928ec0ff07/fiec-62552-1-2015
- m) Tests (both performance (Part 2) and energy (Part 3)) have been added for wine storage appliances.

The following print types are used in this international standard:

- requirements: in roman type;
- test variables: in *italic type*;
- notes: in small roman type.
- words in **bold** are defined in Clause 3.

The text of this standard is based on the following documents:

FDIS	Report on voting
59M/61/FDIS	59M/64/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62252 series, published under the general title *Household refrigerating appliances – characteristics and test methods*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

IEC 62552 is split into 3 parts as follows:

- Part 1: Scope, definitions, instrumentation, test room and set up of refrigerating products (this part);
- Part 2: General performance requirements for **refrigerating appliances** and methods for testing them;
- Part 3: Energy consumption and volume determination.

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 IEC 60704-2-14.

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HOUSEHOLD REFRIGERATING APPLIANCES – CHARACTERISTICS AND TEST METHODS –

Part 1: General requirements

1 Scope

This part of IEC 62552 specifies the essential characteristics of household **refrigerating appliances**, cooled by internal natural convection or forced air circulation, and establishes test methods for checking the characteristics.

For the purposes of declaration, the tests defined in this part of IEC 62552 are considered to be type tests to assess the fundamental design and operation of a **refrigerating appliance**. This part of IEC 62552 does not define requirements for production sampling or conformity assessment or certification.

This part of IEC 62552 does not define a regime for verification testing as this varies by region and country. When verification of the performance of a **refrigerating appliance** of a given type in relation to this 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. DARD PREVIEW

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2 Normative references

IEC 62552-1:2015

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.

IEC 62552-2:2015, Household refrigerating appliances – Characteristics and test methods – Part 2: Performance requirements

IEC 62552-3:2015, Household refrigerating appliances – Characteristics and test methods – Part 3: Energy consumption and volume

3 Terms, definitions and symbols

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

3.1 General terms and definitions

3.1.1

refrigerating appliance

insulated cabinet with one or more **compartments** that are controlled at specific temperatures and are of suitable size and equipped for household use, cooled by natural convection or a forced convection system whereby the cooling is obtained by one or more energy-consuming means

Note 1 to entry: From the point of view of installation, there are various types of household **refrigerating appliances** (free-standing, portable, wall-mounted, built-in, etc.).

3.1.2

refrigerator

refrigerating appliance intended for the storage of foodstuff, with at least one fresh food compartment

3.1.3

refrigerator-freezer

refrigerating appliance having at least one fresh food compartment and at least one freezer compartment

3.1.4

frost-free refrigerating appliance

refrigerating appliance 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

freezer

refrigerating appliance with only frozen compartments, at least one of which is a freezer compartment

3.1.6

wine storage appliance refrigerating appliance that has no compartment other than one or more wine storage compartment(s) **Teh STANDARD PREVIEW**

Note 1 to entry: An appliance containing any compartments which do not fulfil all requirements as specified for wine storage compartments under Annex G cannot be categorised as a wine storage appliance.

3.1.7

IEC 62552-1:2015

built-in appliance https://standards.iteh.ai/catalog/standards/sist/6a1b6f28-6b78-4051-82a5-

refrigerating appliance intended to be used whilst fastened in an enclosure or secured in a prepared recess in a wall or similar location

3.1.8

foodstuff

food and beverages intended for consumption

3.1.9

rated

value declared by the manufacturer (e.g. volume, energy consumption, usage)

3.1.10

normal use

operation when the **refrigerating appliance** is subjected to a range of different conditions that could occur during use including operation in a range of:

- indoor temperatures (including those defined in the Storage Test, see Clause 6 of IEC 62552-2:2015),
- different humidity levels and
- user-related actions, such as door openings (which may be regular, infrequent or a mixture thereof) and the addition and removal of **foodstuff** or other stored items

3.2 Terms and definitions related to refrigerating system

3.2.1

refrigerant

fluid used for heat transfer in a refrigerating system, which absorbs heat at a low temperature and at a low pressure of the fluid and rejects heat at a higher temperature and at a higher pressure of the fluid, usually involving changes of phase of the fluid

3.2.2

condenser

heat exchanger from which heat in the **refrigerant** is rejected to an external cooling medium (usually the air surrounding the appliance)

3.2.3

evaporator

heat exchanger which absorbs heat from the **compartment** to be refrigerated and transfers this to the **refrigerant**

3.3 Compartments and sections

3.3.1

compartment

enclosed space within a **refrigerating appliance**, which is directly accessible through one or more external doors, which may itself be divided into **sub-compartments**

Note 1 to entry: The requirements for the following compartment types are specified in Table 2 of IEC 62552-2:2015 and Table 1 of IEC 62552-3:2015

Note 2 to entry: Throughout this standard, unless specified otherwise, "compartment" shall be taken to mean compartment and/or sub-compartment as appropriate for the context.

3.3.2 https://standards.iteh.ai/catalog/standards/sist/6a1b6f28-6b78-4051-82a5-

sub-compartment 2928ec0ff07f/iec-62552-1-2015

permanent enclosed space within a **compartment** which has a different operating temperature range from the **compartment** within which it is located

3.3.3

convenience feature

enclosure, or a container (either fixed or removable by the user), in which suitable storage conditions are provided for designated types of **foodstuff**

Note 1 to entry: These conditions may be different from those of the **compartment** in which it is located.

3.3.4

variable temperature compartment

compartment intended for use as two (or more) alternative **compartment** types (e.g. a **compartment** that can be either a **fresh food compartment** or **freezer compartment**) and which is capable of being set by a user to continuously maintain the operating temperature range applicable for each **compartment** type claimed

Note 1 to entry: A **compartment** intended for use as a single type but that can also meet additional types (e.g. a **chill compartment** that may also fulfil **zero-star** requirements) is not a **variable temperature compartment**.

3.3.5

freezer compartment

compartment that meets three-star or four-star requirements

Note 1 to entry: In certain instances, two-star sections and/or sub-compartments are permitted within the compartment.

3.3.6

fresh food compartment

compartment for the storage and preservation of unfrozen foodstuff

3.3.7

cellar compartment

compartment for the storage of foodstuff at a temperature that is warmer than that of a fresh food compartment

3.3.8

pantry compartment compartment for the storage of foodstuff at a temperature that is warmer than that of a cellar compartment

3.3.9

chill compartment

compartment for the storage of highly perishable foodstuff

3.3.10

ice-making compartment

compartment specifically for the making and storage of ice

Note 1 to entry: an ice-making compartment is classified as a zero-star compartment or a frozen compartment.

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3.3.11

ice mould (standards.iteh.ai) form in an automated icemaker which is automatically filled with water and from which the ice cubes are automatically ejected

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3.3.12

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ice cube tray

removable tray which is manually filled with water and from which ice cubes are manually ejected

Note 1 to entry: Ice cube trays with water are used as load in order to determine load processing efficiency. See Annex G of IEC 62552-3:2015.

3.3.13

zero-star compartment

compartment in which the temperature is not warmer than 0 °C that can be used for the making and storage of ice but is not suitable for the preservation of highly perishable foodstuff

3.3.14

wine storage compartment

compartment specifically for the storage and maturation of wine

Note 1 to entry: Temperature requirements for wine storage compartments are specified in Annex G.

3.3.15

unfrozen compartment

any of the following compartment types: zero-star, chill, fresh food, cellar, wine storage or pantry

Note 1 to entry: although ice-making compartments and zero star compartments operate below zero, they are configured as unfrozen compartments for energy and performance tests in this standard.

3.3.16

frozen compartment

any of the following compartment types: one-star, two-star, three-star, four-star

Note 1 to entry: frozen compartments are classified according to temperature, see 3.3.16.1 to 3.3.16.4.

3.3.16.1

one-star

compartment where the storage temperature is not warmer than -6 °C

3.3.16.2

two-star compartment where the storage temperature is not warmer than -12 °C

3.3.16.3

three-star compartment where the storage temperature is not warmer than -18 °C

3.3.16.4

four-star

compartment where the **storage temperature** meets **three-star** conditions and where the minimum **freezing capacity** meets the requirements of Clause 8 of IEC 62552-2:2015

Note 1 to entry: In certain instances, two-star sections and/or sub-compartments are permitted within a fourstar compartment.

3.3.17

two-star section

(standards.iteh.ai)

part of a **three-star** or **four-star compartment**, which is not self-contained (i.e., does not have its own individual access door or lid) and which meets **two-star** requirements

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Note 1 to entry: Any two-star section in the compartment shall not exceed 20 % of the total compartment volume.

3.3.18

vegetable drawer or crisper

convenience feature provided primarily to retard dehydration of fruits and vegetables

Note 1 to entry: A **vegetable drawer** is usually considered as a removable **convenience feature** but is normally left in situ for testing purposes.

3.4 Physical aspects and dimensions

3.4.1

top-opening type

refrigerating appliance in which the **compartment**(s) are accessible from the top (usually via a lid)

3.4.2

upright type

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

3.4.3

overall dimensions

space taken up by the **refrigerating appliance** (height, width and depth) with doors or lids closed