

# INTERNATIONAL STANDARD

# IEC 60335-2-24

1997

AMENDMENT 2  
1999-08

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Amendment 2

**Safety of household and similar  
electrical appliances –**

**Part 2-24:  
Particular requirements for refrigerating  
appliances, ice-cream appliances and  
ice-makers**

*Amendement 2*

*Sécurité des appareils électrodomestiques  
et analogues –*

*Partie 2-24:  
Règles particulières pour les appareils de réfrigération,  
les appareils de glaces à la crème et les fabriques de glace*

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International Electrotechnical Commission  
Международная Электротехническая Комиссия

PRICE CODE

**J**

*For price, see current catalogue*

## FOREWORD

This amendment has been prepared by subcommittee 61C: Household appliances for refrigeration, of IEC technical committee 61: Safety of household and similar electrical appliances.

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

FDIS	Report on voting
61C/155+156/FDIS	61C/167+168/RVD

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

A bilingual version of this amendment may be issued at a later date.

Amend the title of this standard on the cover page, the title page and on pages 5 and 9 as follows:

### **Part 2-24: Particular requirements for refrigerating appliances, ice-cream appliances and ice-makers**

Page 5

#### FOREWORD

Replace, on page 7, the first paragraph by the following:

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for refrigerating appliances, ice-cream appliances and ice-makers.

Page 9

#### **1 Scope**

Add the following new paragraph after the second paragraph:

This standard also deals with the safety of **ice-cream appliances** intended for household use, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances.

In note 2, on page 11, replace the last dashed item by:

- commercial dispensing appliances and vending appliances (IEC 60335-2-75);
- commercial ice-cream appliances.

Page 11

## 2 Definitions

Add, after definition 2.2.9.3, the following new definition:

### 2.2.9.4

#### **normal operation of an ice-cream appliance**

operation of the appliance using the maximum quantity of the mixture of ingredients indicated in the instructions. The mixture used being that which gives the most unfavourable results, the mixture being at an initial temperature of  $23\text{ °C} \pm 2\text{ °C}$

Replace definition 2.109 by the following:

### 2.109

#### **flammable refrigerant**

refrigerant with a flammability classification of group 2 or 3 according to ISO 5149

NOTE For refrigerant blends which have more than one flammability classification the most unfavourable classification is taken for the purpose of this definition.

Add, after definition 2.109, the following new definitions:

### 2.110

#### **ice-cream appliance**

**compression-type appliance** which is used to make ice-cream

### 2.111

#### **free space**

space with a volume exceeding 60 l where a child can be entrapped and which is accessible after opening any door, lid or drawer and removing any **detachable internal part**, including shelves, containers or removable drawers which are themselves only accessible after opening any door or lid. In calculating the volume, a space with any single dimension not exceeding 150 mm or any two orthogonal dimensions each of which do not exceed 200 mm is ignored.

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## 4 General conditions for the tests

4.3 Replace the first paragraph by:

Before starting the tests:

- **ice-cream appliances** are operated empty at **rated voltage** for 1 h or the maximum setting of an incorporated timer, whichever is shorter;
- other **compression-type appliances** shall be operated at **rated voltage** for at least 24 h, then switched off and left to stand for at least 12 h.

#### 4.7 Replace the first paragraph by:

For **ice-cream appliances**, tests specified in clauses 10, 11 and 13 are carried out at an ambient temperature of  $23\text{ °C} \pm 2\text{ °C}$ .

For other appliances, tests specified in clauses 10, 11, 13 and subclause 19.103 are carried out at an ambient temperature of:

$32\text{ °C} \pm 1\text{ °C}$  on appliances of extended temperate (SN) and temperate (N) classes;

$38\text{ °C} \pm 1\text{ °C}$  on appliances of subtropical (ST) class;

$43\text{ °C} \pm 1\text{ °C}$  on appliances of tropical (T) class;

Before starting these tests, the appliance with the doors or lids open is brought to within 2 K of the ambient temperature specified.

Page 15

## 6 Classification

### 6.101 Replace the first line by:

Appliances, other than **ice-cream appliances**, shall be of one or more of the following climatic classes:

## 7 Marking and instructions

### 7.1 Modification:

Replace the third dash by :

- **rated power input** in watts or **rated current** in amperes, except that **compression-type appliances**, other than **ice-cream appliances**, shall be marked only with the **rated current** in amperes;

Add the following:

For **compression-type appliances**, the defrosting power input in watts shall be marked separately if the current corresponding to the defrosting power input is greater than the **rated current** of the appliance.

### 7.12 Add the following:

The instructions for **ice-cream appliances** shall include the ingredients and maximum quantity of mixtures that can be used in the appliance.

Page 19

## 10 Power input and current

10.1 Replace, on page 21, the first paragraph under "Addition" by the following:

*The power input is considered to be stabilised when steady conditions are established or when any incorporated timer operates, whichever occurs first.*

10.2 Replace the text under "Addition" by the following:

*The appliance is operated for a period of 1 h or the maximum setting of an incorporated timer which ever is shorter. Excluding starting current, the maximum value of the current averaged over any 5 min period is obtained. The interval between current measurements shall not exceed 30 s.*

Replace note 101 by the following:

NOTE 101 Starting current is considered to be excluded if the first current measurement is made approximately 1 min after starting.

## 11 Heating

11.2 Add, on page 23, after the first paragraph, the following new second paragraph:

***Ice-cream appliances** are placed as near to the walls of the test corner as possible, unless the manufacturer indicates in the instructions for use that a free distance shall be observed from the walls, in which case, this distance is observed during the test. If means of ventilation are supplied by the manufacturer, they are mounted as intended.*

Delete the last paragraph.

11.8 Replace the first paragraph of the test specification by the following:

*During the test, **protective devices** other than self-resetting thermal motor-protectors for motor-compressors shall not operate. When steady conditions are established, self-resetting thermal motor-protectors for motor-compressors shall not operate.*

Page 29

## 15 Moisture resistance

15.103 Replace, on page 31, the first sentence of the first paragraph by the following:

*Appliances, other than **built-in appliances**, **ice-makers** and **ice-cream appliances** are tilted at an angle of up to 2° in relation to the position of normal use, in the direction which is likely to be the most unfavourable for this test.*

Page 33

## 19 Abnormal operation

19.1 *Add the following:*

*Fan motors of **ice-cream appliances** are not subject to the locked-rotor test of annex AA.*

19.7 *Addition:*

*Fan motors of **ice-cream appliances** are tested for 5 min.*

19.102 *Replace, on page 35, the first three paragraphs by the following:*

**Ice-makers** and **ice-cream appliances** shall be constructed so that they shall not cause any risk of fire, mechanical hazard or electric shock even in the case of abnormal operation.

*Compliance is checked by applying any defect which may be expected to occur in normal use, while the **ice-maker**, **incorporated ice-maker** or **ice-cream appliance** is operated under **normal operation at rated voltage**. Only one fault condition is reproduced at a time and the tests are made consecutively.*

*During the tests, the temperatures of windings of the **ice-maker**, **incorporated ice-maker**, **ice-cream appliance** or of the appliance incorporating the **ice-maker** shall not exceed the values given in table 6.*

Page 37

## 20 Stability and mechanical hazards

*Replace the text by the following:*

This clause of part 1 is applicable except as follows:

20.1 *Addition:*

This requirement does not apply to **refrigerating appliances** and **ice-makers**, instead annex BB applies.

Page 39

## 22 Construction

**22.17** *Replace the text by the following:*

The requirement is not applicable to **refrigerating appliances** and **ice-makers**.

**22.107.1** *Replace the second sentence of note 1 by the following:*

Welded telescopic joints of the motor-compressor housing, the welding of the pipes through the motor-compressor housing and the welding of the fusite are not considered to be critical points.

**22.109** *Replace note 5 by the following:*

NOTE 5 Welded telescopic joints of the motor-compressor housing, the welding of the pipes through the motor-compressor housing and the welding of the fusite are not considered to be pipework joints.

**22.110** *In table 102 replace footnotes 2 and 3 by the following:*

- 2) Values for other **flammable refrigerants** can be obtained from IEC 60079-20 and ISO 5149.
- 3) IEC 60079-20 is the reference standard. ISO 5149 may be used if the required data is not contained in IEC 60079-20.

*Add the following new subclauses:*

**22.111** The doors and lids of compartments in appliances with a **free space** shall be capable of being opened from the inside.

*Compliance is checked by the following test.*

*The empty appliance is disconnected from the supply, placed on a horizontal support and levelled in accordance with the instructions for installation, with castors and rollers, if any, oriented, adjusted or blocked so as to prevent the appliance from moving. Locks, if any, on doors or lids are left unlocked.*

*Doors and lids are closed for a period of 15 min.*

*A force is then applied to a point, equivalent to an accessible inside point, of each appropriate door or lid of the appliance, at the midpoint of the edge farthest from the hinge axis in the direction perpendicular to the plane of the lid or door.*

*The force shall be applied at a rate not exceeding 15 N/s and the lid or door shall open before the force exceeds 70 N.*

NOTE 1 The force may be applied by means of a spring balance with the aid of a suction pad if necessary, to the point on the outer surface of the door or lid which corresponds to the accessible inside point.

NOTE 2 If the handle of the door or lid is at the mid-point of the edge farthest from the hinge axis, the force may be applied by means of a spring balance, to the handle. In this case, the value of the force required to open the door or lid from the inside may be determined by the proportional calculation relating to the distances of the handle and the accessible inside point from the hinge axis.

**22.112** Drawers which are only accessible after opening a door or lid shall not contain a **free space**.

*Compliance is checked by inspection and measurement.*

**22.113** Drawers which are accessible without opening a door or lid and which contain a **free space** shall:

- have an opening in their rear wall that has a height of at least 250 mm and a width of at least two-thirds of the inner width of the drawer;
- be capable of being opened from the inside.

*Compliance is checked by inspection, measurement and by the following test which is carried out with a weight of 23 kg placed inside the drawer.*

*The empty appliance is disconnected from the supply, placed on a horizontal support and levelled in accordance with the instructions for installation, with castors and rollers, if any, oriented, adjusted or blocked so as to prevent the appliance from moving. Locks, if any, on drawers are left unlocked.*

*Drawers shall be maintained closed for a period of 15 min.*

*A force is then applied to the drawer of the appliance at the geometrical centre of the front plane of the drawer equivalent to an accessible inside point, in the direction perpendicular to the front plane of the drawer.*

*The force shall be applied at a rate not exceeding 15 N/s and the drawer shall open before the force exceeds 70 N.*

**22.114** In appliances intended for household use and which contain compartments with a **free space**, any door or drawer giving access to these compartments shall not be fitted with a self-latching lock.

Key operated locks shall require two independent movements to actuate the lock or be of a type that automatically ejects the key when unlocked.

NOTE Push and turn is considered to be an example of two independent movements.

*Compliance is checked by inspection and test.*