



## **DRAFT TANZANIA STANDARD**

**(Draft for comments only)**

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**Household and similar electrical appliances-Safety-Part 2-24:  
Particular requirements for refrigerating appliances, ice –cream  
appliances and ice-makers**

**TANZANIA BUREAU OF STANDARDS**

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## 1 National Foreword

This draft Tanzania Standard has been prepared by the Electrical Equipment Technical Committee, under the supervision of the Electrotechnical Divisional Standards Committee (EDC). This draft Tanzania Standard is identical to International Standard **IEC 60335-2-24:2010** *Household and similar electrical appliances – Safety - Part 2-24: Particular requirements for refrigerating appliances, ice cream appliances and ice-makers* which has been prepared by the International Electrotechnical Commission.

This draft Tanzania Standard replaces TZS 448-2-1:1990 which has become technically revised due to international developments.

## 2 Terminology and conventions

Some terminologies and certain conventions are not identical with those used in Tanzania standards; attention is drawn especially to the following: -

- 1) The comma has been used as a decimal marker for metric dimensions. In Tanzania Standards, it is current practice to use “full point” on the baseline as the decimal marker.
- 2) Where the words “International Standard(s)” appear, referring to this standard they should read “Tanzania Standard(s)”.

# FINAL VERSION

# VERSION FINALE



**Household and similar electrical appliances – Safety –  
Part 2-24: Particular requirements for refrigerating appliances, ice-cream  
appliances and ice-makers**

**Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-24: Règles particulières pour les appareils de réfrigération, les  
sorbetières et les fabriques de glace**

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**IEC 60335-2-24 Amendment 2 to**  
Edition 7.0 2017-04

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –**

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

**INTERPRETATION SHEET 1**

This interpretation sheet has been prepared by subcommittee 61C: Safety of refrigeration appliances for household and commercial use, of technical committee 61: Safety of household and similar electrical appliances.

The text of this interpretation sheet is based on the following documents:

FDIS	Report on voting
61C/730/FDIS	61C/734/RVD

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

**SC 61C interpretation sheet on: Subclause 30.2.101 with respect to testing of built-in appliances and interpretation of accessible non-metallic material**

**Questions:** Some questions have arisen over the text added to 30.2 and 30.2.101 via AMD2 concerning non-metallic material on the external rear surfaces of an appliance that is in direct contact with thermal insulation. These are:

- Is the non-metallic material on the external rear surfaces of an appliance that is in direct contact with thermal insulation considered to be “accessible non-metallic material” ?
- Does the term “accessible” have the meaning defined in 3.6.3 of Part 1 ?
- What force is applied to test probe B when judging accessibility ?
- For built-in appliances, is accessibility judged before the appliance is built-in ?

**Relevant text from IEC 60335-2-24 AMD2****The addition to 30.2 states:**

*For accessible thermal insulation and non-metallic material on the external rear surfaces of an appliance having an area exceeding  $75 \text{ cm}^2$  that is in direct contact with the thermal insulation, compliance is checked by the test of 30.2.101.*

**Subclause 30.2.101 states:**

**30.2.101** *Accessible thermal insulation and non-metallic material on the external rear surfaces of an appliance that is in direct contact with thermal insulation*

- *is subject to the needle-flame test (NFT) of Annex E; or*
- *shall comprise material classified as V-0 or V-1 according to IEC 60695-11-10 provided that the test sample used for the classification was no thicker than the relevant part of the appliance.*

*Non-metallic material*

- *that is within 150 mm from the top surface of the appliance;*
- *that is on the left side or right side of the motor-compressor compartment;*
- *that has an area not exceeding  $75 \text{ cm}^2$  that is in direct contact with the thermal insulation is not tested.*

**ANSWERS**

- a) Yes
- b) Yes
- c) The test probe is applied with a force not exceeding 1 N
- d) Yes. This is irrespective of the last paragraph of 5.10 of Part 1

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DRAFT FOR STAKEHOLDERS' COMMENTS ONLY

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –  
SAFETY –****Part 2-24: Particular requirements for refrigerating appliances,  
ice-cream appliances and ice-makers**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

**DISCLAIMER**

**This Consolidated version is not an official IEC Standard and has been prepared for user convenience. Only the current versions of the standard and its amendment(s) are to be considered the official documents.**

This Consolidated version of IEC 60335-2-24 bears the edition number 7.2. It consists of the seventh edition (2010-02) [documents 61C/459/FDIS and 61C/461/RVD], its amendment 1 (2012-05) [documents 61C/506/FDIS and 61C/509/RVD] and its amendment 2 (2017-04) [documents 61C/694/FDIS and 61C/700/RVD]. The technical content is identical to the base edition and its amendments.

This Final version does not show where the technical content is modified by amendments 1 and 2. A separate Redline version with all changes highlighted is available in this publication.



This part of International Standard IEC 60335 has been prepared by subcommittee 61C: Household appliances for refrigeration, of IEC technical committee 61: Safety of household and similar electrical appliances.

This seventh edition constitutes a technical revision.

The principal changes in this edition as compared with the previous edition of IEC 60335-2-24 are as follows (minor changes are not listed):

- aligns the text with IEC 60335-1, and its Amendments 1 and 2;
- clarifies the term “household and similar use” (1, 7.12);
- updates marking requirements for supply terminals of battery operated appliances (7.6, 7.101);
- introduces requirements for appliances using transcritical refrigerant systems (3.112, 3.113, 3.114, 3.115, 3.116, 7.1, 7.6, 7.12.1, 22.103, 24.1.4, 24.102);
- introduces an enhanced flexing test (23.3);
- introduces requirements for accessible glass panels (22.116);
- clarifies tests for appliances using flammable refrigerants (22.107, Annex DD)

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

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fourth edition (2001) of that standard.

NOTE 1 When “Part 1” is mentioned in this standard, it refers to IEC 60335-1.

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 electric refrigerating appliances, ice-cream appliances and ice-makers.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

- requirements: in roman type;
- test specifications: *in italic type*;
- notes: in smaller roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

A list of all parts of the IEC 60335 series, under the general title: *Household and similar electrical appliances – Safety*, can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendments 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.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

The following differences exist in the countries indicated below.

- 22.101 : E12 and E17 lamp holders are checked as specified for E14 and B15 lamp holders. E26 lamp holder is checked as specified for E27 and B22 lamp holders (Japan).
- 22.110 : For unsealed glass tube heaters, the temperature requirements are different (Japan).

**IMPORTANT – The “colour inside” logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.**

## INTRODUCTION

It has been assumed in the drafting of this international standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another part 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

NOTE 2 Horizontal and generic standards covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards. For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 standards.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features that impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

## HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

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

#### 1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of the following appliances, their **rated voltage** being not more than 250 V for single-phase appliances, 480 V for other appliances and 24 V d.c. for appliances when battery operated.

- **refrigerating appliances** for household and similar use;
- **ice-makers** incorporating a motor-compressor and **ice-makers** intended to be incorporated in frozen food storage compartments;
- **refrigerating appliances** and **ice-makers** for use in camping, touring caravans and boats for leisure purposes.

These appliances may be operated from the mains, from a separate battery or operated either from the mains or from a separate battery.

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.

It also deals with **compression-type appliances** for household and similar use, which use **flammable refrigerants**.

This standard does not cover features of the construction and operation of those **refrigerating appliances** which are dealt with in other IEC standards.

**Refrigerating appliances** not intended for normal household use but which nevertheless may be a source of danger to the public, such as

- **refrigerating appliances** used in staff kitchen areas in shops, offices and other working environments,
- **refrigerating appliances** used in farm houses and by clients in hotels, motels and other residential type environments,
- **refrigerating appliances** used in bed and breakfast type environments, and
- **refrigerating appliances** used in catering and similar non-retail applications

are within the scope of this standard.

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

- persons (including children) whose
  - physical, sensory or mental capabilities or
  - lack of experience and knowledgeprevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

NOTE 1 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;
- in many countries, additional requirements are specified by national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

NOTE 2 This standard does not apply to

- appliances intended to be used in the open air;
- appliances designed exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- appliances incorporating a battery intended as a power supply for the refrigerating function;
- appliances assembled on site by the installer;
- appliances with remote motor-compressors;
- motor-compressors (IEC 60335-2-34);
- commercial dispensing appliances and vending appliances (IEC 60335-2-75);
- commercial refrigerators and freezers used for the display of food products, including beverages, for retail sale (IEC 60335-2-89);
- commercial ice-cream appliances.

## 2 Normative references

*This clause of Part 1 is applicable except as follows.*

*Addition:*

IEC 60068-2-11, *Environmental testing – Part 2 Tests. Tests Ka: Salt mist*

IEC 60079 -15:2010, *Explosive atmospheres – Part 15: Equipment protection by type of protection "n"*

IEC 60079-20-1, *Explosive atmospheres – Part 20-1: Material characteristics for gas and vapour classification – Test methods and data*

IEC 60335-2-5:2002, *Household and similar electrical appliances – Safety – Part 2-5: Particular requirements for dishwashers*

IEC 60335-2-34:2002, *Household and similar electrical appliances – Safety – Part 2-34: Particular requirements for motor-compressors*

Amendment 1 (2004)

Amendment 2 (2008)<sup>1)</sup>

ISO 209, *Aluminium and aluminium alloys - Chemical composition*

ISO 817, *Refrigerants – Designation and safety classification*

ISO 4126-2:2003, *Safety devices for protection against excessive pressure – Bursting disc safety devices*

ISO 5149-1, *Refrigerating systems and heat pumps – Safety and environmental requirements – Part 1: Definitions, classification and selection criteria*

<sup>1)</sup>

There exists a consolidated edition 4.2 (2002) that includes edition 4 and its Amendment 1 and Amendment 2.

### 3 Terms and definitions

This clause of Part 1 is applicable except as follows.

#### 3.1.9 Replacement:

##### normal operation

operation of the appliance under the following conditions

##### 3.1.9.101

##### normal operation of a refrigerating appliance

operation at an ambient temperature in accordance with 5.7, empty, with the doors and lids closed. User-adjustable temperature control devices which control the operation of the motor-compressor in **compression-type appliances** are short-circuited or otherwise rendered inoperative

##### 3.1.9.102

##### normal operation of an ice-maker

operation at an ambient temperature in accordance with 5.7, with the supply water at a temperature of  $15\text{ °C} \pm 2\text{ °C}$

##### 3.1.9.103

##### normal operation of an incorporated ice-maker

operation at the normal temperature of the frozen food storage compartment, with the supply water at a temperature of  $15\text{ °C} \pm 2\text{ °C}$

##### 3.1.9.104

##### 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  $23\text{ °C} \pm 2\text{ °C}$

#### 3.101

##### refrigerating appliance

enclosed thermally insulated appliance of suitable volume for household use, cooled by an incorporated device and having one or more compartments intended for the preservation of foodstuffs including cooling of beverages

#### 3.102

##### compression-type appliance

appliance 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 original state by mechanical compression at a higher pressure and subsequent cooling in another heat exchanger (**condenser**)

#### 3.103

##### ice-maker

appliance in which ice is made by freezing water by a device consuming electrical energy and having a compartment for storing the ice

#### 3.104

##### incorporated ice-maker

**ice-maker** specially designed to be incorporated into a frozen food storage compartment and without independent means for freezing water

