EESTI STANDARD EVS-EN IEC 60335-2-24:2022+A11:2022

# MAJAPIDAMIS- JA MUUD TAOLISED ELEKTRISEADMED. OHUTUS. OSA 2-24: ERINÕUDED KÜLMUTUSSEADMETELE, JÄÄTISE- JA JÄÄVALMISTITELE

AN:SOOCUN

Household and similar electrical appliances - Safety -Part 2-24: Particular requirements for refrigerating appliances, ice-cream appliances and ice makers (IEC 60335-2-24:2020 + COR1:2021)

NO OLOG

# EESTI STANDARDI EESSÕNA

# NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 60335-2-24:2022 +A11:2022 sisaldab Euroopa standardi EN IEC 60335-2-24:2022 ja selle muudatuse A11:2022 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 60335-2-24:2022+A11:2022 consists of the English text of the European standard EN IEC 60335-2-24:2022 and its amendment A11:2022.	
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.	
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 09.12.2022, muudatus A1 09.12.2022.	Date of Availability of the European standard is 09.12.2022, for A1 09.12.2022.	
Muudatusega A11 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega A11) (A11).	The start and finish of text introduced or altered by amendment A11 is indicated in the text by tags $A_{11}$ $A_{11}$ .	
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.	

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile <u>standardiosakond@evs.ee</u>.

ICS 97.040.30

#### Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autoriõiguse kaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht <u>www.evs.ee</u>; telefon 605 5050; e-post <u>info@evs.ee</u>

#### The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about standards copyright protection, please contact the Estonian Centre for Standardisation and Accreditation:

Homepage <u>www.evs.ee</u>; phone +372 605 5050; e-mail <u>info@evs.ee</u>

# EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

# EN IEC 60335-2-24 + A11

December 2022, December 2022

ICS 97.040.30

Supersedes EN 60335-2-24:2010; EN 60335-2-24:2010/A1:2019; EN 60335-2-24:2010/A2:2019; EN 60335-2-24:2010/A11:2020

English Version Household and similar electrical appliances - Safety - Part 2-24: Particular requirements for refrigerating appliances, ice-cream appliances and ice makers (IEC 60335-2-24:2020 + COR1:2021)

Appareils électrodomestiques et analogues - Sécurité -Partie 2-24: Exigences particulières pour les appareils de réfrigération, les sorbetières et les fabriques de glace (IEC 60335-2-24:2020 + COR1:2021)

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke - Teil 2-24: Besondere Anforderungen für Kühl-/Gefriergeräte und Speiseeis- und Eisbereiter (IEC 60335-2-24:2020 + COR1:2021)

This European Standard was approved by CENELEC on 2022-08-31. Amendment A11 was approved by CENELEC on 2022-08-31. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard and its amendment 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 CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard and its Amendment A11 exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2022 CENELEC All rights of exploitation in any form and by any means reserved worldwide for CENELEC Members.

# **European foreword**

This document (EN IEC 60335-2-24:2022) consists of the text of IEC 60335-2-24:2020+COR1:2021 prepared by IEC/TC 61 "Safety of household and similar electrical appliances".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with this document have to be withdrawn
  (dow) 2025-12-09

This document supersedes EN IEC 60335-2-24:2010 and all of its amendments and corrigenda (if any).

This document is read in conjunction with EN IEC 60335-2-24:2022/A11:2022.

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

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s)/ Regulation(s) see informative Annex ZZA, which is an integral part of EN IEC 60335-2-24:2022/A11:2022.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

## **Endorsement notice**

The text of the International Standard IEC 60335-2-24:2020+COR1:2021 was approved by CENELEC as a European Standard without any modification.

# Amendment A11 European foreword

This document (EN IEC 60335-2-24:2022/A11:2022) has been prepared by CLC/TC 61 "Safety of household and similar electrical appliances".

The following dates are fixed:

- latest date by which this document has to be implemented at (dop) 2023-06-09 national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with this (dow) 2025-12-09 document have to be withdrawn

The numbering system for European clauses, subclauses, notes, tables, figures and annexes that are additional to those in the IEC standard are prefixed with the letter "Z".

This document is read in conjunction with EN IEC 60335-2-24:2022.

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

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s) / Regulation(s), see informative Annex ZZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website. (And





Edition 8.0 2020-09

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



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: Exigences particulières pour les appareils de réfrigération, les sorbetières et les fabriques de glace





# THIS PUBLICATION IS COPYRIGHT PROTECTED Copyright © 2020 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office 3, rue de Varembé CH-1211 Geneva 20 Switzerland Tel.: +41 22 919 02 11 info@iec.ch www.iec.ch

#### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

#### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

#### IEC publications search - webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

#### IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

#### IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

#### Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Glossary - std.iec.ch/glossary

67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

#### A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

#### A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

#### Recherche de publications IEC -

#### webstore.iec.ch/advsearchform

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

#### IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

#### Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

#### Electropedia - www.electropedia.org

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 000 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

#### Glossaire IEC - std.iec.ch/glossary

67 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.





Edition 8.0 2020-09

# **INTERNATIONAL STANDARD**

# NORME INTERNATIONALE



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: Exigences particulières pour les appareils de réfrigération, les sorbetières et les fabriques de glace 

**INTERNATIONAL ELECTROTECHNICAL** COMMISSION

COMMISSION **ELECTROTECHNIQUE INTERNATIONALE** 

ISBN 978-2-8322-8850-4

ICS 97.040.30

Warning! Make sure that you obtained this publication from an authorized distributor. Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

® Registered trademark of the International Electrotechnical Commission Marque déposée de la Commission Electrotechnique Internationale

this occument is a proview concrete where the owner of the owner of the owner of the owner own

# CONTENTS

FOF	REWORD	4
INT	RODUCTION	7
1	Scope	8
2	Normative references	9
3	Terms and definitions	10
4	General requirement	13
5	General conditions for the tests	14
6	Classification	15
7	Marking and instructions	16
8	Protection against access to live parts	21
9	Starting of motor-operated appliances	21
10	Power input and current	21
11	Heating	22
12	Void	25
13	Leakage current and electric strength at operating temperature	25
14	Transient overvoltages	25
15	Moisture resistance	25
16	Leakage current and electric strength	27
17	Overload protection of transformers and associated circuits	28
18	Endurance	28
19	Abnormal operation	28
20	Stability and mechanical hazards	30
21	Mechanical strength	32
22	Construction	33
23	Internal wiring	45
24	Components	46
25	Supply connection and external flexible cords	48
26	Terminals for external conductors	49
27	Provision for earthing	50
28	Screws and connections	50
29	Clearances, creepage distances and solid insulation	50
30	Resistance to heat and fire	50
31	Resistance to rusting	51
32	Radiation, toxicity and similar hazards	51
Ann	exes	54
Ann	ex C (normative) Ageing test on motors	54
Ann	ex D (normative) Thermal motor protectors	54
Ann	ex P (informative) Guidance for the application of this standard to appliances	
	used in tropical climates	54
Ann	ex AA (normative) Locked-rotor test of fan motors	55
Ann	ex BB (informative) Method for accumulation of frost	57

Annex CC (normative) Non-sparking "n" electrical apparatus and test conditions for "dc" devices	60
Annex DD (informative) Sound manufacturing practice for compression-type appliances which use flammable refrigerant	61
Annex EE (normative) Test for material encasing and in contact with thermal insulation	62
Annex ZC (normative) Normative references to international publications with their corresponding European publications (Annex Annex ZC (normative) Normative references to international publications with their corresponding European publications (Annex ZC (normative) Normative) Normative references to international publications with their corresponding European publications (Annex ZC (normative) Normative) Normative references to international publications with their corresponding European publications (Annex ZC (normative) Normative) Normative references to international publications (Annex ZC (normative) Normative) Normative references to international publications (Annex ZC (normative) Normative) Normative) Normative references to international publications (Annex ZC (normative) Normative)	64
Annex ZZA (informative) Relationship between this European Standard and the safety objectives of Directive 2014/35/EU [2014 OJ L96] aimed to be covered (Att]	66
Annex ZZB (informative) Relationship between this European standard and the essential requirements of Directive 2006/42/EC aimed to be covered (A11)	67
Bibliography	68
Figure 101 – Apparatus for spillage test	52
Figure 102 – Scratching tool tip details	53
Figure AA.1 – Supply circuit for locked-rotor test of a single-phase fan motor	56
Figure BB.1 – Diagram of apparatus for water evaporation and for accumulation of frost	58
Figure BB.2 – Apparatus for water evaporation and for accumulation of frost	59
Figure EE.1 – Arrangement of the test specimen and burner	63
Table 101 – Maximum temperatures for motor-compressors	23
Table 102 – Refrigerant flammability parameters	42
Table ZZA.1 — Correspondence between this European Standard and Annex I of Directive 2014/35/EU [2014 OJ L96]	66

Standard and Ann.

### 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 for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 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.

This part of IEC 60335 has been prepared by subcommittee 61C: Safety of refrigeration appliances for household and commercial use, of IEC Technical Committee 61: Safety of household and similar electrical appliances.

This eighth edition cancels and replaces the seventh edition published in 2010, Amendment 1:2012 and Amendment 2:2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- aligns the text with IEC 60335-1, Ed 5.2;
- some notes have been converted to normative text or deleted (4, 5.2, 5.7, 7.1, 7.6, 7.10, 7.12, 19.1, 19.101, 19.102, 20.101, 20.102, 20.103, 20.104, 21, 22.7, 22.33, 22.101, 22.102, 22.103, 22.107, 22.108, 22.109, 30.1);
- normative references and associated text have been updated (2, 22.108, 22.109, Table 102, Annex CC);

- definition of free space has been clarified (3.6.104);
- measurement of the input current of refrigerating appliances using inverter driven motorcompressors is included (10.2);
- compatibility tests for winding insulation of motor-compressors used with different types of refrigerants and oils have been introduced (22.9);
- requirements for inadvertent contact points between uncoated aluminium pipes and copper pipes have been updated (22.111);
- testing of accessible glass panels has been clarified (22.116);
- in refrigerating appliances, requirements for material encasing and in contact with thermal insulation have been introduced and consequential text has been deleted (22.117, 30.2, 30.2.101, Annex EE);
- requirements for motor running capacitors have been updated (24.5, 24.8);
- the locked rotor test for fan motors has been clarified (Annex AA).

The text of this International Standard is based on the following documents:

FDIS	Report on voting
61C/861/FDIS	61C/863/RVD

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

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

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.

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 fifth edition (2010) 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 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 small 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.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document 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).
- 22.117: Only the first two dashed items in the first paragraph of the requirement are allowed (Australia and New Zealand).

The contents of the corrigendum of August 2021 have been included in this copy.

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 document 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.

Mith this European amendment A11, the standard EN 60335-2-24:2010+A1:2019+A2:2019+A11:2020 is superseded.

This European amendment A11 supplements or modifies the corresponding clauses of the standards below:

— EN 60335-1:2012+A11:2014+A13:2017+A1:2019+A14:2019+A2:2019+A15:2021 (Part 1)

— EN IEC 60335-2-24:2022 (Part 2) (A11

## 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 part of IEC 60335 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 DC 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.

This document deals with the reasonably foreseeable hazards presented by appliances and machines that are encountered by all persons. However, in general, it does not take into account:

- children playing with the appliance,
- the use of the refrigerating appliances by very young children,

 the use of ice-cream makers and separated ice-makers by young children and by very young children.

It is recognized that **very vulnerable people** can have needs beyond the level addressed in this document. (A11

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 can 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.
- And in some countries, specific legislation covers surfaces and materials in contact with food. And

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 refrigerating appliances and ice-makers with an incorporated or remote refrigerant unit or motor-compressor (IEC 60335-2-89);
- professional ice-cream makers (IEC 60335-2-118).

#### 2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60068-2-11:1981, Basic environmental testing procedures – Part 2-11: Tests – Test Ka: Salt mist

IEC 60079-1:2014, Explosive atmospheres – Part 1: Equipment protection by flameproof enclosures "d"

IEC 60079-7:2015, Explosive atmospheres – Part 7: Equipment protection by increased safety "e" IEC 60079-7:2015/AMD1:2017<sup>1</sup>

IEC 60079-15:2017, Explosive atmospheres – Part 15: Equipment protection by type of protection "n"

IEC 60252-1:2010, AC motor capacitors – Part 1: General – Performance, testing and rating – Safety requirements – Guidance for installation and operation IEC 60252-1:2010/AMD1:2013

<sup>&</sup>lt;sup>1</sup> There exists a consolidated edition 5.1:2017 that includes edition 5 and its Amendment 1.

EVS-EN IEC 60335-2-24:2022+A11:2022 - 10 -

IEC 60335-2-34:2012, Household and similar electrical appliances – Safety – Part 2-34: Particular requirements for motor-compressors IEC 60335-2-34:2012/AMD1:2015 IEC 60335-2-34:2012/AMD2:2016<sup>2</sup>

IEC 60335-2-34:2021, Household and similar electrical appliances – Safety – Part 2-34: Particular requirements for motor-compressors

IEC 60598-1:2014, Luminaires – Part 1: General requirements and tests IEC 60598-1:2014/AMD1:2017<sup>3</sup>

IEC 60695-11-3:2012, Fire hazard testing – Part 11-3: Test flames – 500 W flames – Apparatus and confirmational test methods

IEC 60695-11-20:2015, Fire hazard testing – Part 11-20: Test flames – 500 W flame test method

IEC 60730-2-6:2015, Automatic electrical controls – Particular requirements for automatic electrical pressure sensing controls including mechanical requirements IEC 60730-2-6:2015/AMD1:2019<sup>4</sup>

IEC 60851-4:2016, Winding wires – Test methods – Part 4: Chemical properties

ISO 209:2007, Aluminium and aluminium alloys – Chemical composition

ISO 817:2014, *Refrigerants – Designation and safety classification* ISO 817:2014/AMD1:2017

ISO 4126-2:2018, Safety devices for protection against excessive pressure – Part 2: Bursting disc safety devices

ISO 5149-1:2014, Refrigerating systems and heat pumps – Safety and environmental requirements – Part 1: Definitions, classification and selection criteria ISO 5149-1:2014/AMD1:2015

ISO 7010:2019, Graphical symbols – Safety colours and safety signs – Registered safety signs

## 3 Terms and definitions

This clause of Part 1 is applicable except as follows.

### 3.1 Definitions relating to physical characteristics

#### **3.1.9** *Replacement:*

#### normal operation

operation of the appliance under the following conditions from 3.1.9.101 to 3.1.9.104.

<sup>&</sup>lt;sup>2</sup> There exists a consolidated edition 5.2:2016 that includes edition 5 and its Amendment 1 and Amendment 2.

<sup>&</sup>lt;sup>3</sup> There exists a consolidated edition 8.1:2017 that includes edition 8 and its Amendment 1

<sup>&</sup>lt;sup>4</sup> There exists a consolidated edition 3.1:2019 that includes edition 3 and its Amendment 1