



Sisaldab värvilisi lehekülgi
Colour inside

MAJAPIDAMIS- JA MUUD TAOLISED ELEKTRISEADMED. OHUTUS. OSA 2-40: ERINÕUDED ELEKTRILISTELE SOOJUSPUMPADELE, ÕHUKONDITSIONEERIDELE JA ÕHUKUIVATITELE

**Household and similar electrical appliances - Safety -
Part 2-40: Particular requirements for electrical heat
pumps, air-conditioners and dehumidifiers
(IEC 60335-2-40:2022 + COR1:2024)**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 60335-2-40:2024+A11:2024 sisaldab Euroopa standardi EN IEC 60335-2-40:2024 ja selle muudatuse A11:2024 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 60335-2-40:2024+A11:2024 consists of the English text of the European standard EN IEC 60335-2-40:2024 and its amendment A11:2024.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 08.11.2024, muudatus A11 08.11.2024.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 08.11.2024, for A11 08.11.2024.
Muudatusega A11 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega A11 A11 . Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The start and finish of text introduced or altered by amendment A11 is indicated in the text by tags A11 A11 . 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 standardiosakond@evs.ee.

ICS 23.120

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 www.evs.ee; telefon 605 5050; e-post info@evs.ee 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 www.evs.ee; phone +372 605 5050; e-mail info@evs.ee
--

English Version

Household and similar electrical appliances - Safety - Part 2-40:
Particular requirements for electrical heat pumps, air-
conditioners and dehumidifiers
(IEC 60335-2-40:2022 + COR1:2024)

Appareils électrodomestiques et analogues - Sécurité -
Partie 2-40: Exigences particulières pour les pompes à
chaleur électriques, les climatiseurs et les
déshumidificateurs
(IEC 60335-2-40:2022 + COR1:2024)

Sicherheit elektrischer Geräte für den Hausgebrauch und
ähnliche Zwecke - Teil 2-40: Besondere Anforderungen für
elektrisch betriebene Wärmepumpen, Klimageräte und
Raumluf-Entfeuchter
(IEC 60335-2-40:2022 + COR1:2024)

This European Standard was approved by CENELEC on 2024-08-12. Amendment A11 was approved by CENELEC on 2024-08-12. 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

European foreword

This document (EN IEC 60335-2-40:2024) consists of the text of IEC 60335-2-40:2022 + COR1:2024 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 (dop) 2025-08-12 implemented at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards (dow) 2027-08-12 conflicting with this document have to be withdrawn

This document supersedes EN IEC 60335-2-40:2023 and all of its amendments and corrigenda (if any).

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

This document is read in conjunction with EN IEC 60335-2-40:2024/A11:2024.

This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annexes ZZA and ZZB, which are an integral part of EN IEC 60335-2-40:2024/A11:2024.

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

Endorsement notice

The text of the International Standard IEC 60335-2-40:2022 + COR1:2024 was approved by CEN-CENELEC as a European Standard without any modification.

A11 Amendment A11 European foreword

This document (EN IEC 60335-2-40:2024/A11:2024) 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 (dop) 2025-08-12
implemented at national level by publication of
an identical national standard or by
endorsement
- latest date by which the national standards (dow) 2027-08-12
conflicting with this 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".

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

This document is read in conjunction with EN IEC 60335-2-40:2024.

This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annexes ZZA and ZZB, which are an integral part of this document.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN and CENELEC websites. **A11**

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Household and similar electrical appliances – Safety –
Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and
dehumidifiers**

**Appareils électrodomestiques et analogues – Sécurité –
Partie 2-40: Exigences particulières pour les pompes à chaleur électriques, les
climatiseurs et les déshumidificateurs**



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2022 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 Secretariat
3, rue de Varembe
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.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

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.

IEC Products & Services Portal - products.iec.ch

Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 300 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 19 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Household and similar electrical appliances – Safety –
Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and
dehumidifiers**

**Appareils électrodomestiques et analogues – Sécurité –
Partie 2-40: Exigences particulières pour les pompes à chaleur électriques, les
climatiseurs et les déshumidificateurs**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 23.120

ISBN 978-2-8322-3437-2

**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.**

This document is a preview generated by EVS

CONTENTS

FOREWORD.....	5
INTRODUCTION.....	8
1 Scope.....	9
2 Normative references.....	10
3 Terms and definitions	12
4 General requirement.....	19
5 General conditions for the tests.....	19
6 Classification.....	20
7 Marking and instructions	21
8 Protection against access to live parts	26
9 Starting of motor-operated appliances.....	26
10 Power input and current.....	27
11 Heating	27
12 Void	30
13 Leakage current and electric strength at operating temperature	30
14 Transient overvoltages.....	30
15 Moisture resistance	30
16 Leakage current and electric strength.....	31
17 Overload protection of transformers and associated circuits.....	32
18 Endurance.....	32
19 Abnormal operation	32
20 Stability and mechanical hazards	38
21 Mechanical strength.....	39
22 Construction	40
23 Internal wiring.....	52
24 Components	52
25 Supply connection and external flexible cords	53
26 Terminals for external conductors	54
27 Provision for earthing.....	54
28 Screws and connections	54
29 Clearances, creepage distances and solid insulation	54
30 Resistance to heat and fire	54
31 Resistance to rusting	55
32 Radiation, toxicity and similar hazards	56
Annexes	63
Annex D (normative) Thermal motor protectors.....	63
Annex I (normative) Motors having basic insulation that is inadequate for the rated voltage of the appliance	63
Annex AA (informative) Examples for operating temperatures of the appliance	64
Annex BB (normative) Selected information about refrigerants	65

Annex CC (informative) Transportation, marking and storage for units that employ flammable refrigerants	69
Annex DD (normative) Requirements for installation, service, maintenance and repair, and decommissioning manuals of appliances using flammable refrigerants	70
Annex EE (normative) Pressure tests	79
Annex FF (normative) Leak simulation tests	81
Annex GG (normative) Charge limits, ventilation requirements and requirements for secondary circuits.....	83
Annex HH (informative) Competence of service personnel	116
Annex II (Void).....	118
Annex JJ (normative) Allowable openings of relays and similar components to prevent ignition of A2L refrigerants	119
Annex KK (normative) Test method for hot surface ignition temperature for A2L	121
Annex LL (normative) Refrigerant detection systems for flammable refrigerants	125
Annex MM (normative) Refrigerant sensor location confirmation test	136
Annex NN (normative) Flame arrest enclosure verification test for A2L refrigerants	139
Annex OO (Void)	141
Annex PP (normative) Leak detection system confirmation test for flammable refrigerants.....	142
Annex QQ (normative) Methods for determining releasable charge	148
A11 Annex ZC (normative) Normative references to international publications with their corresponding European publications A11	156
A11 Annex ZE (normative) Specific additional requirements for appliances and machines intended for commercial use A11	158
A11 Annex ZAA (informative) The relevance of the Pressure Equipment Directive A11	161
A11 Annex ZAB (normative) Noise test code for appliances covered by Annex ZE A11	163
A11 Annex ZZA (informative) Relationship between this European Standard and the safety objectives of Directive 2014/35/EU [2014 OJ L96] aimed to be covered A11	166
A11 Annex ZZB (informative) Relationship between this European standard and the essential requirements of Directive 2006/42/EC aimed to be covered A11	167
Bibliography	171
Figure 101 – Example of label for field charged units.....	58
Figure 102 – Arrangement for heating test of appliances with supplementary air heater.....	60
Figure 103 – Supply circuit for locked-rotor test of a motor of the single-phase type – Revise as needed for three-phase test	61
Figure 104 – Power spectral density profile for vibration test in 21.101.....	61
Figure 105 – Dimensional details for the weight in the area of the pressure ball	61
Figure 106 – Measurement before and after the test	62
Figure GG.1 – Unventilated area	113
Figure GG.2 – Mechanical ventilation	113
Figure GG.3 – Relevant heights h_{inst} , h_0 and h_{rel} for calculation of A_{min} and m_{max}	114
Figure GG.4 – Airflow direction	115
Figure KK.1 – Front view of test apparatus labels	121
Figure KK.2 – Test apparatus with dimensions	122
Figure KK.3 – Top view of test apparatus	123

Figure LL.1 – Example of test chamber design	131
Table 101 – Power spectral density profile for vibration test	39
Table 102 – UVC spectral irradiance measurement location	57
Table AA.1 – Examples for operating temperatures of the appliance	64
Table BB.1 – Selected information about refrigerants	65
Table DD.1 – Mandatory clauses in each manual	70
Table GG.1 – Outline of Annex GG (informative)	84
Table GG.2 – Circulation airflow	89
Table GG.3 – Appliance with packaging	96
Table GG.4 – Appliance without packaging	96
Table GG.5 – Minimum air velocity	108
Table GG.6 – Refrigerant leak rate ($\dot{m}_{\text{leak}}$)	111
Table LL.1 – Relationship among alarm set point, tolerance and test gas (informative)	127
Table LL.2 – Gas and vapour concentrations	129
Table LL.3 – Example of the test chamber design	132
Table ZAA.1 — Refrigerants classified as Fluid Group 1	162
Table ZAA.2 — Refrigerants classified in Fluid Group 2	162
Table ZZA.1 — Correspondence between this European Standard and Annex I of Directive 2014/35/EU [2014 OJ L96]	166
Table ZZB.1 — Correspondence between this European standard and Annex I of Directive 2006/42/EC. [OJ No L 157]	167

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers

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.
- 2) 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.

IEC 60335 has been prepared by subcommittee 61D: Appliances for air-conditioning for household and similar purposes, of IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This seventh edition cancels and replaces the sixth edition published in 2018. This edition constitutes a technical revision.

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

- Clause 1 – added **thermoelectric heat pumps** to the scope and increased maximum **rated voltage** to 300 V for single phase appliances;
- Clause 7 – revised requirements for marking on the appliance and packaging, including a symbol for minimum floor area and modifying the symbol for **flammable refrigerants** to include the safety group per ISO 817;

- Clause 11 and Clause 19 – restructured for alignment with Part 1 and added requirements for **supplementary air heaters**;
- Clause 13 and Clause 16 – revised requirement for leakage current for **stationary class I motor-operated appliances**;
- Clause 21 – added requirements for **particle foam material** and revised requirements for transport testing;
- Clause 22 – removed limit on the sum of **refrigerant charges** for appliances with multiple **refrigerating systems**, and revised requirements for avoiding ignition sources, **leak detection systems**, **safety shut-off valves**, and **particle foam material**;
- Clause 23 – added requirements to avoid contact between wires and refrigerant piping;
- Clause 24 – revised requirements for motor-compressors;
- Clause 30 – added requirements for resistance to heat of **particle foam material**;
- Annex BB – revised Table BB.1 with refrigerant information and added a link to ISO 817 refrigerant data;
- Annex DD – revised requirements for information in the manual for appliances with **flammable refrigerants**;
- Annex EE – revised requirements for pressure testing;
- Annex FF – revised requirements for leak simulation tests;
- Annex GG – added requirements for applying **releasable charge**, added additional coverage for A2 and A3 refrigerants, including new charge limits for appliances with **circulation airflow** and for **enhanced tightness refrigerating systems**, and revised requirements for **enhanced tightness refrigerating systems** using **A2L refrigerant**;
- Annex LL – revised requirements for **refrigerant detection systems**;
- Annex MM – revised simulated leak rate;
- Annex OO – deleted annex for conditioning internal wiring using UV light.
- Annex PP – new coverage of **leak detection system** confirmation test;
- Annex QQ – new coverage of method for determining **releasable charge**.

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

Draft	Report on voting
61D/491/FDIS	61D/493/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

This part 2-40 is to be used in conjunction with IEC 60335-1:2010, its Amendment 1:2013 and its Amendment 2:2016.

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

This part 2-40 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for electrical heat pumps, air-conditioners and dehumidifiers.

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 associated noun are also in bold.

The following differences exist in the countries indicated below:

- 6.1: Class 0I appliances are allowed (Japan).
- 11.8: The temperature of the wooden walls in the test casing is limited to 85 °C (Sweden).

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 this document will remain unchanged until the stability date indicated on the IEC website under 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.

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.

The content of the corrigendum 1 (2024-10) has been included in this copy.

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.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website

<https://www.iec.ch/tc61/supportingdocuments>

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

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 instructions. It also covers abnormal situations that can be expected in practice.

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 can 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 publications, basic safety publications and group safety publications 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.

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.

A11 With this European amendment A11, EN IEC 60335-2-40:2023+A11:2023 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+A16:2023 (Part 1)
- EN IEC 60335-2-40:2024 (Part 2) **A11**

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric **heat pumps**, **sanitary hot water heat pumps** and **air conditioners**, incorporating motor-compressors as well as **hydronic fan coils units**, **dehumidifiers** (with or without motor-compressors), **thermoelectric heat pumps** and **partial units**. Their maximum **rated voltage** being not more than 300 V for single phase appliances and 600 V for multi-phase appliances.

A11 These appliances are used for the household environment and commercial purposes.

NOTE Z101 Examples of appliance for household environment are appliances for typical housekeeping functions used in the household environment that can also be used by non-expert users for typical housekeeping functions:

- in shops, offices and other similar working environments;
- in farmhouses;
- by clients in hotels, motels and other residential type environments;
- in bed and breakfast type environments.

NOTE Z102 Household environment includes the dwelling and its associated buildings, the garden, etc. **A11**

The appliances referenced above can consist of one or more factory-made assemblies. If provided in more than one assembly, the separate assemblies are used together, and the requirements are based on the use of matched assemblies.

NOTE 101 A definition of 'motor-compressor' is given in IEC 60335-2-34, which includes the statement that the term motor-compressor is used to designate either a hermetic motor-compressor or semi-hermetic motor-compressor.

NOTE 102 Requirements for containers intended for storage of the heated water included in **sanitary hot water heat pumps** are, in addition, covered by IEC 60335-2-21.

A11 Appliances and machines intended to be used by expert or trained users in shops, in light industry and on farms, and appliances and machines which are declared to be for commercial use by lay persons are within the scope of this document.

NOTE Z103 Additional requirements for such appliances are given in Annex ZE.

NOTE Z104 Guidance on the relevance of the Pressure Equipment Directive is given in Annex ZAA.

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 appliance by **very young children**;
- the use of the appliance by **young children** without supervision.

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

This document deals with specific requirements on noise emitted from these appliances if the generated noise is $L_{pA} > 70$ dB(A) and it is considered to be a relevant hazard.

NOTE Z105 Additional information for such appliances are given in Annex ZE and Annex ZAB. 

This standard does not take into account refrigerants other than group A1, A2L, A2 and A3 as defined by ISO 817. **Flammable refrigerants** are limited to those of a molar mass of more than or equal to 42 kg/kmol based on WCF (worst case formulation) as specified in ISO 817.

As far as practical, this standard deals with common hazards presented by appliances that are encountered in normal use and assumes that installation, servicing, decommissioning, and disposal are safely handled by competent persons and accidental release of refrigerants is avoided. However, it does not prescribe the criteria to ensure competence of persons during installation, servicing and disposal. Safety requirements during disposal are not specified in this standard.

NOTE 103 Annex HH provides informative requirements on competence of persons. Criteria for competence of personnel for the purpose of certification schemes can be found in ISO 22712¹.

Unless specifications are covered by this standard, including the annexes, requirements for refrigerating safety are covered by:

- ISO 5149-1:2014, ISO 5149-1:2014/AMD1:2015, and ISO 5149-1:2014/AMD2:2021,
- ISO 5149-2:2014 and ISO 5149-2:2014/AMD1:2020,
- ISO 5149-3:2014 and ISO 5149-3:2014/AMD1:2021.

Supplementary heaters, or a provision for their separate installation, are within the scope of this standard, but only heaters which are designed as a part of the appliance package, the controls being incorporated in the appliance.

NOTE 104 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, for example, by the national health authorities responsible for the protection of labour and the national authorities responsible for storage, transportation, building constructions and installations.

NOTE 105 This standard does not apply to

- humidifiers intended for use with heating and cooling equipment (IEC 60335-2-88);
- appliances designed exclusively for industrial processing;
- 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).

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60068-2-52, *Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium, chloride solution)*

¹ Under preparation. Stage at the time of publication: ISO FDIS 22712:2022

IEC 60079-0, *Explosive atmospheres – Part 0: Equipment – General requirements*

IEC 60079-7:2015, *Explosive atmospheres – Part 7: Equipment protection by increased safety "e"*

IEC 60079-7:2015/AMD1:2017

IEC 60079-14:2013, *Explosive atmospheres – Part 14: Electrical installations design, selection and erection*

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

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

IEC 60335-2-51, *Household and similar electrical appliances – Safety – Part 2-51: Particular requirements for stationary circulation pumps for heating and service water installations*

IEC 60695-1-10, *Fire hazard testing – Part 1-10: Guidance for assessing the fire hazard of electrotechnical products – General guidelines*

IEC 60695-10-2:2014, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test method*

IEC 60730-2-6, *Automatic electrical controls – Part 2-6: Particular requirements for automatic electrical pressure sensing controls including mechanical requirements*

IEC 62471:2006, *Photobiological safety of lamps and lamp systems*

ISO 817, *Refrigerants – Designation and safety classification*

ISO 527-3, *Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets*

ISO 1302:2002², *Geometrical Product Specifications (GPS) – Indication of surface texture in technical product documentation*

ISO 2578, *Plastics – Determination of time-temperature limits after prolonged exposure to heat*

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 5149-1:2014/AMD2:2021

ISO 5149-2:2014, *Refrigerating systems and heat pumps – Safety and environmental requirements – Part 2: Design, construction, testing, marking and documentation*

ISO 5149-2:2014/AMD1:2020

ISO 5149-3:2014, *Refrigerating systems and heat pumps – Safety and environmental requirements – Part 3: Installation site*

ISO 5149-3:2014/AMD1:2021

² Withdrawn.

ISO 5151:2017, *Non-ducted air conditioners and heat pumps – Testing and rating for performance*
ISO 5151:2017/AMD1:2020

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

ISO 13253, *Ducted air-conditioners and air-to-air heat pumps – Testing and rating for performance*

ISO 13256 (all parts), *Water-source heat pumps – Testing and rating for performance*

ISO 13355:2016, *Packaging – Complete, filled transport packages and unit loads – Vertical random vibration test*

ISO 14903, *Refrigerating systems and heat pumps – Qualification of tightness of components and joints*

ISO 15042, *Multiple split-system air-conditioners and air-to-air heat pumps – Testing and rating for performance*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1.4 Addition:

Note 101 to entry: If the appliance comprises electrical accessories, including fans, the **rated power input** is based upon the total maximum **electrical power input** with all accessories energized, when operating continuously under the appropriate environmental conditions. If the **heat pump** can be operated in the heating or cooling mode, the **rated power input** is based upon the input in the heating or in the cooling mode, whichever is the greater.

3.1.9 Replacement:

normal operation

conditions that apply when the appliance is mounted or installed as in normal use and is operating under the most severe operating conditions specified by the manufacturer

3.5.4 Addition:

Note 101 to entry: Appliances connected to water pipes or refrigerant pipes that are secured to the building are also **fixed appliances**.

3.8.101

particle foam material

closed cell material moulded from thermoplastic particles (e.g. beads) with expanding agent

3.101

heat pump

appliance which takes up heat at a certain temperature and releases heat at a higher temperature

Note 1 to entry: When operated to provide heat (e.g., for space heating or water heating), the appliance is said to operate in the heating mode; when operated to remove heat (for example, for space cooling), it is said to operate in the cooling mode.

Note 2 to entry: A **heat pump** can contain a combination of **condensing unit** or **condenser unit** and an **evaporating unit** or **evaporator unit** and can be equipped to operate in a reverse cycle mode.