SLOVENSKI STANDARD
oSIST prEN IEC 60335-2-104:2024

01-julij-2024

Gospodinjski in podobni električni aparati - Varnost - 2-104. del: Posebne zahteve za aparate za zbiranje in/ali recikliranje hladilnega sredstva iz klimatskih naprav in hladilne opreme

Household and similar electrical appliances - Safety - Part 2-104: Particular requirements for appliances to recover and/or recycle refrigerant from air conditioning and refrigeration equipment

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke - Teil 2-104: Besondere Anforderungen für Geräte zur Rückgewinnung und/oder zum Recycling von Kältemittel aus Klimaanlagen und Kühlgeräten

Appareils électrodomestiques et analogues - Sécurité - Partie 2-104: Exigences particulières pour les appareils de récupération et/ou de recyclage des fluides frigorigènes des climatiseurs et des appareils de réfrigération

Ta slovenski standard je istoveten z: **prEN IEC 60335-2-104:2024**

ICS:

27.200	Hladilna tehnologija	Refrigerating technology
71.100.45	Hladiva in antifrizi	Refrigerants and antifreezes

oSIST prEN IEC 60335-2-104:2024 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN IEC 60335-2-104

May 2024

ICS 27.200; 71.100.45 -

English Version

Household and similar electrical appliances - Safety - Part 2-104: Particular requirements for appliances to recover and/or recycle refrigerant from air conditioning and refrigeration equipment (IEC 60335-2-104:2021)

To be completed
(IEC 60335-2-104:2021)

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke - Teil 2-104: Besondere Anforderungen für Geräte zur Rückgewinnung und/oder zum Recycling von Kältemittel aus Klimaanlagen und Kühlgeräten
(IEC 60335-2-104:2021)

This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2024-08-09.

The text of this draft consists of the text of IEC 60335-2-104:2021.

If this draft becomes a European Standard, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CENELEC 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.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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 (prEN IEC 60335-2-104:2024) consists of the text of IEC 60335-2-104:2021 prepared by IEC/TC 61 "Safety of household and similar electrical appliances".

This document is currently submitted to the Enquiry.

The following dates are proposed:

• latest date by which the existence of this document has to be announced at national level	(doa)	dor + 6 months
• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	dor + 12 months
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	dor + 36 months (to be confirmed or modified when voting)

IEC 60335-2-104

Edition 2.0 2021-05

INTERNATIONAL STANDARD

colour inside

Household and similar electrical appliances – Safety – Part 2-104: Particular requirements for appliances to recover and/or recycle refrigerant from air conditioning and refrigeration equipment

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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.

IEC 60335-2-104 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 second edition cancels and replaces the first edition published in 2003. This edition constitutes a technical revision.

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

a) Clause 1 – The scope has been edited to reflect that "appliance" in this document means recovery and/or recycle equipment to recover and/or recycle refrigerant from air-conditioning and refrigeration equipment.
b) Clause 2 – Normative references were added.
c) Clause 3 – Some definitions were deleted, some were added.
d) Subclause 7.1 – Some markings were deleted, some were added.

e) Subclause 7.6 – Symbols were added for “read operator’s manual”, “operator’s manual; operating instructions” including coloring are placed in visible location; maximum allowable pressure markings following X MPa.

f) Subclause 19.11.4 was modified.

g) Subclause 21.1 was modified.

h) Subclause 21.2 was modified.

i) Subclause 22.102 was modified.

j) Subclause 22.104.1.1 was modified.

k) Subclause 22.104.5 was modified.

l) Subclause 22.104.10 was modified.

m) Subclause 22.104.11 was modified.

n) Subclause 22.105.1 was modified.

o) Subclause 22.107 was modified.

p) Subclause 30.2 was moved to Clause 29.

q) Annex AA was deleted and replaced with Annex AA.

r) Annex BB was deleted and replaced with former IEC 60335-2-104 Annex CC (normative) Compatibility requirements following addition to Annex BB.

s) Annex DD was deleted and replaced with Annex CC.

t) New Annex DD was added.

u) New Annex EE was added.

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

Draft	Report on voting
61D/472/FDIS	61D/474/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/standardsdev/publications.

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 fifth edition of IEC 60335-1:2010 and its amendments.

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 electrical appliances to recover and/or recycle refrigerant from air conditioning and refrigeration equipment.

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.

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:

- 6.1: Class 01 appliances are allowed (Japan).
- 11.8: The temperature of the wooden walls in the test casing is limited to 85 °C (Sweden).

IMPORTANT – The "colour inside" logo on the cover page of this document 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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-104: Particular requirements for appliances to recover and/or recycle refrigerant from air conditioning and refrigeration equipment

1 Scope

This clause of Part 1 is replaced by the following:

This part of IEC 60335 deals with the safety of electrical **recovery** and/or **recycle** equipment to recover and/or **recycle refrigerant** from air conditioning and refrigeration equipment. This applies to air-conditioning, heat-pumps and refrigeration equipment incorporating open drive or motor-**compressors**, their maximum **rated voltages** being not more than 300 V for single phase appliances and 600 V for all other equipment.

Appliances not intended for normal household use but which nevertheless may be a source of danger to the public, such as appliances intended to be used by service personnel in shops, in light industry and on farms, are within the scope of this standard.

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

NOTE 101 In this document, the term appliance is to denote **recovery** equipment.

2 Normative references

This clause of Part 1 is applicable except as follows.

Replacement:

IEC 60065:2014, *Audio, video and similar electronic apparatus − Safety requirements*

Addition:

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

IEC 60079-15:2010[1], *Explosive atmospheres – Part 15: Equipment protection by type of protection "n"*

IEC 600320 (all parts), *Appliance couplers for household and similar general purposes*

IEC 60335-2-34:2012, *Household and similar electrical appliances – Safety – Part 2-34: Particular requirements for motor-compressors*

[1] Withdrawn.

IEC 60335-2-40:2018, *Household and similar electrical appliances – Safety – Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers*

IEC 62640:2011, *Residual current devices with or without overcurrent protection for socket-outlets for household and similar uses*
IEC 62640:2011/AMD1:2015

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

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

ASTM D4728-17, *Standard Test Method for Random Vibration Testing of Shipping Containers*

SAE J2210 HFC-134a (R-134a), *Recovery/Recycling Equipment for Mobile Air-Conditioning Systems*

SAE J2843 R-1234yf [HFO-1234yf], *Recovery/Recycling/Recharging Equipment for Flammable Refrigerants for Mobile Air-Conditioning Systems*

SAE J3030, A*utomotive Refrigerant Recovery/Recycling/Recharging Equipment Intended for use with Both R-1234yf and R-134a*

3 Terms and definitions

This clause of part 1 is applicable except as follows.

3.1.6
rated current

Note 101 to entry: If the appliance comprises electrical accessories, including fans, the **rated current** is based upon the total maximum electrical power input with all accessories energized, when operating continuously under the appropriate environmental conditions.

Replacement:

3.1.9
normal operation
conditions that apply when the appliance is mounted as in normal use and is operating under the most severe operating conditions specified by the manufacturer

3.101
compressor
open drive **compressor** or motor-**compressor** (hermetically sealed) with the suction side (low pressure side) which is intended to be temporarily connected to the appliance's low pressure side to remove refrigerant

3.102
pressure-limiting device
mechanism that automatically responds to a predetermined pressure by stopping the operation of the pressure-imposing element

3.104
recovery
pumping out (removal) of **refrigerant** from air conditioning or refrigeration equipment

3.105
recycle
pumping out (removal) and cleaning of **refrigerant** from air conditioning or refrigeration equipment

3.106
refrigerant
substance that is classified by ISO 817 as A1, A2L, A2, A3 or B1

3.107
flammable refrigerant
substance that is classified by ISO 817 as A2L, A2, or A3

3.108
recovery cylinder
receptacle used for recovered **refrigerant**

3.109
scale
weighing device which is capable of measuring recovered **refrigerant**

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

Replacement:

5.7 The tests and test conditions of Clause 10 and Clause 11 are carried out under conditions as in 11.4 or under the most severe operating conditions within the operating temperature range specified by the manufacturer.

6 Classification

This clause of Part 1 is applicable except as follows.

Modification:

6.1 Appliances shall be of one of the following classes with respect to protection against electric shock:

class I, class II or **class III**.

Compliance is checked by inspection and by the relevant tests.