



INTERNATIONAL STANDARD



This extended version of IEC 60335-2-40 includes the content of the references made to IEC 60335-1:2010+AMD1:2013+AMD2:2016 CSV

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

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 1: General requirements

INTERPRETATION SHEET 1

This interpretation sheet has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

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

DISH	Report on voting
61/5999/DISH	61/6009/RVDISH

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

TC 61 interpretation sheet on: Detachable power supply parts of IEC 60335-1:2010/AMD2:2016

Introduction

Amendment 2 of IEC 60335-1:2010 defines and introduces requirements for a detachable power supply part of an appliance. In this amendment, 24.2 prohibits the use of a power supply in a flexible cord.

QUESTION:

Does Subclause 24.2 prohibit the use of a detachable power supply part?

ANSWER

No, a “detachable power supply part” is a defined term and is not captured by term “power supply” as used in Subclause 24.2.

NOTE A detachable power supply part is captured by the defined term when the output of the power supply part is detachable from the class III construction part of the appliance at:

- the power supply part, or
- the class III construction part of the appliance.

However, the supply cord (if any) does not have to be detachable from the detachable power supply part.

CONTENTS

FOREWORD	7
INTRODUCTION	10
1 Scope	11
2 Normative references	12
3 Terms and definitions	17
4 General requirement	32
5 General conditions for the tests	32
6 Classification	36
7 Marking and instructions	36
8 Protection against access to live parts	49
9 Starting of motor-operated appliances	51
10 Power input and current	51
11 Heating.....	53
12 Void.....	60
13 Leakage current and electric strength at operating temperature.....	60
14 Transient overvoltages	62
15 Moisture resistance	63
16 Leakage current and electric strength	64
17 Overload protection of transformers and associated circuits	66
18 Endurance	66
19 Abnormal operation.....	66
20 Stability and mechanical hazards.....	80
21 Mechanical strength.....	81
22 Construction	83
23 Internal wiring	107
24 Components	109
25 Supply connection and external flexible cords	114
26 Terminals for external conductors.....	122
27 Provision for earthing	124
28 Screws and connections.....	126
29 Clearances, creepage distances and solid insulation.....	129
30 Resistance to heat and fire.....	137
31 Resistance to rusting.....	142
32 Radiation, toxicity and similar hazards	142
Annex A (informative) Routine tests	162
Annex B (normative) Appliances powered by rechargeable batteries that are recharged in the appliance.....	164
Annex C (normative) Ageing test on motors	169

Annex D (normative) Thermal motor protectors	170
Annex E (normative) Needle-flame test	171
Annex F (normative) Capacitors	172
Annex G (normative) Safety isolating transformers	174
Annex H (normative) Switches	175
Annex I (normative) Motors having basic insulation that is inadequate for the rated voltage of the appliance	177
Annex J (normative) Coated printed circuit boards	178
Annex K (normative) Overvoltage categories	179
Annex L (informative) Guidance for the measurement of clearances and creepage distances	180
Annex M (normative) Pollution degree	184
Annex N (normative) Proof tracking test	185
Annex O (informative) Selection and sequence of the tests of Clause 30	186
Annex P (informative) Guidance for the application of this standard to appliances used in tropical climates	192
Annex Q (informative) Sequence of tests for the evaluation of electronic circuits	194
Annex R (normative) Software evaluation	196
Annex S (normative) Battery-operated appliances powered by batteries that are non-rechargeable or not recharged in the appliance	210
Annex T (normative) UV-C radiation effect on non-metallic materials	213
Annex AA (informative) Examples for operating temperatures of the appliance	216
Annex CC (informative) Transportation, marking and storage for units that employ flammable refrigerants	221
Annex DD (normative) Requirements for installation, service, maintenance and repair, and decommissioning manuals of appliances using flammable refrigerants	222
Annex EE (normative) Pressure tests	231
Annex FF (normative) Leak simulation tests	233
Annex GG (normative) Charge limits, ventilation requirements and requirements for secondary circuits	235
Annex HH (informative) Competence of service personnel	268
Annex II (Void)	270
Annex JJ (normative) Allowable openings of relays and similar components to prevent ignition of A2L refrigerants	271
Annex KK (normative) Test method for hot surface ignition temperature for A2L	273
Annex LL (normative) Refrigerant detection systems for flammable refrigerants	277
Annex MM (normative) Refrigerant sensor location confirmation test	288
Annex NN (normative) Flame arrest enclosure verification test for A2L refrigerants	291
Annex OO (Void)	293
Annex PP (normative) Leak detection system confirmation test for flammable refrigerants	294
Annex QQ (normative) Methods for determining releasable charge	300
Bibliography	308
Index of defined terms	308

Figure 1 – Circuit diagram for leakage current measurement at operating temperature for single-phase connection of class II appliances and for parts of class II construction	144
Figure 2 – Circuit diagram for leakage current measurement at operating temperature for single-phase connection of other than class II appliances or parts of class II construction...	145
Figure 3 – Circuit diagram for leakage current measurement at operating temperature for three-phase with neutral class II appliances and for parts of class II construction	146
Figure 4 – Circuit diagram for leakage current measurement at operating temperature for three-phase with neutral appliances other than those of class II or parts of class II construction	147
Figure 5 – Small part.....	148
Figure 6 – Example of an electronic circuit with low-power points	149
Figure 7 – Test finger nail.....	150
Figure 8 – Flexing test apparatus.....	151
Figure 9 – Constructions of cord anchorages	152
Figure 10 – An example of parts of an earthing terminal	153
Figure 11 – Examples of clearances	154
Figure 12 – Example of the placement of the cylinder.....	155
Figure 13 – Small parts cylinder	156
Figure 101 – Example of label for field charged units	157
Figure 102 – Arrangement for heating test of appliances with supplementary air heater.....	159
Figure 103 – Supply circuit for locked-rotor test of a motor of the single-phase type – Revise as needed for three-phase test.....	160
Figure 104 – Power spectral density profile for vibration test in 21.101	160
Figure 105 – Dimensional details for the weight in the area of the pressure ball	160
Figure 106 – Measurement before and after the test.....	161
Figure B.1 – Examples of forms of constructions for appliances covered by Annex B.....	167
Figure L.1 – Sequence for the determination of clearances.....	181
Figure L.2 – Sequence for the determination of creepage distances.....	183
Figure O.1 – Tests for resistance to heat	186
Figure O.2 – Selection and sequence of tests for resistance to fire in hand-held appliances	187
Figure O.3 – Selection and sequence of tests for resistance to fire in attended appliances .	188
Figure O.4 – Selection and sequence of tests for resistance to fire in unattended appliances	189
Figure O.5 – Some applications of the term "within a distance of 3 mm"	191
Figure S.1 – Examples of battery marking representing three batteries	212
Figure GG.1 – Unventilated area	265
Figure GG.2 – Mechanical ventilation	265
Figure GG.3 – Relevant heights h_{inst} , h_0 and h_{rel} for calculation of A_{min} and m_{max}	266
Figure GG.4 – Airflow direction.....	267
Figure KK.1 – Front view of test apparatus labels.....	273
Figure KK.2 – Test apparatus with dimensions	274
Figure KK.3 – Top view of test apparatus.....	275
Figure LL.1 – Example of test chamber design	283

Table 1 – Power input deviation.....	51
Table 2 – Current deviation	52
Table 3 – Maximum normal temperature rises	56
Table 4 – Voltage for electric strength test.....	62
Table 5 – Characteristics of high-voltage sources.....	62
Table 6 – Impulse test voltage	63
Table 7 – Test voltages	65
Table 8 – Maximum winding temperature	69
Table 9 – Maximum abnormal temperature rise	75
Table 10 – Dimensions of cables and conduits	115
Table 11 – Minimum cross-sectional area of conductors	117
Table 12 – Pull force and torque.....	119
Table 13 – Nominal cross-sectional area of conductors	123
Table 14 – Torque for testing screws and nuts	128
Table 15 – Rated impulse voltage.....	130
Table 16 – Minimum clearances	130
Table 17 – Minimum creepage distances for basic insulation	134
Table 18 – Minimum creepage distances for functional insulation	135
Table 19 – Minimum thickness for accessible parts of reinforced insulation consisting of a single layer	137
Table 101 – Power spectral density profile for vibration test	83
Table 102 – UV-C spectral irradiance measurement location	143
Table A.1 – Test voltages.....	163
Table C.1 – Test conditions.....	169
Table R.1 – General fault/error conditions.....	198
Table R.2 – Specific fault/error conditions.....	201
Table R.3 – Semi-formal methods.....	207
Table R.4 – Software architecture specification.....	207
Table R.5 – Module design specification	208
Table R.6 – Design and coding standards.....	208
Table R.7 – Software safety validation	209
Table S.101 – Battery source impedance.....	211
Table T.1 – Minimum property retention limits after UV-C exposure	214
Table T.2 – Minimum electric strength for internal wiring after UV-C exposure	215
Table AA.1 – Examples for operating temperatures of the appliance	216
Table BB.1 – Selected information about refrigerants	217
Table DD.1 – Mandatory clauses in each manual	222
Table GG.1 – Outline of Annex GG (informative).....	236
Table GG.2 – Circulation airflow	241
Table GG.3 – Appliance with packaging.....	248
Table GG.4 – Appliance without packaging	248
Table GG.5 – Minimum air velocity	260
Table GG.6 – Refrigerant leak rate (\dot{m}_{leak}).....	263

Table LL.1 – Relationship among alarm set point, tolerance and test gas (informative).....	279
Table LL.2 – Gas and vapour concentrations	281
Table LL.3 – Example of the test chamber design	284

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.
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- 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 extended version (EXV) of the official IEC Standard provides the user with a comprehensive content of the Standard.

IEC 60335-2-40:2022 EXV includes the content of the references made to IEC 60335-1:2010, its Amendment 1:2013 and its Amendment 2:2016.

Particular subclauses of IEC 60335-1:2010+AMD1:2013+AMD2:2016 CSV are displayed in the content on a blue background.

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.

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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

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

1 Scope

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.

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

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.

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.

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

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

IEC 60034-1, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60061-1, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 1: Lamp caps*

IEC 60065:2001, *Audio, video and similar electronic apparatus – Safety requirements Amendment 1 (2005)²⁾*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

IEC 60068-2-31, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*

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

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

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/TR 60083, *Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC*

IEC 60085:2007, *Electrical insulation – Thermal evaluation and designation*

IEC 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials Amendment 1 (2009)³⁾*

IEC 60127 (all parts), *Miniature fuses*

²⁾ There exists a consolidated edition 7.1 (2005) that includes edition 7 and its Amendment 1.

³⁾ There exists a consolidated edition 4.1 (2009) that includes edition 4 and its Amendment 1.

IEC 60227 (all parts), *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V*

IEC 60238, *Edison screw lampholders*

IEC 60245 (all parts), *Rubber insulated cables – Rated voltages up to and including 450/750 V*

IEC 60252-1, *AC motor capacitors – Part 1: General – Performance testing and rating – Safety requirements – Guide for installation and operation*

IEC 60309 (all parts), *Plugs, socket-outlets and couplers for industrial purposes*

IEC 60320-1, *Appliance couplers for household and similar general purposes – Part 1: General requirements*

IEC 60320-2-2, *Appliance couplers for household and similar general purposes – Part 2-2: Interconnection couplers for household and similar equipment*

IEC 60320-2-3, *Appliance coupler for household and similar general purposes – Part 2-3: Appliance coupler with a degree of protection higher than IPX0*

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 60384-14:2005, *Fixed capacitors for use in electronic equipment – Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*

IEC 60417, *Graphical symbols for use on equipment*

IEC 60445:2010, *Basic and safety principles for man-machine interface, marking and identification – Identification of equipment terminals, conductor terminations and conductors*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
Amendment 1 (1999)⁴)

IEC 60598-1:2008, *Luminaires – Part 1: General requirements and tests*

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60664-3:2003, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60664-4:2005, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*

IEC 60691, *Thermal-links – Requirements and application guide*

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

IEC 60695-2-11:2000, *Fire hazard testing – Part 2-11: Glowing/hot wire based test methods – Glow-wire flammability test method for end-products*

IEC 60695-2-12, *Fire hazard testing – Part 2-12: Glowing/hot wire based test methods – Glow-wire flammability test method for materials*

⁴) There exists a consolidated edition 2.1 (2001) that includes edition 2 and its Amendment 1.

IEC 60695-2-13, *Fire hazard testing – Part 2-13: Glowing/hot wire based test methods – Glow-wire ignitability test method for materials*

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

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

IEC 60695-11-5:2004, *Fire hazard testing – Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance*

IEC 60695-11-10, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

IEC 60730-1:1999, *Automatic electrical controls for household and similar use – Part 1: General requirements*

Amendment 1 (2003)

Amendment 2 (2007)⁵⁾

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

IEC 60730-2-8:2000, *Automatic electrical controls for household and similar use – Part 2-8: Particular requirements for electrically operated water valves, including mechanical requirements*

Amendment 1 (2002)⁶⁾

IEC 60730-2-9:2008⁷⁾, *Automatic electrical controls for household and similar use – Part 2-9: Particular requirements for temperature sensing controls*

IEC 60730-2-10, *Automatic electrical controls for household and similar use – Part 2-10: Particular requirements for motor-starting relays*

IEC 60738-1, *Thermistors – Directly heated positive temperature coefficient – Part 1: Generic specification*

IEC 60906-1, *IEC system of plugs and socket-outlets for household and similar purposes – Part 1: Plugs and socket-outlets 16 A 250 V a.c.*

IEC 60990:1999, *Methods of measurement of touch current and protective conductor current*

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IEC 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

⁵⁾ There exists a consolidated edition 3.2 (2007) that includes edition 3 and its Amendment 1 and Amendment 2.

⁶⁾ There exists a consolidated edition 2.1 (2003) that includes edition 2 and its Amendment 1.

⁷⁾ There exists a consolidated edition 3.1 (2011) that includes edition 3:2008 and its Amendment 1:2011.

IEC 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-11:2004, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests*

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Amendment 1 (2009)⁸⁾

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Amendment 1 (2009)

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IEC 61058-1:2000, *Switches for appliances – Part 1: General requirements*
Amendment 1 (2001)
Amendment 2 (2007)⁹⁾

IEC 61180-1, *High-voltage test techniques for low-voltage equipment – Part 1: Definitions, test and procedure requirements*

IEC 61180-2, *High-voltage techniques for low-voltage equipment – Part 2: Test equipment*

IEC 61558-1:2005, *Safety of power transformers, power supply units and similar products – Part 1: General requirements and tests*
Amendment 1(2009)¹⁰⁾

IEC 61558-2-6:2009, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers*

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IEC 61770, *Electric appliances connected to the water mains – Avoidance of backsiphonage and failure of hose-sets*

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⁸⁾ There exists a consolidated edition 1.1 (2009) that includes edition 1 and its Amendment 1.

⁹⁾ There exists a consolidated edition 3.2 (2008) that includes edition 3 and its Amendment 1 and Amendment 2.

¹⁰⁾ There exists a consolidated edition 2.1 (2009) that includes edition 2 and its Amendment 1.

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

ISO 817, *Refrigerants – Designation and safety classification*

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ISO 4892-2: 2013, *Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps*

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

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Amendment 1 (2003)

ISO 9773, *Plastics – Determination of burning behaviour of thin flexible vertical specimens in contact with a small-flame ignition source*

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

¹¹ Withdrawn.

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*

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**

CONTENTS

FOREWORD	5
INTRODUCTION	8
1 Scope	9
2 Normative references	10
3 Terms and definitions	11
4 General requirement.....	19
5 General conditions for the tests	19
6 Classification	20
7 Marking and instructions.....	20
8 Protection against access to live parts	26
9 Starting of motor-operated appliances	26
10 Power input and current.....	26
11 Heating.....	26
12 Void.....	29
13 Leakage current and electric strength at operating temperature.....	29
14 Transient overvoltages	29
15 Moisture resistance	29
16 Leakage current and electric strength.....	31
17 Overload protection of transformers and associated circuits	31
18 Endurance	31
19 Abnormal operation	31
20 Stability and mechanical hazards.....	38
21 Mechanical strength	38
22 Construction	39
23 Internal wiring.....	51
24 Components	51
25 Supply connection and external flexible cords	52
26 Terminals for external conductors	53
27 Provision for earthing	53
28 Screws and connections	53
29 Clearances, creepage distances and solid insulation	53
30 Resistance to heat and fire	53
31 Resistance to rusting	55
32 Radiation, toxicity and similar hazards.....	55
Annexes	62
Annex D (normative) Thermal motor protectors	62
Annex I (normative) Motors having basic insulation that is inadequate for the rated voltage of the appliance	62
Annex AA (informative) Examples for operating temperatures of the appliance	63
Annex BB (normative) Selected information about refrigerants.....	64
Annex CC (informative) Transportation, marking and storage for units that employ flammable refrigerants	68

Annex DD (normative) Requirements for installation, service, maintenance and repair, and decommissioning manuals of appliances using flammable refrigerants	69
Annex EE (normative) Pressure tests.....	78
Annex FF (normative) Leak simulation tests.....	80
Annex GG (normative) Charge limits, ventilation requirements and requirements for secondary circuits	82
Annex HH (informative) Competence of service personnel	115
Annex II (Void).....	117
Annex JJ (normative) Allowable openings of relays and similar components to prevent ignition of A2L refrigerants	118
Annex KK (normative) Test method for hot surface ignition temperature for A2L	120
Annex LL (normative) Refrigerant detection systems for flammable refrigerants.....	124
Annex MM (normative) Refrigerant sensor location confirmation test	135
Annex NN (normative) Flame arrest enclosure verification test for A2L refrigerants	138
Annex OO (Void)	140
Annex PP (normative) Leak detection system confirmation test for flammable refrigerants	141
Annex QQ (normative) Methods for determining releasable charge	147
Bibliography.....	155
Figure 101 – Example of label for field charged units	57
Figure 102 – Arrangement for heating test of appliances with supplementary air heater.....	59
Figure 103 – Supply circuit for locked-rotor test of a motor of the single-phase type – Revise as needed for three-phase test.....	60
Figure 104 – Power spectral density profile for vibration test in 21.101	60
Figure 105 – Dimensional details for the weight in the area of the pressure ball.....	60
Figure 106 – Measurement before and after the test	61
Figure GG.1 – Unventilated area.....	112
Figure GG.2 – Mechanical ventilation	112
Figure GG.3 – Relevant heights h_{inst} , h_0 and h_{rel} for calculation of A_{min} and m_{max}	113
Figure GG.4 – Airflow direction	114
Figure KK.1 – Front view of test apparatus labels	120
Figure KK.2 – Test apparatus with dimensions.....	121
Figure KK.3 – Top view of test apparatus.....	122
Figure LL.1 – Example of test chamber design.....	130
Table 101 – Power spectral density profile for vibration test.....	38
Table 102 – UVC spectral irradiance measurement location.....	56
Table AA.1 – Examples for operating temperatures of the appliance	63
Table BB.1 – Selected information about refrigerants.....	64
Table DD.1 – Mandatory clauses in each manual.....	69
Table GG.1 – Outline of Annex GG (informative).....	83
Table GG.2 – Circulation airflow	88
Table GG.3 – Appliance with packaging.....	95

Table GG.4 – Appliance without packaging	95
Table GG.5 – Minimum air velocity	107
Table GG.6 – Refrigerant leak rate (\dot{m}_{leak}).....	110
Table LL.1 – Relationship among alarm set point, tolerance and test gas (informative).....	126
Table LL.2 – Gas and vapour concentrations	128
Table LL.3 – Example of the test chamber design	131

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.
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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 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.

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.

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.

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

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.

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.

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

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)*

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

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*

² Withdrawn.

SOMMAIRE

AVANT-PROPOS	161
INTRODUCTION	164
1 Domaine d'application	165
2 Références normatives	166
3 Termes et définitions	168
4 Exigences générales	176
5 Conditions générales d'essais	176
6 Classification	177
7 Marquage et instructions	177
8 Protection contre l'accès aux parties actives	183
9 Démarrage des appareils à moteur	183
10 Puissance et courant	183
11 Échauffements	183
12 Vide	187
13 Courant de fuite et rigidité diélectrique à la température de régime	187
14 Surtensions transitoires	187
15 Résistance à l'humidité	187
16 Courant de fuite et rigidité diélectrique	188
17 Protection contre la surcharge des transformateurs et des circuits associés	189
18 Endurance	189
19 Fonctionnement anormal	189
20 Stabilité et dangers mécaniques	196
21 Résistance mécanique	196
22 Construction	197
23 Conducteurs internes	211
24 Composants	211
25 Raccordement au réseau et câbles souples extérieurs	212
26 Bornes pour conducteurs externes	213
27 Dispositions en vue de la mise à la terre	213
28 Vis et connexions	213
29 Distances dans l'air, lignes de fuite et isolation solide	213
30 Résistance à la chaleur et au feu	214
31 Protection contre la rouille	215
32 Rayonnement, toxicité et dangers analogues	215
Annexes	222
Annexe D (normative) Protecteurs thermiques des moteurs	222
Annexe I (normative) Moteurs ayant une isolation principale inappropriée pour la tension assignée de l'appareil	222
Annexe AA (informative) Exemples de températures de régime de l'appareil	223
Annexe BB (normative) Informations concernant les fluides frigorigènes	225
Annexe CC (informative) Transport, marquage et entreposage des unités qui utilisent des fluides frigorigènes inflammables	229

Annexe DD (normative) Exigences applicables aux manuels d'installation, d'entretien de maintenance et de réparation, et de mise hors service d'appareils utilisant des fluides frigorigènes inflammables	231
Annexe EE (normative) Essais de pression	241
Annexe FF (normative) Essais de simulation de fuite	243
Annexe GG (normative) Limites de charge, exigences de ventilation et exigences pour les circuits secondaires	245
Annexe HH (Informative) Compétences du personnel de service	279
Annexe II (vide)	282
Annexe JJ (normative) Ouvertures admissibles des relais et composants analogues pour empêcher l'inflammation des fluides frigorigènes A2L	283
Annexe KK (Normative) Méthode d'essai pour la température d'inflammation des surfaces brûlantes des fluides frigorigènes A2L	285
Annexe LL (normative) Systèmes de détection des fluides frigorigènes pour les fluides frigorigènes inflammables	289
Annexe MM (normative) Essai de confirmation de l'emplacement du capteur de fluide frigorigène	301
Annexe NN (normative) Essai de vérification de l'enveloppe arrête-flammes pour les fluides frigorigènes A2L	304
Annexe OO (vide)	306
Annexe PP (normative) Essai de confirmation du système de détection des fuites pour les fluides frigorigènes inflammables	307
Annexe QQ (Normative) Méthodes d'essai pour la détermination de la charge libérable	313
Bibliographie.....	321
Figure 101 – Exemple d'étiquette pour les unités chargées sur place.....	217
Figure 102 – Montage d'essai d'échauffement pour les appareils comportant un chauffe-air supplémentaire.....	219
Figure 103 – Circuit d'alimentation pour l'essai en rotor bloqué d'un moteur monophasé – à réviser au besoin pour l'essai triphasé	220
Figure 104 – Profil de densité spectrale de puissance pour l'essai de vibration du 21.101	220
Figure 105 – Détails dimensionnels du poids dans la zone de la bille de pression.....	220
Figure 106 – Mesurage avant et après l'essai	221
Figure GG.1 – Zones non ventilées.....	276
Figure GG.2 – Ventilation mécanique.....	276
Figure GG.3 – Hauteurs appropriées h_{inst} , h_0 et h_{rel} pour le calcul de A_{min} et de m_{max}	277
Figure GG.4 – Direction du débit d'air	278
Figure KK.1 – Vue de face des étiquettes de l'appareillage d'essai	285
Figure KK.2 – Appareillage d'essai avec dimensions.....	286
Figure KK.3 – Vue du dessus de l'appareillage d'essai	287
Figure LL.1 – Exemple de conception d'une chambre d'essai.....	295
Tableau 101 – Profil de densité spectrale de puissance pour l'essai de vibration	196
Tableau 102 – Emplacement de mesure de l'éclairement spectral UV-C	216
Tableau AA.1 – Exemples de températures de régime de l'appareil	223

Tableau BB.1 – Informations concernant les fluides frigorigènes.....	225
Tableau DD.1 – Articles obligatoires dans chaque manuel.....	231
Tableau GG.1 – Aperçu de l'Annexe GG (informatif)	246
Tableau GG.2 – Débit d'air de circulation.....	251
Tableau GG.3 – Appareil avec emballage	258
Tableau GG.4 – Appareil sans emballage	259
Tableau GG.5 – Vitesse minimale de l'air.....	271
Tableau GG.6 – Débit de fuite du fluide frigorigène (\dot{m}_{leak}).....	274
Tableau LL.1 – Relation entre le point de consigne de l'alarme, la tolérance et le gaz d'essai (informatif)	291
Tableau LL.2 – Concentrations de gaz et de vapeur	293
Tableau LL.3 – Exemple de conception de la chambre d'essai.....	296

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

Partie 2-40: Exigences particulières pour les pompes à chaleur électriques, les climatiseurs et les déshumidificateurs

AVANT-PROPOS

- 1) La Commission Électrotechnique Internationale (IEC) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de l'IEC). L'IEC a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. À cet effet, l'IEC – entre autres activités – publie des Normes internationales, des Spécifications techniques, des Rapports techniques, des Spécifications accessibles au public (PAS) et des Guides (ci-après dénommés "Publication(s) de l'IEC"). Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec l'IEC, participent également aux travaux. L'IEC collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
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- 9) L'attention est attirée sur le fait que certains des éléments de la présente Publication de l'IEC peuvent faire l'objet de droits de brevet. L'IEC ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de brevets.

L'IEC 60335 a été établie par le sous-comité 61D: Appareils de conditionnement d'air pour usage domestique et commercial, du comité d'études 61 de l'IEC: Sécurité des appareils électrodomestiques et analogues. Il s'agit d'une Norme internationale.

Cette septième édition annule et remplace la sixième édition parue en 2018. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- Article 1 – ajout des **pompes à chaleur thermoélectriques** au domaine d'application et augmentation de la **tension assignée** maximale à 300 V pour les appareils monophasés;

- Article 7 – révision des exigences relatives au marquage sur l'appareil et l'emballage, y compris un symbole relatif à la surface au sol minimale, et modification du symbole relatif aux **fluides frigorigènes inflammables** afin d'inclure le groupe de sécurité selon l'ISO 817;
- Article 11 et Article 19 – restructuration à des fins d'alignement sur la Partie 1 et ajout d'exigences relatives au **chauffe-air supplémentaires**;
- Article 13 et Article 16 – révision de l'exigence relative au courant de fuite des **appareils fixes à moteur de classe I**;
- Article 21 – ajout d'exigences relatives au **matériau en mousse de particules** et révision des exigences relatives aux essais de transport;
- Article 22 – suppression de la limite pour la somme des **charges de fluide frigorigène** des appareils équipés de plusieurs **systèmes frigorifiques** et révision des exigences afin d'éviter les sources d'inflammation, les **systèmes de détection des fuites**, les **vannes d'arrêt de sécurité** et le **matériau en mousse de particules**;
- Article 23 – ajout d'exigences visant à éviter le contact entre les conducteurs et la tuyauterie de fluide frigorigène;
- Article 24 – révision des exigences relatives aux motocompresseurs;
- Article 30 – ajout d'exigences en matière de résistance à la chaleur du **matériau en mousse de particules**;
- Annexe BB – révision du Tableau BB.1 avec des informations relatives aux fluides frigorigènes et ajout d'un lien vers les données sur les fluides frigorigènes de l'ISO 817;
- Annexe DD – révision des exigences relatives aux informations contenues dans le manuel pour les appareils qui utilisent des **fluides frigorigènes inflammables**;
- Annexe EE – révision des exigences relatives aux essais de pression;
- Annexe FF – révision des exigences relatives aux essais de simulation de fuite;
- Annexe GG – ajout d'exigences relatives à l'application de la **charge libérable**, ajout d'une couverture supplémentaire pour les fluides frigorigènes A2 et A3, y compris de nouvelles limites de charge pour les appareils à **débit d'air de circulation** et pour les **systèmes frigorifiques à étanchéité renforcée**, et révision des exigences relatives aux **systèmes frigorifiques à étanchéité renforcée** qui utilisent le **fluide frigorigène A2L**;
- Annexe LL – révision des exigences relatives aux **systèmes de détection des fluides frigorigènes**;
- Annexe MM – révision du taux de fuite simulé;
- Annexe OO – suppression de l'annexe relative au conditionnement du câblage interne à l'aide de la lumière UV.
- Annexe PP – nouvelle couverture de l'essai de confirmation du **système de détection des fuites**;
- Annexe QQ – nouvelle couverture de la méthode pour la détermination de la **charge libérable**;

Le texte de cette Norme internationale est issu des documents suivants:

Projet	Rapport de vote
61D/491/FDIS	61D/493/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Le présent document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/standardsdev/publications.

La présente Partie 2-40 doit être utilisée conjointement avec l'IEC 60335-1:2010, son Amendement 1:2013 et son Amendement 2:2016.

NOTE 1 L'expression "Partie 1" utilisée dans la présente norme fait référence à l'IEC 60335-1.

La présente Partie 2-40 complète ou modifie les articles correspondants de l'IEC 60335-1, de façon à transformer cette publication en norme IEC: Exigences de sécurité pour les pompes à chaleur électriques, les climatiseurs et les déshumidificateurs.

Lorsqu'un paragraphe particulier de la Partie 1 n'est pas mentionné dans la présente Partie 2, ce paragraphe s'applique pour autant que cela soit raisonnable. Lorsque la présente norme indique "addition", "modification" ou "remplacement", le texte correspondant de la Partie 1 doit être adapté en conséquence.

NOTE 2 Le système de numérotation suivant est utilisé:

- les paragraphes, tableaux et figures qui sont ajoutés à ceux de la Partie 1 sont numérotés à partir de 101;
- les notes, à l'exception de celles qui sont dans un nouveau paragraphe ou de celles qui concernent des notes de la Partie 1, sont numérotées à partir de 101, y compris celles des articles ou paragraphes qui sont modifiés ou remplacés;
- les annexes supplémentaires sont appelées AA, BB, etc.

NOTE 3 Les caractères d'imprimerie suivants sont utilisés:

- exigences: caractères romains;
- *modalités d'essai: caractères italiques;*
- notes: petits caractères romains.

Les termes en **gras** dans le texte sont définis à l'Article 3. Lorsqu'une définition concerne un adjectif, l'adjectif et nom associé figurent également en gras.

Les différences suivantes existent dans les pays indiqués ci-après:

- 6.1: Les appareils de la classe 0I sont autorisés (Japon).
- 11.8: La température des parois en bois du caisson d'essai est limitée à 85 °C (Suède).

Une liste de toutes les parties de la série IEC 60335, publiées sous le titre général: *Appareils électrodomestiques et analogues – Sécurité*, peut être consultée sur le site web de l'IEC.

Le comité a décidé que le contenu du présent document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous webstore.iec.ch dans les données relatives au document recherché. À cette date, le document sera

- reconduit,
- supprimé,
- remplacé par une édition révisée, ou
- amendé.

IMPORTANT – Le logo "colour inside" qui se trouve sur la page de couverture de cette publication indique qu'elle contient des couleurs qui sont considérées comme utiles à une bonne compréhension de son contenu. Les utilisateurs devraient, par conséquent, imprimer ce document en utilisant une imprimante couleur.

INTRODUCTION

Il a été estimé, en établissant la présente Norme internationale, que l'exécution de ses dispositions était confiée à des personnes expérimentées et ayant une qualification appropriée.

Les documents de recommandation concernant l'application des exigences de sécurité pour les appareils sont accessibles par les documents de soutien du CE 61 sur le site web de l'IEC

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

Cette information est donnée à l'intention des utilisateurs de la présente Norme internationale et ne constitue aucunement un remplacement du texte normatif de la présente norme.

La présente norme reconnaît le niveau de protection internationalement accepté contre les dangers électriques, mécaniques, thermiques, liés au feu et au rayonnement des appareils, lorsqu'ils fonctionnent comme en usage normal en tenant compte des instructions. Elle couvre également les situations anormales auxquelles il est possible de s'attendre dans la pratique.

Cette norme tient compte autant que possible des exigences de l'IEC 60364, de façon à rester compatible avec les règles d'installation quand l'appareil est raccordé au réseau d'alimentation. Cependant, des règles nationales d'installation peuvent être différentes.

Si un appareil relevant du domaine d'application de la présente norme comporte également des fonctions qui sont couvertes par une autre partie 2 de l'IEC 60335, la partie 2 correspondante est appliquée à chaque fonction séparément, dans la limite du raisonnable. Le cas échéant, l'influence d'une fonction sur les autres fonctions est prise en compte.

Lorsqu'une partie 2 ne comporte pas d'exigences complémentaires pour couvrir les dangers traités dans la Partie 1, la Partie 1 s'applique.

NOTE 1 Cela signifie que les comités d'études responsables pour les parties 2 ont déterminé qu'il n'était pas nécessaire de spécifier des exigences particulières pour l'appareil en question en plus des exigences générales.

Cette norme est une norme de famille de produits traitant de la sécurité d'appareils et prévaut sur les normes horizontales et génériques couvrant le même sujet.

NOTE 2 Les publications horizontales, les publications de sécurité de base et les publications groupées de sécurité qui couvrent un danger ne sont pas applicables parce qu'elles ont été prises en considération lorsque les exigences générales et particulières ont été étudiées pour la série de normes IEC 60335.

Un appareil conforme au texte de la présente norme n'est pas nécessairement jugé conforme aux principes de sécurité de la norme si, lorsqu'il est examiné et soumis aux essais, il apparaît qu'il présente d'autres caractéristiques qui compromettent le niveau de sécurité visé par ces exigences

Un appareil qui utilise des matériaux ou présente des modes de construction différents de ceux décrits dans les exigences de la présente norme peut être examiné et soumis aux essais conformément à l'objectif poursuivi par ces exigences et, s'il est jugé pratiquement équivalent, il peut être estimé conforme à la norme.

APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

Partie 2-40: Exigences particulières pour les pompes à chaleur électriques, les climatiseurs et les déshumidificateurs

1 Domaine d'application

L'article de la Partie 1 est remplacé par le texte suivant.

La présente partie de l'IEC 60335 traite de la sécurité des **pompes à chaleur** électriques, des **pompes à chaleur pour production d'eau chaude sanitaire** et des **climatiseurs** qui comportent des motocompresseurs ainsi que des **ventiloconvecteurs hydroniques**, des **déshumidificateurs** (avec ou sans motocompresseur), **des pompes à chaleur thermoélectriques** et des **unités partielles**. Leur **tension assignée** maximale n'est pas supérieure à 300 V pour les appareils monophasés et à 600 V pour les appareils multiphasés.

Les appareils non destinés à un usage domestique normal, mais qui néanmoins peuvent constituer une source de danger pour le public, tels que les appareils destinés à être utilisés par des usagers non avertis dans des magasins, chez des artisans et dans des fermes, sont compris dans le domaine d'application de la présente norme.

Les appareils indiqués ci-dessus peuvent consister en un ou plusieurs ensembles fabriqués en usine. Si les appareils sont fournis en plusieurs ensembles, les ensembles doivent être utilisés conjointement et les exigences correspondantes dépendent de l'utilisation des ensembles assortis.

NOTE 101 Une définition du terme "motocompresseur" est donnée dans l'IEC 60335-2-34 qui indique que le terme "motocompresseur" est utilisé pour désigner un motocompresseur hermétique ou semi-hermétique.

NOTE 102 En outre, l'IEC 60335-2-21 spécifie les exigences relatives aux cuves destinées au stockage de l'eau chauffée dans les **pompes à chaleur pour production d'eau chaude sanitaire**.

La présente norme ne couvre pas les fluides frigorigènes qui n'appartiennent pas aux groupes A1, A2L, A2 et A3 tels qu'ils sont définis par l'ISO 817. Les **fluides frigorigènes inflammables** se limitent à ceux dont la masse molaire est supérieure ou égale à 42 kg/kmol d'après la formule "la plus défavorable" (WCF, Worst Case Formulation) spécifiée dans l'ISO 817.

Dans la mesure du possible, la présente norme traite des dangers courants engendrés par les appareils qui sont rencontrés dans le cadre d'une utilisation normale et elle suppose que l'installation, l'entretien, la mise hors service et l'élimination sont effectués en toute sécurité par des personnes compétentes et que le dégagement accidentel de fluides frigorigènes est évité. Toutefois, elle ne prescrit pas les critères qui permettent de garantir la compétence des personnes lors de l'installation, de l'entretien et de l'élimination. Les exigences de sécurité pendant l'élimination ne sont pas spécifiées dans la présente norme.

NOTE 103 L'Annexe HH fournit des exigences informatives relatives à la compétence des personnes. Les critères de compétence du personnel aux fins des systèmes de certification figurent dans l'ISO 22712¹.

Sauf spécification contraire dans la présente norme et ses annexes, les exigences relatives à la sécurité des systèmes frigorifiques sont spécifiées dans:

- l'ISO 5149-1:2014, l'ISO 5149-1:2014/AMD1:2015, et l'ISO 5149-1:2014/AMD2:2021;

¹ En cours d'élaboration. Stade au moment de la publication: ISO FDIS 22712:2022

- l'ISO 5149-2:2014 et l'ISO 5149-2:2014/AMD1:2020;
- l'ISO 5149-3:2014 et l'ISO 5149-3:2014/AMD1:2021.

Les **dispositifs de chauffage supplémentaires** (ou les dispositions concernant leur installation) sont couverts par le domaine d'application de la présente norme, mais uniquement les dispositifs de chauffage qui sont conçus en tant que partie de l'appareil, les commandes étant incorporées à l'appareil.

NOTE 104 L'attention est attirée sur le fait que

- pour les appareils destinés à être utilisés dans des véhicules ou à bord de navires ou d'avions, des exigences supplémentaires peuvent être nécessaires;
- dans de nombreux pays, des exigences supplémentaires sont spécifiées par exemple par les organismes nationaux de la santé publique responsables de la protection des travailleurs et par les organismes nationaux responsables du stockage, du transport, de la construction des bâtiments et des installations.

NOTE 105 La présente norme ne s'applique pas

- aux humidificateurs destinés à être utilisés avec des appareils de chauffage et de refroidissement (IEC 603352-88);
- aux appareils prévus exclusivement pour des usages industriels;
- aux appareils destinés à être utilisés dans des locaux présentant des conditions particulières, telles que la présence d'une atmosphère corrosive ou explosive (poussière, vapeur ou gaz).

2 Références normatives

L'article de la Partie 1 est applicable avec l'exception suivante.

Addition:

IEC 60068-2-52, *Essais d'environnement – Partie 2-52: Essais – Essai Kb: Brouillard salin, essai cyclique (solution de chlorure de sodium)*

IEC 60079-0, *Atmosphères explosives – Partie 0: Matériel – Exigences générales*

IEC 60079-7:2015, *Atmosphères explosives – Partie 7: Protection du matériel par sécurité augmentée "e"*
IEC 60079-7:2015/AMD1:2017

IEC 60079-14:2013, *Atmosphères explosives – Partie 14: Conception, sélection et construction des installations électriques*

IEC 60079-15:2017, *Atmosphères explosives – Partie 15: Protection du matériel par mode de protection "n"*

IEC 60335-2-34:2021, *Appareils électrodomestiques et analogues – Sécurité – Partie 2-34: Exigences particulières pour les motocompresseurs*

IEC 60335-2-51, *Appareils électrodomestiques et analogues – Sécurité – Partie 2-51: Exigences particulières pour les pompes de circulation fixes pour installations de chauffage et de distribution d'eau*

IEC 60695-1-10, *Essais relatifs aux risques du feu – Partie 1-10: Lignes directrices pour l'évaluation des risques du feu des produits électrotechniques – Lignes directrices générales*

IEC 60695-10-2:2014, *Essais relatifs aux risques du feu – Partie 10-2: Chaleurs anormales – Essai à la bille*

IEC 60730-2-6, *Dispositifs de commande électrique automatiques – Partie 2-6: Exigences particulières pour les dispositifs de commande électrique automatiques sensibles à la pression y compris les exigences mécaniques*

IEC 62471:2006, *Sécurité photobiologique des lampes et des appareils utilisant des lampes*

ISO 817, *Fluides frigorigènes – Désignation et classification de sûreté*

ISO 527-3, *Plastiques – Détermination des propriétés en traction – Partie 3: Conditions d'essai pour films et feuilles*

ISO 1302:2002², *Spécification géométrique des produits (GPS) – Indication des états de surface dans la documentation technique de produits*

ISO 2578, *Plastiques – Détermination des limites temps-températures après exposition à l'action prolongée de la chaleur*

ISO 5149-1:2014, *Systèmes frigorifiques et pompes à chaleur – Exigences de sécurité et d'environnement – Partie 1: Définitions, classification et critères de choix*

ISO 5149-1:2014/AMD1:2015

ISO 5149-1:2014/AMD2:2021

ISO 5149-2:2014, *Systèmes frigorifiques et pompes à chaleur – Exigences de sécurité et d'environnement – Partie 2: Conception, construction, essais, marquage et documentation*

ISO 5149-2:2014/AMD1:2020

ISO 5149-3:2014, *Systèmes frigorifiques et pompes à chaleur – Exigences de sécurité et d'environnement – Partie 3: Site d'installation*

ISO 5149-3:2014/AMD1:2021

ISO 5151, *Climatiseurs et pompes à chaleur non raccordés – Essais et détermination des caractéristiques de performance*

ISO 5151:2017/AMD1:2020

ISO 7010:2019, *Symboles graphiques – Couleurs de sécurité et signaux de sécurité – Signaux de sécurité enregistrés*

ISO 13253, *Climatiseurs et pompes à chaleur air/air raccordés – Essais et détermination des caractéristiques de performance*

ISO 13256 (toutes les parties), *Pompes à chaleur à eau – Essais et détermination des caractéristiques de performance*

ISO 13355:2016, *Emballages – Emballages d'expédition complets et pleins et charges unitaires – Essais de vibration verticale aléatoire*

ISO 14903, *Systèmes de réfrigération et pompes à chaleur – Qualification de l'étanchéité des composants et des joints*

ISO 15042, *Climatiseurs et pompes à chaleur air/air multi-split – Essais et détermination des caractéristiques de performance*

² Supprimée.