AS/NZS 60335.2.24:2021

STANDARDS NEW ZEALAND
TE MANA TAUTĪKANGA O AOTEAROA

STANDARDS Australia

Australian/New Zealand Standard™

Household and similar electrical appliances – Safety

Part 2.24: Particular requirements for refrigerating appliances, ice-cream appliances and ice-makers (IEC 60335-2-24 Ed 8, MOD)

AS/NZS 60335.2.24:2021

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee EL-002, Safety of Household and Similar Electrical Appliances and Small Power Transformers and Power Supplies. It was approved on behalf of the Council of Standards Australia on 20 October 2021 and by the New Zealand Standards Approval Board on 6 October 2021.

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Australian Industry Group
Australian Retailers Association
Business New Zealand
Better Regulation Division (Fair Trading, Safework NSW, TestSafe)
Consumer Electronic Suppliers Association, Australia
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Electrical Regulatory Authorities Council, Australia
Electrical consultants
Engineers Australia
JAS-ANZ
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This Standard was issued in draft form for comment as DR AS/NZS IEC 60335.2.24:2021.

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Australian/New Zealand Standard™

Household and similar electrical appliances – Safety

Part 2.24: Particular requirements for refrigerating appliances, ice-cream appliances and ice-makers (IEC 60335-2-24 Ed 8, MOD)

Originated in Australia as C174 — 1996.
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Jointly revised and designated AS/NZS 60335.2.24:2021.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

AS/NZS 60335.2.24:2021

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2.24: Particular requirements for refrigerating appliances, ice-cream appliances and ice-makers

Foreword

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-002 - Safety of Household and Similar Electrical Appliances and Small Power Transformers to supersede AS/NZS 60335.2.24:2010 three years from the date of publication of this Standard. During this period AS/NZS 60335.2.24:2010 will also remain current. Regulatory authorities that reference this Standard in regulation may apply these requirements at a different time. Users of this Standard should consult with these authorities to confirm their requirements.

The objective of this Standard is to provide manufacturers, designers, regulatory authorities, testing laboratories and similar organizations with safety requirements designed to give the user protection against hazards that might occur during normal operation and abnormal operation of the appliance and which may be used as the basis for approval for sale or for connection to the electricity supply mains in Australia and New Zealand.

The text of IEC 60335-2-24 Ed 8, prepared by IEC Technical Subcommittee SC 61C, was submitted to the Standards Australia/Standards New Zealand Combined Procedure (dual public comment and committee vote) for adoption of the IEC standard as a Standards Australia/Standards New Zealand joint standard.

The principal changes in this edition as compared with the 2010 edition of AS/NZS 60335.2.24 are as follows (minor changes are not listed):

- aligns the text with IEC 60335-1, Ed 5.2;
- some notes have been converted to normative text or deleted (4, 5.2, 5.7, 7.1, 7.6, 7.10, 7.12, 19.1, 19.101, 19.102, 20.101, 20.102, 20.103, 20.104, 21, 22.7, 22.33, 22.101, 22.102, 22.103, 22.107, 22.108, 22.109, 30.1);
- normative references and associated text have been updated (2, 22.108, 22.109, Table 102, Annex CC);
- definition of free space has been clarified (3.6.104);
- measurement of the input current of refrigerating appliances using inverter driven motor-compressors is included (10.2);
- compatibility tests for winding insulation of motor-compressors used with different types of refrigerants and oils have been introduced (22.9);
- requirements for inadvertent contact points between uncoated aluminum pipes and copper pipes have been updated (22.111);
- testing of accessible glass panels has been clarified (22.116);
- in refrigerating appliances, requirements for material encasing and in contact with thermal insulation have been introduced and consequential text has been deleted (22.117, 30.2, 30.2.101, Annex EE);
- requirements for motor running capacitors have been updated (24.5, 24.8);
- the locked rotor test for fan motors has been clarified (Annex AA).

This Standard is an adoption with national modifications of the eighth edition of IEC 60335-2-24, *Household and similar electrical appliances – Safety – Part 2-24: Particular requirements for refrigerating appliances, ice-cream appliances and ice-makers.* It has been varied as indicated to take account of Australian and New Zealand conditions.

This part 2 has to be used in conjunction with the latest edition of AS/NZS 60335.1 *Household and similar electrical appliances – Safety – Part 1: General requirements* and its Amendments. It was established on the basis of AS/NZS 60335.1:2020.

This part 2 supplements or modifies the corresponding clauses of AS/NZS 60335.1 so as to convert it into the Australian/New Zealand Standard: Safety requirements for refrigerating appliances, ice-cream appliances and ice-makers.

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

NOTE 1 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.;

– subclauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letters AZ.

NOTE 2 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.

p NOTE 3 In this document, p is used in the margin to indicate instructions for preparing a consolidated version.

The essential safety requirements in AS/NZS 3820[1] that could be applicable to requirements for refrigerating appliances, ice-cream appliances and ice-makers are covered by this standard.

The national variations to IEC 60335-2-24 Ed 8 form the Australian and New Zealand national variations for purposes of the IECEE scheme for recognition of results of testing to standards for safety of electrical equipment (the CB scheme).

[1] AS/NZS 3820 *Essential safety requirements for electrical equipment*

The text of the International Standard IEC 60335-2-24 Ed 8 was approved as a joint Australia/New Zealand Standard with the agreed national variations as given below.

AUSTRALIAN NATIONAL VARIATIONS

The following national variations to this Part 2 are additional to those listed in the national variations of AS/NZS 60335.1:2020.

6 Classification

p **6.101** *Replace* the requirement by:

Appliances, other than **ice-cream appliances**, shall be classified as at least appliances for tropical climates.

22 Construction

p **22.117** *Replace* the first paragraph of the requirement by:

In **refrigerating appliances**, other than **ice-cream appliances**, thermal insulation shall be encased in and in contact with

- metallic material having a thickness not less than 0.20 mm; or
- polymeric material classified as 5VA according to IEC 60695-11-20, provided that the test sample used for the classification was no thicker than the relevant part of the appliance.

Annexes

p **Annex EE** *Replace* this Annex by the following variation:

Annex EE Void

NEW ZEALAND NATIONAL VARIATIONS

The following national variations to this Part 2 are additional to those listed in the national variations of AS/NZS 60335.1:2020.

6 Classification

p **6.101** *Replace* the requirement by:

Appliances, other than **ice-cream appliances**, shall be classified as at least appliances for tropical climates.

22 Construction

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In **refrigerating appliances**, other than **ice-cream appliances**, thermal insulation shall be encased in and in contact with

- metallic material having a thickness not less than 0.20 mm; or
- polymeric material classified as 5VA according to IEC 60695-11-20, provided that the test sample used for the classification was no thicker than the relevant part of the appliance.

Annexes

p **Annex EE** *Replace* this Annex by the following variation:

Annex EE Void

Annex ANZ
(normative)
Normative references to international publications with their corresponding joint Australia/New Zealand publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by national variations the relevant joint Australia/New Zealand publications applies if the national variations are needed to ensure the safety of the appliance for Australia/New Zealand conditions. These international publications are indicated by (mod). If an international publication is not so indicated, then either it or the listed Australia/New Zealand publication may be used.

Publication	Year	Title	AS/NZS	Year
IEC 60068-2-11	1981	*Environmental testing – Part 2 Tests. Tests Ka: Salt mist*		
IEC 60079-1	2014	*Explosive atmospheres – Part 1: Equipment protection by flameproof enclosures "d"*	60079.1	2015
IEC 60079-7 IEC 60079-7:2015/AMD1)[2]	2015 2017	*Explosive atmospheres – Part 7: Equipment protection by increased safety "e"*	60079.7	2016
IEC 60079-15	2017	*Explosive atmospheres – Part 15: Equipment protection by type of protection "n"*	60079.15	2020
IEC 60252-1 IEC 60252-1:2010/AMD1)[3]	2010 2013	*AC motor capacitors – Part 1: General – Performance, testing and rating – Safety requirements – Guidance for installation and operation*		
IEC 60335-2-34 IEC 60335-2-34:2015/AMD1 IEC 60335-2-34:2016/AMD2)[4]	2012	*Household and similar electrical appliances – Safety – Part 2-34: Particular requirements for motor-compressors*	60335.2.34	2016
IEC 60598-1 IEC 60598-1:2010/AMD1)[5]	2014 2017	*AC motor capacitors – Part 1: General – Performance, testing and rating – Safety requirements – Guidance for installation and operation*	60598.1	2017
IEC 60695-11-3	2012	*Fire hazard testing – Part 11-3: Test flames – 500 W flames – Apparatus and confirmational test methods*		
IEC 60695-11-20	2015	*Fire hazard testing – Part 11-20: Test flames – 500 W flame test method*		

2) There exists a consolidated edition 5.1:2017 that includes edition 5 and its Amendment 1.

3) There exists a consolidated edition 8.1:2013 that includes edition 8 and its Amendment 1.

4) There exists a consolidated edition 5.2:2016 that includes edition 4 and its Amendment 1 and Amendment 2.

5) There exists a consolidated edition 8.1:2017 that includes edition 8 and its Amendment 1.

IEC 60730-2-6 IEC 60730-2-6:2015/AMD1)[6]	2015 2019	*Automatic electrical controls – Part 2-6: Particular requirements for automatic electrical pressure sensing controls including mechanical requirements*		
IEC 60851-4	2016	*Winding wires – Test methods – Part 4: Chemical properties*		
ISO 209	2007	*Aluminium and aluminium alloys - Chemical composition*		
ISO 817 ISO 817:2014/AMD1)	2014 2017	*Refrigerants – Designation and safety classification*	817	2016
ISO 4126-2	2018	*Safety devices for protection against excessive pressure – Part 2: Bursting disc safety devices*		
ISO 5149-1 ISO 5149-1:2014/AMD1)	2014 2015	*Refrigerating systems and heat pumps – Safety and environmental requirements – Part 1: Definitions, classification and selection criteria*	5149-1	2016
ISO 7010	2019	*Graphical symbols – Safety colours and safety signs – Registered safety signs*		

[6] There exists a consolidated edition 3.1:2019 that includes edition 3 and its Amendment 1.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

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

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
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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.

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

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

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

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

– normative references and associated text have been updated (2, 22.108, 22.109, Table 102, Annex CC);

– definition of free space has been clarified (3.6.104);

– measurement of the input current of refrigerating appliances using inverter driven motor-compressors is included (10.2);

– compatibility tests for winding insulation of motor-compressors used with different types of refrigerants and oils have been introduced (22.9);

– requirements for inadvertent contact points between uncoated aluminium pipes and copper pipes have been updated (22.111);

– testing of accessible glass panels has been clarified (22.116);

– in refrigerating appliances, requirements for material encasing and in contact with thermal insulation have been introduced and consequential text has been deleted (22.117, 30.2, 30.2.101, Annex EE);

– requirements for motor running capacitors have been updated (24.5, 24.8);

– the locked rotor test for fan motors has been clarified (Annex AA).

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

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

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

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

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

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fifth edition (2010) of that standard.

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

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for refrigerating appliances, ice-cream appliances and ice-makers.

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

NOTE 2 The following numbering system is used:

– subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;

– unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;

– additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

– requirements: in roman type;

– *test specifications: in italic type;*

– notes: in small roman type.

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

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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

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

The following differences exist in the countries indicated below.

– 22.101： E12 and E17 lamp holders are checked as specified for E14 and B15 lamp holders. E26 lamp holder is checked as specified for E27 and B22 lamp holders (Japan).

– 22.110：For unsealed glass tube heaters, the temperature requirements are different (Japan).

– 22.117: Only the first two dashed items in the first paragraph of the requirement are allowed (Australia and New Zealand).

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

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

INTRODUCTION

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

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

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

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

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

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

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

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

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

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

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

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

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of the following appliances, their **rated voltage** being not more than 250 V for single-phase appliances, 480 V for other appliances and 24 V DC for appliances when battery operated:

– **refrigerating appliances** for household and similar use;

– **ice-makers** incorporating a motor-compressor and **ice-makers** intended to be incorporated in frozen food storage compartments;

– **refrigerating appliances** and **ice-makers** for use in camping, touring caravans and boats for leisure purposes.

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

This standard also deals with the safety of **ice-cream appliances** intended for household use, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances.

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

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

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

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

are within the scope of this standard.

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