

INTERNATIONAL STANDARD

Corrected version
2026-01

This full version of IEC 60335-2-118:2025 includes the content of the references made to IEC 60335-1:2020

**Household and similar electrical appliances – Safety –
Part 2-118: Particular requirements for professional ice-cream makers**

get full document from standards.iteh.ai



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2025 IEC, Geneva, Switzerland

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

IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC

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

About IEC publications

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

IEC publications search - webstore.iec.ch/advsearchform

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 It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

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

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

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

IEC Products & Services Portal - products.iec.ch

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

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

get full document from standards.iteh.ai



IEC 60335-2-118

Edition 2.0 2025-04
EXTENDED VERSION

INTERNATIONAL STANDARD

Corrected version
2026-01

This full version of IEC 60335-2-118:2025 includes the content of the references made to IEC 60335-1:2020

**Household and similar electrical appliances – Safety –
Part 2-118: Particular requirements for professional ice-cream makers**

get full document from standards.iteh.ai

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 97.040.99; 13.120

ISBN 978-2-8327-0341-0

Warning! Make sure that you obtained this publication from an authorized distributor.

Sample Document

get full document from standards.iteh.ai

INTERNATIONAL ELECTROTECHNICAL COMMISSION

IEC 60335-1
Edition 6.0 2020-09

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:

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

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

INTRODUCTION

Edition 6 of IEC 60335-1:2020 defines and introduces requirements for a detachable power supply part of an appliance. In the document, 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 the 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.

ICS 13.120; 97.030

CONTENTS

FOREWORD.....	6
INTRODUCTION to IEC 60335-1:2020.....	9
INTRODUCTION to IEC 60335-2-118:2025.....	11
1 Scope.....	12
2 Normative references	13
3 Terms and definitions	19
4 General requirement.....	32
5 General conditions for the tests	32
6 Classification.....	38
7 Marking and instructions.....	38
8 Protection against access to live parts.....	50
9 Starting of motor-operated appliances	53
10 Power input and current.....	53
11 Heating.....	55
12 Charging of metal-ion batteries.....	62
13 Leakage current and electric strength at operating temperature.....	63
14 Transient overvoltages	66
15 Moisture resistance	67
16 Leakage current and electric strength.....	70
17 Overload protection of transformers and associated circuits	72
18 Endurance.....	73
19 Abnormal operation	73
20 Stability and mechanical hazards.....	84
21 Mechanical strength	86
22 Construction	89
23 Internal wiring.....	115
24 Components	117
25 Supply connection and external flexible cords	123
26 Terminals for external conductors.....	131
27 Provision for earthing	133
28 Screws and connections.....	135
29 Clearances, creepage distances and solid insulation	137
30 Resistance to heat and fire.....	146
31 Resistance to rusting.....	150
32 Radiation, toxicity and similar hazards.....	150
Annex A (informative) Routine tests	166
Annex B (normative) Battery-operated appliances, separable batteries and detachable batteries for battery-operated appliances	169
Annex C (normative) Ageing test on motors	190
Annex D (normative) Thermal motor protectors	192
Annex E (normative) Needle-flame test.....	193
Annex F (normative) Capacitors.....	194

Annex G (normative) Safety isolating transformers	196
Annex H (normative) Switches	197
Annex I (normative) Motors having basic insulation that is inadequate for the rated voltage of the appliance	199
Annex J (normative) Coated printed circuit boards	201
Annex K (informative) Overvoltage categories	202
Annex L (informative) Guidance for the measurement of clearances and creepage distances	203
Annex M (informative) Pollution degree	206
Annex N (normative) Proof tracking test.....	207
Annex O (informative) Selection and sequence of the tests of Clause 30	208
Annex P (informative) Guidance for the application of this standard to appliances used in tropical climates	213
Annex Q (informative) Sequence of tests for the evaluation of electronic circuits	215
Annex R (normative) Software evaluation	218
Annex S (informative) Guidance for the application of this standard on measurement of power input and current based on the requirements of 10.1 and 10.2 concerning the representative period	232
Annex T (normative) UV-C radiation effect on non-metallic materials	233
Annex U (normative) Appliances intended for remote communication through public networks	236
Annex AA (normative) Locked-rotor test of fan motors	240
Annex BB (normative) Non-sparking "n" electrical apparatus and test conditions for "dc" devices	242
Annex CC (normative) Test method for determining refrigerant concentration beyond the boundary of an appliance	243
Bibliography.....	248
Index of defined terms	251
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	151
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	152
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	153
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	154
Figure 5 – Small part	155
Figure 6 – Example of an electronic circuit with low-power points	155
Figure 7 – Test finger nail	156
Figure 8 – Flexing test apparatus.....	157
Figure 9 – Constructions of cord anchorages	158
Figure 10 – An example of parts of an earthing terminal	159
Figure 11 – Examples of clearances	160
Figure 12 – Example of the placement of the cylinder	161

Figure 13 – Small parts cylinder.....	162
Figure 14 – Example of a specified operating region of a lithium-ion cell during charging	163
Figure 101 – Scratching tool tip details	164
Figure 102 – Vibration velocity-frequency chart	165
Figure 103 – Isosceles triangle arrow test gauge	165
Figure 104 – Measurement of vibration amplitude	165
Figure B.1 – Examples of battery-operated appliance constructions and application of normative Annex B (1 of 2)	187
Figure B.2 – Examples of correct polarity connection marking representing three batteries	189
Figure I.1 – Simulation of faults	200
Figure L.1 – Sequence for the determination of clearances	203
Figure L.2 – Sequence for the determination of creepage distances	204
Figure L.3 – Measurement of clearances	205
Figure O.1 – Tests for resistance to heat	208
Figure O.2 – Selection and sequence of tests for resistance to fire in hand-held appliances	209
Figure O.3 – Selection and sequence of tests for resistance to fire in attended appliances	209
Figure O.4 – Selection and sequence of tests for resistance to fire in unattended appliances	210
Figure O.5 – Some applications of the term "within a distance of 3 mm"	212
Figure Q.1 – Flowchart outlining the sequence of tests for the evaluation of electronic circuits (1 of 2).....	216
Figure S.1 – Flowchart giving guidance on measurement of power input and current concerning the representative period	232
Figure AA.1 – Supply circuit for locked-rotor test of a single-phase fan motor	241
Figure CC.1 – Schematic illustration of the refrigerant concentration sampling points	247
Table 1 – Power input deviation	53
Table 2 – Current deviation.....	54
Table 3 – Maximum normal temperature rises.....	58
Table 101 – Maximum temperatures for motor-compressors	61
Table 4 – Voltage for electric strength test.....	66
Table 5 – Characteristics of high-voltage sources	66
Table 6 – Impulse test voltage	67
Table 7 – Test voltages.....	72
Table 8 – Maximum winding temperature	76
Table 9 – Maximum abnormal temperature rise.....	81
Table 102 – Refrigerant flammability parameters	113
Table 10 – Dimensions of cables and conduits.....	124
Table 11 – Minimum cross-sectional area of conductors	126
Table 12 – Pull force and torque	128
Table 13 – Nominal cross-sectional area of conductors	132
Table 14 – Torque for testing screws and nuts.....	136

Table 15 – Rated impulse voltage	138
Table 16 – Minimum clearances.....	139
Table 17 – Minimum creepage distances for basic insulation	143
Table 18 – Minimum creepage distances for functional insulation	144
Table 19 – Minimum thickness for accessible parts of reinforced insulation consisting of a single layer	146
Table A.1 – Test voltages	167
Table B.1 – Artificial source characteristics.....	171
Table B.2 – Total area of openings for metal-ion cells.....	179
Table B.3 – Volume of air injected at 2 070 kPa.....	179
Table C.1 – Test conditions	190
Table R.1 – General fault/error conditions.....	220
Table R.2 – Specific fault/error conditions.....	222
Table R.3 – Semi-formal methods	228
Table R.4 – Software architecture specification	228
Table R.5 – Module design specification	229
Table R.6 – Design and coding standards.....	230
Table R.7 – Software safety validation	230
Table T.1 – Minimum property retention limits after UV-C exposure	234
Table T.2 – Minimum electric strength for internal wiring after UV-C exposure.....	235
Table U.1 – Examples of acceptable measures against unauthorised access and transmission fault/error modes.....	238
Table CC.1 – Relevant properties and mass flux for selected flammable refrigerants.....	245

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-118: Particular requirements for professional ice-cream 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.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. 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 the full content of the Standard.

IEC 60335-2-118:2025 EXV includes the content of IEC 60335-2-118:2025, and the references made to IEC 60335-1:2020.

The specific content of IEC 60335-2-118:2025 is displayed on a [blue background](#).

IEC 60335-2-118 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. It is an International Standard.

This second edition cancels and replaces the first edition published in 2020. This edition constitutes a technical revision.

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

- a) the text has been aligned with IEC 60335-1:2020;
- b) scope has been revised (Clause 1);
- c) requirements for appliances employing R-744 system have been added (7.1, 7.12.1, 22.7, 22.111);
- d) additional requirements for appliances employing flammable refrigerant have been added (7.1, 7.6, 7.12, 7.15, 21.105, 22.110, 22.112, 22.113, 22.114, 22.115, 22.116, 22.117, 22.118, 22.119, 22.120, 22.121, 22.122, 22.123, Annex CC);
- e) definition of hermetically sealed system has been revised (3.6.113);
- f) reference to flammable refrigerant has been deleted (22.7);
- g) new subclauses have been added (22.40, 22.49, 22.51);
- h) compatibility tests for winding insulation of motor-compressors used with different types of refrigerants and oils have been introduced (22.9);
- i) Annex AA has been modified to cover motors that are supplied at a voltage that is different from the rated voltage of the appliance;
- j) Annex BB has been updated to align with the latest edition of IEC 60079-15;
- k) text in 3.1.9.101, 3.1.9.102 and 3.1.9.103 has been cancelled and the text copied in 5.102;
- l) new informative tightness routine test has been added (Annex A).

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

Draft	Report on voting
61C/928/FDIS	61C/932/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.

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 unless that edition precludes it; in that case, the latest edition that does not preclude it is used. It was established on the basis of the sixth edition (2020) 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: Particular requirements **for professional ice-cream 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

The content of the corrigendum 1 (2026-01) has been included in this copy.

INTRODUCTION to IEC 60335-1:2020

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 –

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 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 the functions of an appliance are covered by different parts 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.

Throughout this publication, when "part 2" is mentioned, it refers to the relevant part of IEC 60335.

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.

Individual countries may wish to consider the application of this standard, as far as is reasonable, to appliances not mentioned in a part 2, and to appliances designed on new principles. In this case, consideration should be given to defining normal operation, specifying the classification of the appliance according to Clause 6 and specifying whether the appliance is operated attended or unattended. Consideration should also be given to particular categories of likely users and to related specific risks such as access to live parts, hot surfaces or hazardous moving parts.

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

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

- IEC standards published by TC 59 concerning methods of measuring performance;
- CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
- CISPR 14-2 concerning electromagnetic immunity;
- IEC standards published by TC 111 concerning environmental matters.

Sample Document

get full document from standards.iteh.ai

INTRODUCTION to IEC 60335-2-118:2025

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 and SC 61C supporting documents on the IEC websites.

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

<https://www.iec.ch/sc61c/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 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 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.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

- IEC standards published by TC 59 concerning methods of measuring performance;
- CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
- CISPR 14-2 concerning electromagnetic immunity;
- IEC standards published by TC 111 concerning environmental matters.

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.