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Responsible committee: CPL/61 Safety of household and similar electrical appliances

Interested committees:

Title: Draft BS EN 60335-2-118 Household and similar electrical appliances - Safety

Part 2-118: Particular requirements for professional ice-cream makers

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

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THIS DRAFT IS NOT CURRENT BEYOND 23 August 2023**

This draft is issued to allow comments from interested parties; all comments will be given consideration prior to publication. No acknowledgement will normally be sent. **See overleaf for information on the submission of comments.**

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Information on the co-operating organizations represented on the committees referenced above may be obtained from <http://standardsdevelopment.bsigroup.com>

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

PROJECT NUMBER:

IEC 60335-2-118 ED2

DATE OF CIRCULATION:

2023-06-30

CLOSING DATE FOR COMMENTS:

2023-09-22

SUPERSEDES DOCUMENTS:

61C/903/RR**IEC SC 61C : SAFETY OF REFRIGERATION APPLIANCES FOR HOUSEHOLD AND COMMERCIAL USE**

SECRETARIAT:

Germany

SECRETARY:

Mr Dario Perroni

OF INTEREST TO THE FOLLOWING COMMITTEES:

TC 31, TC 61, SC 61D, TC 66

PROPOSED HORIZONTAL STANDARD:



Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

☐ EMC☐ ENVIRONMENT☐ QUALITY ASSURANCE☒ SAFETY

This document is still under study and subject to change. It should not be used for reference purposes.

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

Recipients of this document are invited to submit, with their comments, notification of any local regulations or technical reasons that may exist and should be considered should this proposal proceed, recognizing that failure to address such requirements could result in the need for new or existing "In Some Countries" clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

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

NOTE FROM TC/SC OFFICERS:

In this first CD we see:

- The requirements in the published standard IEC 60335-2-89 ed. 3;
- The accepted requirements (see 61C/893A/CC) from SC61C/WG4 & 61C for part 2-89 ed. 4.

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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.
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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 part of International Standard 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.

This second edition cancels and replaces the first edition published in 2020, and its corrigendum 1 (2021-08). This edition constitutes a technical revision.

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

- the text has been aligned with Ed 6 of Part 1;
- requirements for appliances employing R-744 system have been added (7.1, 7.12.1, 22.112);
- additional requirements for appliances employing flammable refrigerant have been added (7.1, 7.6, 7.12, 7.15, 21.105, 22.108, 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, 22.124, 22.125, 22.126, Annex CC);
- compatibility tests for winding insulation of motor-compressors used with different types of refrigerants and oils have been introduced (22.9);

- annex AA has been modified to cover motors that are supplied at a voltage that is different from the rated voltage of the appliance;
- annex BB has been updated to align with the latest edition of IEC 60079-15;

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

CDV	Report on voting
61C/XXX/CDV	61C/XXX/RVC

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.

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

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

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

This part 2 is to be used in conjunction with the 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: Safety 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 "<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.

176 which to make products in accordance with the new requirements and to equip themselves for conducting new or
177 revised tests.

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

180

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 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 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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY

Part 2-118: Particular requirements for professional ice-cream makers

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of appliances for making ice cream and artisan gelato.

Appliances taken into account are those intended for commercial use and similar appliances not intended for normal household use but which may nevertheless be a source of danger to the public, such as appliances intended to be used by laymen in shops, stores, by artisans or on farms, which rated voltage is not more than 250 V for single-phase appliances and 480 V for other appliances.

Appliances covered by this standard are provided with a refrigerant condensing unit which is usually incorporated, but for some appliances may be remote.

As far as is practicable, this standard deals with the common hazards presented by these types of appliances including those that use flammable refrigerants and appliances employing R-744 refrigerant.

This International Standard is not applicable to appliances with a mass of flammable refrigerant exceeding the limits specified in 22.113 or to appliances with that use refrigerants with a toxicity classification of B according to ISO 817.

It does not cover those features of construction and operation of refrigerating appliances that are dealt with in ISO standards.

This standard also applies to following types of appliances:

- mixers to make ice cream and similar pastry products in which, for the preparation of the product, heating process is made within the appliance before the cooling process;
- appliances for storing whipping cream mix in a refrigerated tank and for whipping the cream for the delivery process.

NOTE 101 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 by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

This standard does not apply to:

- split systems having a **refrigerant charge of flammable refrigerant** exceeding 150 g in any **refrigerating circuit**;
- ice cream appliances for household use (IEC 60335-2-24);
- appliances intended exclusively for industrial purposes;
- 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 60335-2-34:2021, *Household and similar electrical appliances – Safety – Part 2-34: Particular requirements for motor-compressors*

Secretary note to NCs: SC61C/MT1 (team responsible for the compressor standard part 2-34) is working on a new edition 7. The text could be aligned to the new edition 7.

IEC 60598-1:2020, *Luminaires – Part 1: General requirements and tests*

IEC 60947-5-1, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices*

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

ISO 817, *Refrigerants – Designation and safety classification*

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

IEC 60079-7:2015/AMD1:2017 ¹

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

IEC 60079-1:2014, *Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"*

ISO 5149-1, *Refrigerating systems and heat pumps – Safety and environmental requirements – Part 1: Definitions, classification and selection criteria*

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

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

IEC 60730-2-6:2015, *Automatic electrical controls – Part 2-6: Particular requirements for automatic electrical pressure sensing controls including mechanical requirements*
IEC 60730-2-6:2015/AMD1:2019

IEC 60079-29-1:2016, *Explosive atmospheres - Part 29-1: Gas detectors – Performance requirements of detectors for flammable gases.*

IEC 60079-29-1:2016/AMD1:2020

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.9 Addition:

3.1.9.101

normal operation for ice cream making appliances

ice cream making appliances operated under the following conditions:

The appliance uses the maximum quantity of the mixture of ingredients indicated in the instructions which gives the most unfavourable results, the mixture being at an initial temperature of $23\text{ °C} \pm 2\text{ °C}$.

Appliances are operated for the time necessary to reach steady state conditions.

For appliances connected to a water supply, the water other than cooling water, is at a temperature of $15\text{ °C} \pm 2\text{ °C}$ and at and the most unfavourable pressure specified in the instructions. The cooling water is at the temperature specified in 5.7.

For appliances with a separate **refrigerant unit**, the **refrigerant unit** is connected to the cabinet in accordance with the manufacturer's instructions.

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

3.1.9.102**normal operation for pasteurising ice cream making appliances**

pasteurising ice cream making appliances operated under the following conditions:

Appliances are operated at ambient temperature as indicated in 5.7.

The appliance is filled using the maximum quantity of the mixture of ingredients indicated in the instructions which gives the most unfavourable results, the mixture being at an initial temperature of $23\text{ °C} \pm 2\text{ °C}$.

The appliance shall be operated for the time necessary for the mix to reach the maximum pasteurisation temperature and then, for the cooling process, for the number of cycles needed to reach steady state conditions.

3.1.9.103**normal operation for cream whipping appliances**

cream whipping appliances operated under the following conditions:

Appliances are operated at an ambient temperature as indicated in 5.7.

The appliance is filled with liquid cream being kept at preservation temperature of $4\text{ °C} \pm 1\text{ °C}$ in the maximum quantity prescribed by the instructions and shall be operated the time necessary to reach steady state conditions.

The appliance is operated in continuous or cyclic mode, following the instructions for user.

3.1.9.104**refrigerant charge**

mass of refrigerant within a **refrigerating circuit**

3.1.9.105**transcritical refrigeration system**

refrigeration system where the pressure in the high-pressure side is above the pressure where the vapour and liquid states of the refrigerant can coexist in thermodynamic equilibrium

3.6 Definitions relating to parts of an appliance**3.6.101****compression-type appliance**

appliance in which refrigeration is affected by the vaporisation at low pressure in a heat exchanger (**evaporator**) of a liquid refrigerant, the vapour thus formed being restored to the liquid state by mechanical compression at a higher pressure and subsequent cooling in another heat exchanger (**condenser**)

3.6.102**refrigerating circuit**

combination of interconnected refrigerant-containing parts constituting one closed circuit in which the refrigerant is circulated for the purpose of extracting and delivering heat

3.6.103**condenser**

heat exchanger in which, after compression, vaporised refrigerant is liquefied by rejecting heat to an external cooling medium

3.6.104**evaporator**

heat exchanger in which, after pressure reduction, the liquid refrigerant is vaporised by absorbing heat from the medium to be refrigerated

3.6.105**refrigerant unit**

factory assembled unit for performing part of the refrigeration cycle (compressing gas, condensation or gas cooling) comprising one or more refrigerant compressors with motors, condensers, liquid receivers, interconnecting pipe work and ancillary equipment all mounted on a common base

3.6.106**potential leak point**

point in a **refrigerating circuit** where **refrigerant** may leak

Note 1 to entry: The following are considered to be **potential leak point**:

- interconnecting joints between parts of the **refrigerating circuit**;
- pipes with a bended radius, measured along the centre line, of less than 2,5 times the external pipe diameter;

Note 2 to entry: The following are not considered to be **potential leak points**:

- pipes with a bend radius, measured along the centre line, equal to or greater than 2,5 times the external pipe diameter;
- welded telescopic joints of the motor-compressor;
- welding of the pipes through the motor-compressor housing;
- welding of hermetic glass to metal seals (fusite).

3.6.107**heating system**

heating element with associated components such as timers, switches, **thermostats** and other controls

3.6.108**ancillary heating element**

heating device which performs an auxiliary function, such as a defrost heater, door heater or anti-condensation heater

3.6.109**pasteurising cycle**

cycle during which the mixture is brought to the pasteurising temperature and then immediately cooled down to a preservation temperature $\leq 5\text{ }^{\circ}\text{C}$

3.6.110**free space**

any space with a volume exceeding 60 l where a child can be entrapped and which is accessible after opening any door, lid or drawer and removing any detachable internal parts, including shelves, containers or drawers which are only accessible after opening any door, lid or drawer

In calculating the volume, a space with any single dimension not exceeding 150 mm or any two orthogonal dimensions each of which do not exceed 200 mm is ignored.

Note 1 to entry: Evaluation of the ignored volume can be checked by applying a 150 mm $\pm$ 0,5 mm diameter sphere or a square with 200 $\pm$ 0,5 mm side without appreciable force. The volume can be ignored if the sphere or square cannot fit inside.

3.6.111**maximum allowable pressure (PS)**

maximum pressure which system or component is designed, as specified by the manufacturer

3.6.112**pressure relief device**

pressure sensing device, intended to reduce pressure automatically when pressures within the refrigeration system exceed the setting pressure of the device during abnormal operation

3.6.113**hermetically sealed system**

system in which all refrigerant containing parts are sealed by welding, brazing or a similar permanent connection

3.6.114**gas cooler**

heat exchanger in which, after compression, the refrigerant is cooled down, by transferring heat to an external cooling medium, without changing state

Note 1 to entry: A **gas cooler** is normally used in **transcritical refrigeration systems**.

3.7 Definitions relating to safety components**3.7.101****Bursting disc**

disc or foil which bursts at a predetermined pressure to reduce a pressure in a refrigeration system

3.8 Definitions relating to miscellaneous matter**3.8.101****flammable refrigerant**

refrigerant with a flammability classification of Class 2L, Class 2 or Class 3 in accordance with ISO 817.

Note 1 to entry: For refrigerant blends which have more than one flammability classification, the most unfavourable classification is taken for the purposes of this definition

3.8.102**qualified person**

person having the appropriate technical training and experience necessary to be aware of hazards to which he or she is exposed in performing a task and of measures to minimise the danger to themselves or other persons.

4 General requirement

This clause of part 1 is applicable except as follow.

Addition:

The use of **flammable refrigerants** involves some additional hazards that are not associated with appliances which use non-**flammable refrigerants**.

This standard addresses the additional hazards due to the potential leakage of **flammable refrigerants**.

5 General conditions for the tests

This clause of part 1 is applicable except as follows.

5.2 Addition:

At least one additional specially prepared sample is required for the tests of 22.113.

Unless the motor-compressor complies with IEC 60335-2-34, at least one additional specially prepared sample is required for the tests of 22.111.

Unless the motor-compressor complies with IEC 60335-2-34, at least one additional specially prepared sample is required for the test of 19.1.

At least one additional sample of the fan motor, thermal motor protector combination may be required for the test of 19.1.

The tests of 22.7 and 22.110 may be performed on separate samples.

Due to the potentially hazardous nature of the tests of 22.113, 22.114, 22.115 and 22.116 and 22.118, special precautions may need to be taken when performing the tests.

5.3 Addition:

The test of 15.101 is carried out immediately after the test of 15.2.

5.4 Replacement:

For appliances intended to be connected to water supply, water is supplied at the appropriate rated pressure, according to the instructions.

Secretary note to NCs: SC61C/MT7 is working on a new proposal about the climatic classes. The text could be added in the next CD.

5.7 Addition:

Tests according to Clauses 10, 11, 13 and 19.103 are carried out at an ambient temperature of:

- 32 °C ± 1 °C on appliances of extended temperate (SN) and temperate (N) classes;*
- 38 °C ± 1 °C on appliances of subtropical (ST) class;*
- 43 °C ± 1 °C on appliances of tropical (T) class.*

and for appliances connected to a water supply for cooling at a water temperature

- 20 °C ± 1 °C on appliances of extended temperate (SN) and temperate (N) classes;*
- 25 °C ± 1 °C on appliances of subtropical (ST) class;*
- 30 °C ± 1 °C on appliances of tropical (T) class.*

Other tests are carried out at an ambient temperature of 20 °C ± 5 °C and with cooling water at a temperature of 15 °C ± 2 °C.

Appliances classified for several climatic classes are tested at the ambient temperature relevant to the highest climatic class.

Steady conditions are considered to be established when three successive readings of the temperature, taken at approximately 60 min intervals, at the same point of any operating cycle, do not differ by more than 1 K.

5.101 Compression-type appliances with heating systems are tested as combined appliances.

6 Classification

This clause of part 1 is applicable except as follows.

6.1 Replacement:

For appliances provided with hoses and water outlets for cleaning internal parts designed for ice cream production, the protection against harmful ingress of water shall be at least IPX1.

6.101 Appliances shall be of one or more of the following climatic classes:

- appliances of extended temperate class (SN);
- appliances of temperate class (N);
- appliances of subtropical class (ST);
- appliances of tropical class (T).

Compliance is checked by inspection.

NOTE The climatic classes are specified in IEC 62552-1:2015.

7 Marking and instructions

This clause of part 1 is applicable except as follows.

7.1 Modification:

Replace the third dash by:

– **rated current** in amperes;

Addition:

Appliances shall also be marked with:

- the power input, in watts, of heating systems, if greater than 100 W;
 - the letters SN, N, ST or T indicating the climatic class of the appliance;
 - the total mass of the refrigerant for each separate refrigerant circuit;
 - for a single component refrigerant, at least one of the following:
 - the chemical name,
 - the chemical formula,
 - the refrigerant number;
 - for a blended refrigerant, at least one of the following:
 - the chemical name and nominal proportion of each of the components,
 - the chemical formula and nominal proportion of each of the components,
 - the refrigerant number and nominal proportion of each of the components,
 - the refrigerant number of the refrigerant blend;
 - the chemical name or refrigerant number of the principal component of the insulation blowing gas;
- Refrigerant numbers shall be designated in accordance with ISO 817.
- serial number and year of construction.

NOTE 101 Pipe insulation or small items of insulation are not required to be marked.

Appliances without automatic water level control shall be marked with the maximum permissible water level. Appliances shall be marked with details of the source of supply other than electrical, if any.

Appliances that use **flammable refrigerants** shall be marked with the warning sign ISO 7010-W021 (2011-05).

Appliances having a **refrigerant charge** exceeding 150 g of **flammable refrigerants** within any **refrigerating circuit** shall be marked with the **maximum allowable pressure** for which the system is designed to withstand.

Appliances having a **refrigerant charge** within any **refrigerating circuit** exceeding 4 times the lower flammability limit (LFL) for refrigerants having a safety classification of Class A2 or Class A3 and exceeding 6 times the lower flammability limit (LFL) for refrigerants having a safety classification of Class A2L, shall be marked with symbol IEC 60417-6412 (2019-03).

The values of A used in the symbol IEC 60417-6412 (2019-03) shall be the test room floor area used to demonstrate compliance with Annex CC or larger.

Appliances employing R-744 in a **transcritical refrigeration system** shall be marked with the substance of the following:

WARNING: The system contains refrigerant under high pressure. Do not tamper with the system. It must be serviced by suitably **qualified persons** only.

Appliances employing R-744 refrigerant in a **transcritical refrigeration system** shall be marked with symbol ISO 7000-1701 (2004-01).

Appliances with a remote **refrigerant unit** employing R-744 refrigerant in a **transcritical refrigeration system** shall be marked with the **maximum allowable pressure (PS)**, unless the appliance incorporates a **pressure relief device** pre-fitted to the high-pressure side of the motor-compressor.

Appliances without automatic liquid-level control and which are intended to be connected to the water supply mains or to be filled with liquid by the user shall be marked with the maximum liquid level.

Appliances intended to be connected to the water supply shall be marked with symbol IEC 60417-6375 (2017-03) or with the substance of the following warning:

WARNING: Connect to potable water supply only.

7.2 Addition:

NOTE 101 As an alternative, temperature values in degrees Celsius can be indicated on a control scale.

7.6 Addition:



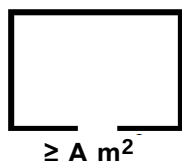
[symbol IEC 60417-6375 (2017-03)] connection to potable water supply



[Warning sign ISO 7010-W021 (2011-05)] warning; Risk of fire/flammable materials



[symbol ISO 7000-1701 (2004-01)] pressure



[symbol IEC 60417-6412 (2019-03)] minimum room floor area

7.12 Modification:

The instructions concerning persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge and children playing with the appliance are not required.

For appliances which use **flammable refrigerants**, the instructions shall include information pertaining to the handling, servicing and disposal of the appliance.

The instructions for appliances which use **flammable refrigerants** shall include the substance of the following warnings:

WARNING: Keep clear of obstruction all ventilation openings in the appliance enclosure or in the structure for building-in.