IEC 60335-2-122

Edition 1.0 2023-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Household and similar electrical appliances – Safety –
Part 2-122: Particular requirements for commercial washing machines

Appareils électrodomestiques et analogues – Sécurité –
Partie 2-122: Exigences particulières pour les machines à laver le linge à usage commercial

IEC 60335-2-122:2023-12(en-fr)

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

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

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-122: Particular requirements for commercial washing machines

FOREWORD

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IEC 60335-2-122 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

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

Draft	Report on voting
61/7010/FDIS	61/7077/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 commercial washing machines.

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.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations can 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.

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 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.

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

– IEC standards published by TC 59 concerning methods for 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.

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –**

Part 2-122: Particular requirements for commercial washing machines

1 Scope

This clause of Part 1 is replaced by the following:

This part of IEC 60335 deals with the safety of electrically operated commercial **washing machines,** their **rated voltage** being not more than 250 V for single phase and 480 V for other appliances.

These appliances are not intended for household and similar purpose. They are used:

- by experts or instructed persons for commercial washing in areas not open to the public, for example on farms and in hotels, hospitals, restaurants and canteens; or
- by laymen in **areas open to the public**, for example launderettes and communal laundry rooms.

The electrical part of appliances making use of other forms of energy is also within the scope of this standard.

These appliances are designed to be connected to hot or cold water supply.

Appliances making use of steam or hot water for heating purposes are also within the scope of this standard.

As far as is practicable, this standard deals with the common hazards presented by these types of appliances. However, in general, it does not consider young children playing with the appliance.

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;
- in many countries, additional requirements are specified for appliances incorporating pressurized parts;
- for appliances having additional functions (e.g. drying function), other standards are also applicable.

This standard does not apply to:

- appliances designed exclusively for industrial purposes (ISO 10472-2);
- 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);
- washing machines appliances for household and similar use (IEC 60335-2-7).

2 Normative references

This clause of Part 1 is applicable except as follows:

Addition:

IEC 60204-1, *Safety of machinery – Electrical equipment of machines – Part 1: General requirements*

IEC 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*

IEC 60730-2-12:2015, *Automatic electrical controls – Part 2-12: Particular requirements for electrically operated door locks*

IEC 61010-1:2010[1], *Safety requirements for electrical equipment for measurement, control, and laboratory use − Part 1: General requirements*
IEC 61010-1:2010/AMD1:2016

ISO 1817:2022, *Rubber, vulcanized or thermoplastic – Determination of the effect of liquids*

3 Terms and definitions

This clause of Part 1 is applicable except as follows:

3.1 Definitions relating to physical characteristics

3.1.9 *Modification:*

Replace the first paragraph with the following:

operation of the appliance under the following conditions:

The appliance is filled with textile material having a mass in the dry condition equal to the maximum mass stated in the instructions, and with the maximum quantity of water for which it is constructed. However, if the power input or current is higher when only 50 % of the textile material is used, the appliance is operated with this load instead.

The temperature of the incoming water is:

- 65 °C ± 5 °C or the temperature indicated in the instructions, whichever is higher, for appliances without heating elements,
- 15 °C ± 5 °C for other appliances or for appliances without heating elements and intended for connection to the cold water supply only.

If the appliance does not incorporate a programmer, the water is heated to 90 °C ± 5 °C or as high as the construction will allow if lower, before starting the first washing period.

The textile material consists of pre-washed double-hemmed cotton sheets having dimensions approximately 70 cm × 70 cm and a specific mass between 140 g/m^2 and 175 g/m^2 in the dry condition.

For **impeller washing machines**, if the textile material does not move properly during operation,

- the quantity of textile material may be reduced until the maximum power input of the motor is attained, or

[1] There exists a consolidated version 3.1:2017 that includes IEC 61010-1:2010 and its Amendment 1:2016.

– a textile material comprising pre-washed double-hemmed cotton sheets, having dimensions of approximately 90 cm × 90 cm and a mass between 90 g/m^2 and 110 g/m^2 in the dry condition, may be used.

However, for **impeller washing machines**, in case of doubt, the test should be carried out using the reduced quantity of textile material.

Appliances with **steam generators** intended to be filled by hand or by a manually operated tap are filled to the indicated level on the **steam generator**.

Appliances with **steam generators** intended to be filled automatically are connected to a water supply having the maximum pressure indicated by the manufacturer. Where the manufacturer specifies a range of pressures, the pressure is adjusted to give the most unfavourable conditions.

The incoming water of appliances with **steam generators** is maintained at

– 15 °C ± 5 °C in the case of appliances intended for connection to a cold water supply;
– 60 °C ± 5 °C or the temperature indicated in the instructions, whichever is higher, in the case of appliances intended for connection to a hot water supply only.

If the appliance is intended for connection to either a hot or cold water supply, the temperature of the water is that which gives the most unfavourable results.

3.5 Definitions relating to types of appliances

3.5.101
washing machine
appliance for cleaning and rinsing of textiles using water which can also have a means of extracting excess water from the textiles

3.5.102
agitator washing machine
washing machine in which the textiles are substantially immersed in the washing water, the mechanical action being produced by a device moving about or along its vertical axis with a reciprocating motion (an agitator)

Note 1 to entry: This device usually extends above the maximum water level.

3.5.103
drum washing machine
washing machine in which the textiles are placed in either a horizontal drum or a drum that is inclined up to and including 45° from the horizontal and the textile is partially immersed in the washing water, the mechanical action being produced by rotation of the drum about its axis, the movement being either continuous or periodically reversed

3.5.104
impeller washing machine
washing machine in which the textiles are substantially immersed in the washing water, the mechanical action being produced by a device rotating about its axis continuously or which reverses after a number of revolutions (an impeller)

Note 1 to entry: The uppermost point of this device is substantially below the minimum water level.

3.5.105
water extraction
function by which water is removed from textiles by centrifugal force

Note 1 to entry: This is usually included as a function of a **washing machine**.

3.6 Definitions relating to parts of an appliance

3.6.101
steam generator
that part of the appliance designed specifically for the generation of steam for exclusive use in a washing compartment

3.8 Definitions relating to miscellaneous matters

3.8.101
area open to the public
area in which the general public, including vulnerable people and children, can have access

Note 1 to entry: Examples are launderettes, communal laundry rooms.

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows:

5.2 *Modification:*

Replace the second and third sentence of the first paragraph with the following:

The relevant tests of 21.101, 21.102 and 22.104 shall be carried out on the same appliance as that used for the test of Clause 18.

5.3 *Addition:*

The test of 15.101 is carried out before the test of 15.3.

The relevant tests of 21.101 and 21.102 are carried out before the test of Clause 18. The test of 22.104 is carried out after the test of Clause 18.

5.7 *Addition:*

Doubt is considered to exist if the temperature of the water is within 6 K of the boiling point and the difference between the temperature rise of the relevant part and the limit specified does not exceed 25 K minus the ***room temperature****.*

6 Classification

This clause of Part 1 is applicable except as follows:

6.1 *Modification:*

Replace the first paragraph with the following:

Appliances shall be **class I**.

6.2 *Addition:*

Appliances shall be at least IPX4.

7 Marking and instructions

This clause of Part 1 is applicable except as follows:

7.1 *Addition:*

Appliances shall be marked in addition with:

- the maximum mass of dry cloth, in kilograms, to be used in the appliance, unless this is indicated in the instructions,
- the water supply pressure or range of pressures, in kilopascals (kPa), for appliances intended to be connected to a water supply, unless this is indicated in the instructions,
- the maximum permissible external steam supply pressure, in kilopascals (kPa), unless this is indicated in the instructions,
- the maximum permissible water and external steam supply temperatures in degrees Celsius, unless this is indicated in the instructions.

Appliances without automatic water level control shall be marked with the maximum water level.

Appliances not intended for connection to the hot water supply and not provided with heating elements shall be marked with the substance of the following:

CAUTION: Do not connect to the hot water supply

7.10 *Addition:*

If the **off position** is only indicated by letters, the word "off" shall be used.

7.12 *Addition:*

The instructions shall indicate if the appliance is also intended to be used in an **area open to the public**. If the appliance is not intended to be used in an **area open to the public**, the instruction shall include the substance of the following warning:

WARNING This appliance shall not be installed where the public has access

The instructions shall specify the maximum mass of dry cloth in kilograms to be used in the appliance.

Modification:

For appliances not intended to be used in an **area open to the public**, 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 is not applicable.

7.12.1 *Addition:*

For appliances having ventilation openings, the installation instructions shall state that the openings shall not be obstructed.

7.15 *Addition:*

The caution relating to connection to the hot water supply shall be on the appliance at its point of attachment to the water supply.

8 Protection against access to live parts

This clause of Part 1 is applicable.

9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.

10 Power input and current

This clause of Part 1 is applicable except as follows:

10.1 *Addition:*

*The selected representative period is the period, such as filling with water, washing, rinsing, **water extraction**, spinning or braking, during which the power input is the highest.*

10.2 *Addition:*

*The selected representative period is the period, such as filling with water, washing, rinsing, **water extraction**, spinning or braking, during which the current input is the highest.*

11 Heating

This clause of Part 1 is applicable except as follows:

11.3 *Addition:*

*Where the external **accessible surfaces** are suitably flat and access permits, then the test probe of Figure 101 is used to measure the temperature rises of external **accessible surfaces** specified in Table 101 and Table 102. The probe is applied with a force of 4 N ± 1 N to the surface in such a way that the best possible contact between the probe and the surface is ensured. The measurement is performed after a contact period of 30 s.*

The probe may be held in place using a laboratory stand clamp or similar device. Any measuring instrument giving the same results as the probe may be used.

11.7 *Modification:*

Replace the first paragraph with the following:

Appliances incorporating a programmer are operated with the programme that results in highest temperature rises,

Appliances incorporating a timer or other time-limiting control are operated in cycles. Each cycle comprises an operating period having a duration equal to the maximum time that can be provided by the control and a rest period of 4 min, including any braking time, during which the appliance is reloaded.

The test may be ended if the temperature rise of any part does not exceed the value determined during the preceding cycle by more than 8 K.

Other appliances are operated with a rest period of 4 min, including any braking time, between cycles until steady conditions are established. Each cycle consists of the following operations: