

INTERNATIONAL STANDARD

IEC 60335-2-7

Sixth edition
2002-07

Household and similar electrical appliances – Safety –

Part 2-7: Particular requirements for washing machines

*Appareils électrodomestiques et analogues –
Sécurité –*

*Partie 2-7:
Règles particulières pour les machines à laver le linge*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 2-7: Particular requirements for washing machines**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

<https://www.iec.ch> This part of International Standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. 7-2002

This sixth edition cancels and replaces the fifth edition published in 2000. It constitutes a technical revision.

The text of this part of IEC 60335 is based on the following documents:

FDIS	Report on voting
61/2133/FDIS	61/2158/RVD

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

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 fourth edition (2001) 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 electric washing machines.

NOTE 2 The following annexes contain provisions suitably modified from other IEC or ISO standards.

Annex AA	Detergent and rinsing agent	IEC 60436 and IEC 60456
Annex BB	Aging tests for elastomeric parts	ISO 1817

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 3 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 4 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 publication will remain unchanged until 2003. At this date, the publication will be

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

The following differences exist in the countries indicated below.

- 3.1.9: Different size cloths are used. The initial water temperature for machines without heating elements and without a wringer is 71 °C (USA).
- 6.1: Class 01 appliances are allowed (China and Japan).
- 6.2: IPX0 appliances are allowed (Canada and USA).
- 11.7: The test durations are different (USA).
- 15.101: The test is different (USA).
- 19.7: Appliances without a programmer are operated until steady conditions are established (USA).
- 19.101: A redundant set of contacts is not required (USA).
- 22.6: The test is different (USA).
- 22.101: The test is carried out at twice the permissible inlet pressure or 2,0 MPa, whichever is higher (Norway).
- 22.101: The test is not carried out (USA).
- Annex AA: The detergent and rinsing agent are different (USA).
- Annex BB: Different tests are carried out (USA).

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.

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.

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.

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.

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-7: Particular requirements for washing machines

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric washing machines for household and similar use, that are intended for washing clothes and textiles, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances.

NOTE 101 Washing machines also supplied with other forms of energy are within the scope of this standard.

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

NOTE 102 Examples of such appliances are washing machines for communal use in blocks of flats or in launderettes.

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

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

NOTE 103 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may 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.

NOTE 104 This standard does not apply to

- 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:

ISO 1817:1999, *Rubber, vulcanized – Determination of the effect of liquids*

3 Definitions

This clause of Part 1 is applicable except as follows.

3.1.9 Replacement:

normal operation

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 water is

- 65 °C ± 5 °C for appliances without heating elements;
- 15 °C ± 5 °C for other appliances.

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/m² and 175 g/m² in the dry condition.

NOTE 101 In washing machines of the continuously rotating impeller type, if the textile material does not move properly during operation, its quantity is reduced until the maximum power input of the motor is attained.

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.

5.3 Addition:

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

5.7 Addition:

NOTE 101 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:

Appliances shall be of **class I**, **class II** or **class III**.

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

The safety release mechanism of power-driven wringers shall be marked to indicate its method of operation, unless its operating means has to be continuously actuated by the user.

NOTE 101 This marking may be near the mechanism.

7.6 Addition:

[symbol 5036 of IEC 60417-1] dangerous voltage

7.10 Addition:

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

7.12 Addition:

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

The instructions for washing machines incorporating a power-driven wringer shall draw attention to the potential hazards involved when operating the wringer and shall state that

- the wringer must be disengaged or switched off when not in use;
- the appliance must not be operated by children.

If symbol 5036 of IEC 60417-1 is used, its meaning shall be explained.

7.12.1 Addition:

The installation instructions shall state

- that the appliance is to be connected to the water mains using new hose-sets and that old hose-sets should not be reused;

NOTE 101 This instruction is not required if the hoses are permanently attached to the appliance.

- the maximum permissible inlet water pressure, in megapascals, for appliances intended to be connected to the water mains;
- the minimum permissible inlet water pressure, in megapascals, if this is necessary for the correct operation of the appliance;
- for washing machines with ventilation openings in the base, that a carpet must not obstruct the openings.