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INTERNATIONAL STANDARD

Household and similar electrical appliances – Safety – Part 2-58: Particular requirements for commercial electric dishwashing machines

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-58: Particular requirements for commercial electric dishwashing machines

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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International Standard IEC 60335-2-58 has been prepared by IEC Committee 61: Safety of household and similar electrical appliances.

This fourth edition cancels and replaces the third edition published in 2002 including its Amendment 1 (2008) and its Amendment 2 (2015). 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 Edition 5.2 of Part 1;
– Requirements and tests for vertical-lift doors with and without a counterbalance system are clarified (20.103, 20.104);

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– Some notes have been converted to normative text or deleted (7.15, 9, 10.1, 11.7, 15.3, 19.4, 20.1, 20.102, 22.106, 22.107, 23.3).

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

FDIS	Report on voting
61/5553/FDIS	61/5587/RVD

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

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

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

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

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

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for commercial electric dishwashing 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 of Part 1 concerns an adjective, the adjective and the associated noun are also in bold.

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

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

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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.

A bilingual version of this publication may be issued at a later date.

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INTRODUCTION

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

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

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

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

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

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

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

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

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

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

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-58: Particular requirements for commercial electric dishwashing machines

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electrically operated dishwashing machines for washing plates, dishes, glassware, cutlery and similar articles, with or without means for water heating or drying, not intended for household use, their **rated voltage** being not more than 250 V for single-phase appliances connected between one phase and neutral and 480 V for other appliances.

NOTE 101 These appliances are used for example in restaurants, canteens, hospitals, and commercial enterprises such as bakeries, butcheries, etc.

NOTE 102 Examples of such appliances are

- **conveyor dishwashers**;
- **batch dishwashers**;
- **brush machines**.

Requirements to avoid backsiphonage of non-potable water into the water mains are specified in Annex BB.

The electrical part of appliances making use of other forms of energy is 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.

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;
- in many countries, additional requirements are specified for pressure appliances.

NOTE 104 This standard does not apply to:

- appliances designed exclusively for industrial purposes, for example machines used in the food industry for cleaning receptacles that serve as packaging for final products (e.g. bottle-cleaning machines), and machines used in manufacturing processes;
- sterilizers and washer-disinfectors used to treat medical materials (IEC 61010-2-040);
- dishwashers that do not form one functional unit, for example where a transportation device transfers the load from one separate unit to another;
- separately driven transport devices not confined in the appliance;
- 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.

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Addition:

IEC 60436:2015, *Electric dishwashers for household use – Methods for measuring the performance*

IEC 61770:2008, *Electric appliances connected to the water mains – Avoidance of back-siphonage and failure of hose-sets*
IEC 61770:2008/AMD 1:2015[1]

ISO 1817:2015, *Rubber, vulcanised or thermoplastic – Determination of the effect of liquids*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1.4 *Addition:*

Note 1 to entry: The **rated power input** is the sum of the power inputs of all the individual elements in the appliance that can be on at one time; where there are several such combinations possible, that giving the highest power input is used in determining the **rated power input**.

3.1.9 *Replacement:*

normal operation
operation of the appliance under the following conditions

Appliances intended to be connected to a water supply are connected to a water supply having the pressure and temperature specified in the instructions.

If a range of temperatures and pressures is specified in the instructions then the water supply is at the conditions within the range that will give the most unfavourable temperature results. Water inlets intended for cold water only are connected to a source supplying water at a temperature of 15 °C ± 5 °C.

The appliance is filled with the maximum quantity of water for which it is designed, without detergents or rinsing agents. **Brush machines** are tested with dishes and the dishwasher is loaded with the maximum number of dishes specified in the instructions for use. The dimensions of the dishes are as specified in IEC 60436. Other appliances are tested without dishes.

Batch dishwashers are operated on continuous cycles, each cycle being followed by a rest period of 1 min. Lids or covers, if any, are left open during the rest period.

Conveyor dishwashers and **brush machines** are operated continuously.

The appliance is operated as follows:

– appliances with automatic timers or programmers are operated with the programme that will give the most unfavourable temperature results;
– appliances that have neither an automatic timer nor a programmer are operated in accordance with the instructions for use, but with the controls intended to be set by the user set at maximum or that setting giving the most unfavourable temperature results.

3.5.101
batch dishwasher
appliance in which the various processes are carried out sequentially on a single load

[1] There exists a consolidated edition 2.1 (2015) that includes edition 2 and its Amendment 1.

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3.5.102
brush machine
appliance in which plates are cleaned by being placed between or held in contact with brushes or similar devices

3.5.103
conveyor (rack or flight) dishwasher
appliance in which the various processes, e.g. washing, rinsing etc., are carried out, the load being moved through the various operations automatically

3.8.101
indicated level
mark on the appliance to indicate the maximum liquid level for correct operation

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 tests of 22.6 are carried out before the tests of Clause 19.

5.101 *Appliances are tested as* ***motor-operated appliances****, even if they incorporate a heating element.*

Appliances incorporating means for heating water, but that may also be operated without the heating elements being energized, are tested without the heating elements energized should this be more unfavourable.

5.102 *Appliances, when assembled in combination with or incorporating other appliances, are tested in accordance with the requirements of this standard. The other appliances are operated simultaneously in accordance with the requirements of the relevant standards.*

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 *Replacement:*

Appliances shall be **class I** with respect to protection against electric shock.

Compliance is checked by inspection and by the relevant tests.

6.2 *Replacement:*

Appliances shall be at least IPX1 with respect to protection against harmful ingress of water.

Compliance is checked by inspection and by the relevant tests.

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