

# INTERNATIONAL STANDARD

**IEC**  
**60335-2-58**

Third edition  
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## Household and similar electrical appliances – Safety –

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

*Appareils électrodomestiques et analogues –  
Sécurité –*

*Partie 2-58:  
Règles particulières pour les lave-vaisselle  
électriques à usage collectif*



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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 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.
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- 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.

This part of International Standard IEC 60335 has been prepared by IEC subcommittee 61E: Safety of electrical commercial catering equipment, of IEC technical committee 61: Safety of household and similar electrical appliances.

This third edition cancels and replaces the second edition published in 1995 and its amendment 1 (1998). It constitutes a technical revision.

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

FDIS	Report on voting
61E/406/FDIS	61E/418RVD

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 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 .

The committee has decided that the contents of this publication will remain unchanged until 2004. 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.

- 6.1: Class 01 appliances are allowed (Japan).
- 6.2: For appliances intended to be installed in a kitchen, an appropriate degree of protection against harmful ingress of water is required according to their height of installation (France).
- 13.2: Leakage current limits are different (Japan).
- 16.2: Leakage current limits are different (Japan).
- Clause 21: For appliances intended to be installed in a kitchen, different values of impact energy are applicable according to the height of the impact point (France).

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

## 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 2-58: 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 CC.

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;
- for appliances intended for disinfection, 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;
- 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.

*Addition:*

IEC 60436:1981, *Methods for measuring the performance of electric dishwashers*

IEC 61770:1998, *Electric appliances connected to the water mains – Avoidance of backsiphonage and failure of hose-sets*

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

## 3 Definitions

This clause of Part 1 is applicable except as follows.

### 3.1.4 Addition:

NOTE 101 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  $15\text{ °C} \pm 5\text{ °C}$ .

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.

### 3.101

#### **conveyor (rack or flight) dishwasher**

an appliance in which the various processes e.g. washing, rinsing etc., are carried out, the load being moved through the various operations automatically

**3.102****batch dishwasher**

an appliance in which the various processes are carried out sequentially on a single load

**3.103****brush machine**

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

**3.104****indicated level**

a 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 Modification:**

Replace the requirement paragraph with the following.

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