

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Household and similar electrical appliances – Safety –
Part 2-84: Particular requirements for toilets**

**Appareils électrodomestiques et analogues – Sécurité –
Partie 2-84: Règles particulières pour les toilettes**

IEC 60335-2-84:2002

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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Definitions	8
4 General requirement.....	8
5 General conditions for the tests	9
6 Classification.....	9
7 Marking and instructions.....	9
8 Protection against access to live parts.....	10
9 Starting of motor-operated appliances	10
10 Power input and current	10
11 Heating	10
12 Void.....	11
13 Leakage current and electric strength at operating temperature.....	11
14 Transient overvoltages	11
15 Moisture resistance	11
16 Leakage current and electric strength.....	12
17 Overload protection of transformers and associated circuits	12
18 Endurance.....	12
19 Abnormal operation	12
20 Stability and mechanical hazards	13
21 Mechanical strength.....	13
22 Construction.....	13
23 Internal wiring.....	14
24 Components	15
25 Supply connection and external flexible cords	15
26 Terminals for external conductors.....	15
27 Provision for earthing	15
28 Screws and connections.....	15
29 Clearances, creepage distances and solid insulation	15
30 Resistance to heat and fire.....	16
31 Resistance to rusting.....	16
32 Radiation, toxicity and similar hazards.....	16
Annexes	18
Bibliography.....	18

Figure 101 – Diagram for leakage current measurement for water heaters having bare heating elements 17

Table 101 – Maximum normal temperature rises 11

Table 102 – Maximum abnormal temperature rises 12

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-84: Particular requirements for toilets

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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This part of International Standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This consolidated version of IEC 60335-2-84 consists of the second edition (2002) [documents 61/2227/FDIS and 61/2302/RVD], its corrigendum 1 (August 2003) and its amendment 1 (2008) [documents 61/3350/CDV and 61/3464/RVC].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 2.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

The French version of this standard has not been voted upon.

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 toilets.

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 following differences exist in the countries indicated below.

- 3.1.9: Normal operation is different (USA).
- 6.1: Appliances incorporating water heaters having bare heating elements are not allowed (Greece).
- 6.2: IPX3 heated seats are allowed (Japan).
- 22.103: The test is different (USA).

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication 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 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 the amendment 1 be adopted for implementation nationally not earlier than 12 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.

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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-84: Particular requirements for toilets

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric toilets in which excrement is stored, dried or destructed, their **rated voltage** being not more than 250 V.

NOTE 101 Electric toilets may be used to process garbage such as paper and food waste.

This standard also applies to electric equipment for use with conventional toilets.

NOTE 102 Examples of such electric equipment are

- automatic seat covering devices;
- chopping units;
- heated seats;
- pumping units;
- water heaters for **shower units**.

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 young children playing with the appliance.

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 to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- chemical toilets;
- toilets in which excrement is destructed by combustion.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60068-2-52:1996, *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

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

Appliances are operated in cycles, each cycle being initiated every 10 min, bowl covers being open or closed whichever is more unfavourable. If the cycle is not automatically terminated, the appliance is operated for 15 s, or for the period specified in the instructions, whichever is longer.

If warm air is provided for drying, the drying cycle is initiated immediately after the end of the showering cycle, unless the sequence is automatic.

The excrement tank of **mouldering toilets** is empty or filled with peat, whichever is more unfavourable.

Package toilets are provided with bags.

For **freezing toilets**, 0,3 l of water having a temperature of 37 °C is added each cycle, controls being adjusted to the lowest temperature. They are also operated without water.

Shower units are supplied with water at the most unfavourable pressure that provides an effective spray.

3.101

mouldering toilet

appliance in which excrement is processed by drying

3.102

package toilet

appliance in which excrement is packed in bags and stored in a tank

3.103

freezing toilet

appliance in which excrement is frozen and stored in a tank

3.104

vacuum toilet

appliance in which excrement is evacuated to a storage tank by negative pressure

3.105

shower unit

device incorporated in the appliance that sprays water for cleaning parts of the human body

NOTE **Shower units** may subsequently supply warm air for drying. The units may be incorporated in the seat or bowl.

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.

5.7 Addition:

The temperature of the water used for the tests is $15\text{ °C} \pm 5\text{ °C}$.

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 Modification:

Appliances incorporating water heaters having bare heating elements shall be **class I** or **class III**.

6.2 Addition:

Toilets and heated seats shall be at least IPX4.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.12 Addition:

The instructions shall state how to empty and clean the toilet safely. They shall include details about the final disposal of the excrement or its residue, unless the toilet is connected to the sewage system.

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 applicable.

7.12.1 Addition:

The installation instructions for **class 0I appliances** and **class I appliances** shall state that they have to be earthed.

The installation instructions for appliances incorporating water heaters having bare heating elements shall state the substance of the following:

- the resistivity of the water supply must not be less than Ωcm ;
- the appliance must be permanently connected to fixed wiring.

The installation instructions shall state that the label concerning glowing cigarettes is to be fixed in a conspicuous place beside the toilet (except flushing toilets).

7.101 Toilets, except flushing toilets, shall be provided with a label stating that glowing cigarettes and other burning materials must not be thrown into the toilet.

The label shall be suitable for permanent fixing.

NOTE The label may be fixed on the appliance if it is visible before using the toilet.

Compliance is checked by inspection.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.1 Addition:

Test probe 18 of IEC 61032 is also applied, as specified for test probe B.

8.2 Addition:

Test probe 18 of IEC 61032 is also applied, as specified for test probe B.

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.

11 Heating

This clause of Part 1 is applicable except as follows.

11.3 Addition:

Thermocouples attached to the small blackened disks are also used for measuring the temperature rise of warm air.

11.7 Replacement:

Shower units are operated for 2 min unless the water flow stops automatically. Other appliances are operated until steady conditions are established.

11.8 Addition:

The temperature rises shall not exceed the values shown in Table 101.