IEC 60335-2-2

Edition 6.0 2009-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Household and similar electrical appliances – Safety –
Part 2-2: Particular requirements for vacuum cleaners and water-suction cleaning appliances

Appareils électrodomestiques et analogues – Sécurité –
Partie 2-2: Exigences particulières pour les aspirateurs et les appareils de nettoyage à aspiration d'eau

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-2: Particular requirements for vacuum cleaners and water-suction cleaning appliances

INTERPRETATION SHEET 1

This interpretation sheet has been prepared by technical committee 61: Safety of household and similar electrical appliances

The text of this interpretation sheet is based on the following documents:

ISH	Report on voting
61/5297/ISH	61/5311/RVD

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

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TC 61 interpretation sheet on: Robotic vacuum cleaners supplied with a rechargeable battery that is not recharged in the appliance.

Introduction

There are robotic vacuum cleaners that are supplied with a rechargeable battery that is not recharged in the appliance. A docking station may not be supplied but if it is, it does not provide automatic battery charging facilities. The battery must be removed from the robotic vacuum cleaner for recharging.

Amendment 1 to IEC 60335-1 published in December 2013 changed the title of Annex B from "**Appliances powered by rechargeable batteries**" to "**Appliances powered by rechargeable batteries that are recharged in the appliance**" and introduced a new annex "**Battery-operated appliances powered by batteries that are non-rechargeable or not recharged in the appliance**"

Amendment 1 to IEC 60335-2-2 is now out of step with IEC 60335-1 ed 5.1. It is stated in the Foreword of IEC 60335-2-2 Ed 6 and Ed 6.1 "This Part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments"

ICS 13.120; 97.080

This situation has caused uncertainty on how to test robotic vacuum cleaners supplied with a rechargeable battery that is not recharged in the appliance.

Questions:

1) Should these appliance be tested in accordance with IEC 60335-2-2 and Annex S to IEC 60335-1 Ed 5.1
2) Should any on the modification to Annex B of IEC 60335-1 included in IEC 60335-2-2 Ed 6 and Ed 6.1 be taken into account.

ANSWERS

1) Yes. Annex S of IEC 60335-1 Ed 5.1 is applicable for these appliances
2) The following modifications to Annex B of IEC 60335-1 included in IEC 60335-2-2 Ed 6 and Ed 6.1 should be taken into account: Modification to Clauses 19, 21, 22, 24 and 30

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

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FOREWORD

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

This sixth edition cancels and replaces the fifth edition published in 2002 including its Amendment 1 (2004) and Amendment 2 (2006). It constitutes a technical revision.

The principal changes in this edition as compared with the fifth edition of IEC 60335-2-2 is as follows (minor changes are not listed):

– the text is aligned with IEC 60335-1:2001, and its Amendments 1 and 2 (see text marked with a marginal bar).

This bilingual version (2013-08) corresponds to the monolingual English version, published in 2009-12.

The text of this standard is based on the following documents:

FDIS	Report on voting
61/3871/FDIS	61/3923/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.

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

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

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 vacuum cleaners and water-suction cleaning appliances.

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 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 this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

The following differences exist in the countries indicated below.

– 3.1.9: Normal operation is defined differently (USA).
– 6.1: Class 0 appliances are allowed (Canada, Japan, USA).
– 6.1: Household vacuum cleaners are required to be class II or class III (Denmark, France, Italy, Netherlands, Norway and Turkey).
– 6.2: IPX4 is not required (USA).
– 7.1: The additional marking for appliance outlets for accessories is not required (USA).
– 10.1: The power input of booster settings is taken into account (USA).
– 11.5: Booster settings are activated every 2 min out of 8 min (USA).
– 11.7: The test is carried out with one-third of the cord unreeled until steady conditions are established (USA).
– 15.2: The test is carried out differently (USA).
– 16.3: The test is carried out differently (USA).

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.

The contents of the interpretation sheet of December 2016 have been included in this copy.

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 2-2: Particular requirements for vacuum cleaners and water-suction cleaning appliances

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric vacuum cleaners and **water-suction cleaning appliances** for household and similar purposes, including vacuum cleaners for animal grooming, their **rated voltage** being not more than 250 V. It also applies to **centrally-sited vacuum cleaners** and **automatic battery-powered cleaners**.

This standard also applies to **motorized cleaning heads** and current-carrying hoses associated with a particular vacuum cleaner.

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 and other premises for normal housekeeping purposes, are within the scope of this standard.

NOTE 101 Examples of such appliances are appliances intended to be used for normal housekeeping purposes in hotels, offices, schools, hospitals and similar premises.

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

– persons (including children) whose
  - physical, sensory or mental capabilities; or
  - lack of experience and knowledge

  prevents them from using the appliance safely without supervision or instruction;
– children playing with the appliance.

NOTE 102 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 103 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);
– wet and dry vacuum cleaners, including power brush, for commercial use (IEC 60335-2-69).

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60312, *Vacuum cleaners for household use − Methods of measuring the performance*

ISO 6344-2, *Coated abrasives – Grain size analysis – Part 2: Determination of grain size distribution of macrogrits P12 to P220*

3 Definitions

This clause of Part 1 is applicable except as follows.

3.1.4 *Addition:*

NOTE 101 For appliances incorporating a **booster setting**, the **rated power input** corresponds to the operation of the appliance without the **booster setting** being used.

3.1.9 *Replacement:*

normal operation
operation of the appliance under the following conditions:

the appliance is supplied at **rated voltage** and operated continuously with the air inlet adjusted to give a power input P_m after 20 s

Three minutes later a final adjustment of the air inlet is made, if necessary.

P_m is calculated from the formula

$$P_m = 0{,}5\ (P_f + P_i)$$

where

P_f is the power input in watts, after 3 min of operation with the air inlet unobstructed. Any device that ensures a flow of air to cool the motor in the event of a blockage of the main air inlet is allowed to operate;

P_i is the power input in watts, after a further 20 s of operation with the air inlet blocked. Any device that is adjustable without the aid of a **tool**, and which ensures a flow of air to cool the motor in the event of a blockage of a main air inlet, is rendered inoperative.

If the appliance is marked with a **rated voltage range**, it is supplied at the mean value of the range if the difference between the limits of the range does not exceed 10 % of the mean value. If the difference exceeds 10 %, the supply voltage is the upper value of the range.

The measurements are made with the appliance fitted with a clean dust bag and filter, any water collection container being empty. If the appliance is intended to be used only with a hose, detachable nozzles and tubes are removed and the hose is laid out straight. If the appliance is provided with a hose as an accessory, it is operated without the hose.

Rotating brushes and similar devices are in operation but not in contact with any surface. **Motorized cleaning heads** are connected by means of the hose or tube and are in operation but not in contact with any surface.

Appliance outlets for other accessories are loaded with a resistive load in accordance with the marking.

Automatic battery-powered cleaners are operated with a clean dust bag or filter on the carpet defined in IEC 60312. A frame of 1,5 m by 1,5 m is used on the carpet to limit the area of action. The air inlet is unobstructed.

3.101
water-suction cleaning appliance
appliance for aspirating an aqueous solution that may contain foaming detergent

3.102
booster setting
position of a control resulting in a temporary higher power input that is automatically reduced to the power input value when the setting is not used

3.103
centrally-sited vacuum cleaner
vacuum cleaner that is connected to a ducting system installed in the building

NOTE During use, the nozzle and its associated hose are connected to one of the suction inlets of the ducting system.

3.104
motorized cleaning head
accessory containing a motor that is supplied from the vacuum cleaner and which is attached to the end of a hose or tube

3.105
automatic battery-powered cleaner
automatic vacuum cleaner that operates without human control only within a defined perimeter, within a pre-programmed area or in an area self-controlled by the appliance

The cleaner consists of the mobile part and may have a **docking station**.

3.106
docking station
unit that may provide

– manual or automatic battery charging facilities,
– dust removal,
– data processing facility, and
– suction for the mobile part

NOTE A **docking station** is also known as a base unit.

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 *Addition:*

A new hose is used for each of the tests of 21.101 to 21.105.