

INTERNATIONAL STANDARD

IEC
60335-2-2

Fifth edition
2002-05

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:
Règles particulières pour les aspirateurs
et les appareils de nettoyage à aspiration d'eau*



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –**
**Part 2-2: Particular requirements for vacuum cleaners
and water-suction cleaning appliances**

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.

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

This fifth edition cancels and replaces the fourth edition published in 1993 and its amendments 1 (1998) and 2 (1999). It constitutes a technical revision.

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

FDIS	Report on voting
61/2110/FDIS	61/2143/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 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 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.

- 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).
- 21.101: The tests are carried out differently (Canada and USA).
- 21.102: The tests are carried out differently (Canada and USA).
- 21.103: The tests are carried differently (Canada and USA).
- 21.104: This test is not carried out (USA).
- 25.1: An appliance inlet may be provided if the connector is locked in position (USA).
- 25.7: Lighter cords are allowed for vacuum cleaners for household use, other than centrally-sited types (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 which 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.

<https://standards.iteh.ai/standards/iec/60335-2-2:2002>

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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**.

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

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

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).

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

ISO 3864, *Safety colours and safety signs*

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.

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

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 21.104.

5.101 *Current-carrying hoses operating at **safety extra-low voltage** are not subjected to the tests of 21.101 to 21.104.*

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 Modification:

Vacuum cleaners and **water-suction cleaning appliances** shall be **class I**, **class II** or **class III**.

Vacuum cleaners for animal grooming shall be **class II** or **class III**.

6.2 Addition:

Vacuum cleaners for animal grooming and **water-suction cleaning appliances** shall be at least IPX4.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 Addition:

The appliance shall be marked with the sum of its **rated power input** and the maximum load of the appliance outlet in watts (if applicable).