INTERNATIONAL STANDARD

IEC 60335-2-68

Edition 3.1

2005-11

Edition 3:2002 consolidated with amendment 1:2005

Household and similar electrical appliances – Safety –

Part 2-68: Particular requirements for spray extraction appliances, for industrial and commercial use

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CONTENTS

Withdrawn
iTeh Standards
(https://standards.iteh.ai)
Document Preview
IEC 60335-2-68:2002
https://standards.iteh.ai/catalog/standards/sist/901d17ab-99c6-431f-878e-2ebe87dd8782/iec-60335-2-68-2002

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-68: Particular requirements for spray extraction appliances, for industrial and commercial use

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This part of International Standard IEC 60335 has been prepared by sub-committee 61J: Electrical motor-operated cleaning appliances for industrial use, of IEC technical committee 61: Safety of household and similar electrical appliances.

This consolidated version of IEC 60335-2-68 is based on the third edition (2002) [documents 61J/129/FDIS and 61J/134/RVD] and its amendment 1 (2005) [documents 61J/197/FDIS and 61J/210/RVD].

It bears the edition number 3.1.

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

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.

Withdrawn
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IEC 60335-2-68:2002

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 spray extraction appliances, for industrial and commercial use.

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 A different type of carpet is specified (USA);
- 7.1 Different markings are required (USA);
- 7.12 No requirements for sound marking exist (USA);
- 25.14 The test is not carried out (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.

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

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Document Preview
IEC 60335-2-68:2002
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Withdrawn

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.

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.

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Document Preview
IEC 60335-2-68:2002
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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-68: Particular requirements for spray extraction appliances, for industrial and commercial use

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electrical **portable, motor-operated spray extraction appliances** and electrical attachments intended for industrial and commercial use, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances. These appliances employ water-based **cleaning agents** and are used for cleaning fabrics, upholstery, carpets, floor coverings or hard surfaces

NOTE 101 Commercial uses are for example for use in hotels, schools, hospitals, factories, shops and offices for other than normal housekeeping purposes, and in the rental business.

Machines with or without electrical heating elements and with or without attachments are within the scope of this standard.

This standard covers appliances in which the pressure of the **cleaning agent** is positive and not more than 2,5 MPa, or in which the product of the pressure (in MPa) and the flow of cleaning agent (in litres per minute) does not exceed 100, and in which the temperature of the **cleaning agent** at the spray nozzle outlet does not exceed 85 °C.

This standard also applies to machines handling hazardous dust such as asbestos or liquids for which additional national requirements might apply.

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IEC 60335-2-68:2002
https://standards.iteh.ai/catalog/standards/iec/90fdf7ab-99c6-431f-878c-2ebe87dd8782/iec-60335-2-68-2002
Withdrawn

It is also applicable to appliances making use of other forms of energy for the motor; but it is necessary that their influence is taken into consideration.

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 exclusively designed to handle hazardous solvents, such as flammable or explosive liquids;
- appliances solely designed for household use;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (vapour or gas);
- audio, video and similar electronic apparatus (IEC 60065);
- appliances for medical purposes (IEC 60601);
- hand-held motor-operated electric tools (IEC 60745);
- personal computers and similar equipment (IEC 60950);
- transportable motor-operated electric tools (IEC 61029).

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60312: 1998, *Vacuum cleaners for household use – Methods of measuring the performance*

IEC 60704-2-1, *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 2-1: Particular requirements for vacuum cleaners*

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.

3.1.9 *Replacement:*

normal operation
operation of the appliance as specified in 3.1.9.101 to 3.1.9.102.

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

3.1.9.101 The appliance is operated with the spray extraction pump with the nozzle giving the highest load, the vacuum motor, the device for agitating the carpet pile (if any), the **cleaning agent heater** (if any) and the soiled water discharge pump (if any) all in use. Any marking of short time intermittent operation of the pumps shall be observed.

The **normal operation** P_m of the vacuum motor is obtained at the following power input:

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

where

P_f is the input, in watts, when the appliance has been operated for 3 min, fitted with the nozzle and hose supplied by the manufacturer giving the highest input;

P_i is the input, in watts, when the appliance has been operated for 20 s with the nozzle sealed, immediately following the 3-minute-period with the nozzle open. Any valve or similar device used to ensure a flow of air to cool the motor in the event of a blockage of a main air inlet is rendered ineffective.

P_f and P_i are measured with the supply voltage adjusted to **rated voltage**, or to a voltage equal to the mean value of the **rated voltage range** if the difference between the limits of the **rated voltage range** does not exceed 10 % of the mean value of the range. If the difference between the limits of the **rated voltage range** exceeds 10 % of the mean value, the tests are carried out with the supply voltage set to the upper limit of the range.

The hose is laid out straight. If the appliance is provided with a hose as an optional accessory, it is operated without the hose.

Electrically driven devices for agitating the carpet, if any, are in operation but are not in contact with the floor or any other surface or with the means used to seal the air inlet.

The adjustment of the air inlet is not altered when it is specified that the appliance is operated under normal load, irrespective of the supply voltages specified in the test. Where optional filtration systems are supplied with the spray extraction appliance, the filtration system giving the least air resistance (maximum flow) is fitted.

The normal load is equal to the mean load P_r for the electrically driven agitating device such as a motor driven brush determined in accordance with the following:

Withdrawn
IEC 60335-2-68:2002

- the agitating device operates on a carpet as specified in IEC 60312;
- the mean load P_r is determined when using the device in the following way:

After setting the device according to the manufacturer's instructions the device shall be moved twice over a distance of 5 m in the direction giving the highest load;

- the motor responsible for the airflow operates under the same conditions as determining P_f, i. e. no airflow restrictions, and measurements are taken after 3 min;
- the device is adjusted to the carpet pile height in accordance with the recommendations of the manufacturer;
- it is necessary to move the agitating device slowly across the carpet in the usual manner to avoid carpet damage.

3.1.9.102 Soiled water discharge pumps are normally operated as follows.

The pump delivers a continuous flow of water without any soiled water discharge hose attached to the soiled water outlet of the machines unless the discharge hose is permanently attached to the machine. The vacuum motor shall work during the test, unless an interlock device is provided to prevent combined operation of both motors.

3.101
cleaning agent pre-heater
an electric heating element which can be used only when the spray extraction functions of the appliances are switched off and which is intended to raise the temperature of the **cleaning agent** to operating temperature before the cleaning operation

NOTE If this element or part of it can function at lower power when the spray extraction functions of the appliance are in operation, it is considered as a **cleaning agent heater** whilst so functioning.

3.102
cleaning agent heater
an electric heater which can be used only when the spray extraction functions of the appliances are in operation, and which is intended to maintain the cleaning agent at the correct temperature for effective operation

3.103
cleaning agent
water with or without the addition of a soluble chemical

3.104
spray extraction appliance
an appliance for cleaning purposes, with or without heating elements and with or without attachments, by which a **cleaning agent** under pressure is sprayed into or onto the surface to be cleaned and the resultant soiled liquid is removed by suction in the same operation.

3.105
soiled water discharge pump
a pump for discharging the soiled water from the appliance.

3.106
maximum rated operating pressure
the maximum pressure generated by the pump when operated at **rated voltage** immediately before any pressure relief valve or sensing device operates, or the pressure at which the relief or sensing device is operating, whichever is the higher.

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Document Preview
IEC 60335-2-68:2002
https://standards.iteh.ai/catalog/standards/iec/90fdf7ab-99c6-431f-878c-2ebe87dd8782/iec-60335-2-68-2002
Withdrawn

3.107
conditions of adequate heat dissipation
a) for the **cleaning agent pre-heater**: the conditions that apply when the heating element is operated, starting with the complete appliance at ambient temperature.
b) for the cleaning agent heater: the conditions that apply when the heating element is operated as during normal use of the spray extraction appliance.

3.108
water-suction cleaning appliance
appliance for aspirating an aqueous solution that may contain foaming detergent

3.109
motorized cleaning head
accessory containing a motor that is supplied from the appliance and which is attached to the end of a hand-held hose or tube

NOTE The main cleaning head permanently attached is not regarded as a **motorized cleaning head**.

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable.

6 Classification

This clause of Part 1 is applicable, except as follows.

6.1 *Replacement:*

Spray extraction appliances and their attachments shall be of **class I**, **class II** or **class III** with respect to their protection against electric shock.

Compliance is checked by inspection and by the relevant tests.

6.2 *Addition:*

Spray extraction appliances shall be at least IPX4.

7 Marking and instructions

This clause of Part 1 is applicable, except as follows.

7.1 *Addition:*

- maximum rated operating pressure in MPa;
- maximum outlet temperature of the spraying liquid in °C, if above 50 °C;
- electrically energised attachments shall be marked: "Do not immerse", unless they are IPX7.

NOTE The use of bar on the nameplate to designate the maximum rated operating pressure is allowed

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IEC 60335-2-68:2002
https://standards.iteh.ai/catalog/standards/iec/90fdf7ab-99c6-431f-878c-2ebe87dd8782/iec-60335-2-68-2002
Withdrawn