



UL 60335-2-69

STANDARD FOR SAFETY

Household and Similar Electrical Appliances – Safety – Part 2-69: Particular Requirements for Wet and Dry Vacuum Cleaners, including Power Brush, for Commercial Use

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UL Standard for Safety for Household and Similar Electrical Appliances – Safety – Part 2-69: Particular Requirements for Wet and Dry Vacuum Cleaners, including Power Brush, for Commercial Use, UL 60335-2-69

First Edition, Dated March 25, 2022

Summary of Topics

This first edition of ANSI/UL 60335-2-69 is an adoption of IEC 60335-2-69, Household and similar electrical appliances – Safety – Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for commercial use (Edition 5, issued by the IEC June 2016). Please note that the national difference document incorporates all of the U.S. national differences for UL 60335-2-69.

The new requirements are substantially in accordance with Proposal(s) on this subject dated July 2, 2021 and October 15, 2021.

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Third Edition
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Underwriters Laboratories Inc.
UL 60335-2-69
First Edition

Household and Similar Electrical Appliances – Safety – Part 2-69: Particular Requirements for Wet and Dry Vacuum Cleaners, including Power Brush, for Commercial Use

March 25, 2022

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ANSI/UL 60335-2-69-2022



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PREFACE

This is the harmonized CSA Group and UL standard for Household and similar electrical appliances – Safety – Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for commercial use. It is the third edition of CSA C22.2 No. 60335-2-69, and the first edition of UL 60335-2-69. This edition of CSA C22.2 No. 60335-2-69 supersedes the previous edition published in 2001 as CAN/CSA-E60335-2-69 (adopted IEC 60335-2-69:1997, including Amendment 1:2000).

This harmonized standard is based on IEC Publication 60335-2-69, Fifth edition, Household and similar electrical appliances – Safety – Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for commercial use, issued June 2016. IEC 60335-2-69 is copyrighted by the IEC.

This harmonized standard was prepared by CSA Group and Underwriters Laboratories Inc. (UL). The efforts and support of the Technical Harmonization Committee are gratefully acknowledged.

This standard is considered suitable for use for conformity assessment within the stated scope of the standard.

This standard was reviewed by the CSA Subcommittee on Electrical Motor and Battery-Operated Cleaning Appliances for Industrial and Commercial Use, under the jurisdiction of the CSA Technical Committee on Consumer and Commercial Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee. This standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

Application of Standard

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

CSA C22.2 No. 60335-2-69 is to be used in conjunction with the second edition of CAN/CSA-C22.2 No. 60335-1. The requirements for wet and dry vacuum cleaners, including power brush, for commercial use, are contained in this Part 2 Standard and CAN/CSA-C22.2 No. 60335-1. Requirements of this Part 2 Standard, where stated, amend the requirements of CAN/CSA-C22.2 No. 60335-1. Where a particular subclause of CAN/CSA-C22.2 No. 60335-1 is not mentioned in CSA C22.2 No. 60335-2-69, the CAN/CSA-C22.2 No. 60335-1 subclause applies.

UL 60335-2-69 is to be used in conjunction with the sixth edition of UL 60335-1. The requirements for wet and dry vacuum cleaners, including power brush, for commercial use are contained in this Part 2 Standard and UL 60335-1. Requirements of this Part 2 Standard, where stated, amend the requirements of UL 60335-1. Where a particular subclause of UL 60335-1 is not mentioned in UL 60335-2-69, the UL 60335-1 subclause applies.

Level of Harmonization

This standard adopts the IEC text with national differences.

This standard is published as an equivalent standard for CSA Group and UL.

An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those

recognized as being in accordance with NAFTA Article 905, for example, because of fundamental climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

All national differences from the IEC text are included in the CSA Group and UL versions of the standard. While the technical content is the same in each organization's version, the format and presentation may differ.

Reasons for differences from IEC

Differences from the IEC are being added in order to address regulatory and safety situations present in the US and Canada.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

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NATIONAL DIFFERENCES

National Differences from the text of International Electrotechnical Commission (IEC) Publication 60335-2-69, Household and similar electrical appliances – Safety – Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for commercial use, copyright 2016, are indicated by notations (differences) and are presented in bold text. The national difference type is included in the body.

There are five types of National Differences as noted below. The difference type is noted on the first line of the National Difference in the standard. The standard may not include all types of these National Differences.

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D2 – These are National Differences from IEC requirements based on existing **safety practices**. These requirements reflect national safety practices, where empirical substantiation (for the IEC or national requirement) is not available or the text has not been included in the IEC standard.

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FOREWORD

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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60335-2-69 has been prepared by subcommittee 61J: Electrical motor-operated cleaning appliances for commercial use, of IEC technical committee 61: Safety of household and similar electrical appliances.

This fifth edition cancels and replaces the fourth edition published in 2012. It constitutes a technical revision.

The principal changes in this edition as compared with the third edition of IEC 60335-2-69 are as follows (minor changes are not listed):

- the scope has been revised editorially to avoid misunderstandings;
- terms and definitions has been revised with regard to the requirements revised;

- the standard has been revised in general and updated regarding state-of-the-art, as far as necessary, in particular some changes have been made to Clauses 15, 22 and 25;
- the standard has been aligned with the newest amendment of IEC 60335-1:2010+A1:2013;
- Annex AA was revised and restructured;
- Annex CC was revised;
- general additions for vacuum cleaners with blowing functions have been introduced;
- a new Annex GG ‘Particular requirements for mobile wet vacuum cleaners for rescue and firefighting services (MWF)’ was added.

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

FDIS	Report on voting
61J/637/FDIS	61J/646/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 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 fifth edition (2010) 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 wet and dry vacuum cleaners, including power brush, for 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:

- sub clauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new sub clause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or sub clause;
- 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.

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.

– 22.207: A mobile power generator in accordance with DIN 14685 is required (Germany)

– 25.6: A safety plug in accordance with DIN 49443 is required. (Germany)

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.

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 committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

101DV DE Modify Note 1 and the paragraph following it in the Part 2 Foreword by replacing it with the following:

Note 1 When "Part 1" is mentioned in this Standard, it refers to CAN/CSA-C22.2 No. 60335-1 (2nd Ed.) / UL 60335-1 (6th Ed.)

This part 2 supplements or modifies the corresponding clauses in CAN/CSA-C22.2 No. 60335-1 Ed 2: 2016-10-31 / UL 60335-1 Ed. 6: 2016-10-31 (based on IEC 60335-1 Ed. 5.1:2013) (Ed. 5:2010 including corrigendum 1:2010, corrigendum 2:2011, and amendment 1:2013), so as to convert that publication into the CSA/UL standard: *Safety requirements for wet and dry vacuum cleaners, including power brush, for COMMERCIAL USE.*

102DV DE Modify the fifth paragraph following Note 4 in the Part 2 Foreword by replacing it with the following:

Words in **SMALL ROMAN CAPS** in the text are defined in Clause **3**. When a definition concerns an adjective, the adjective and the associated noun are also in **SMALL ROMAN CAPS**.

103DV DE Add the following text at the end of the Part 2 Foreword:

The numbering system in this Standard uses a space instead of a comma to indicate thousands and uses a comma instead of a period to indicate a decimal point. For example, 1 000 means 1,000 and 1,01 means 1.01.

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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.

No Text on This Page

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY – Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for commercial use

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electrical motor-operated vacuum cleaners, including BACK-PACK VACUUM CLEANERS, and DUST EXTRACTORS, for wet suction, dry suction, or wet and dry suction, intended for commercial indoor or outdoor use with or without attachments. They may be provided with a blowing or inflating function.

It also deals with the safety of CENTRALLY-SITED VACUUM CLEANERS, excluding the installation of the system.

1DV.1 DR Modification to add the following:

Clause 1DV.1 of the Part 1 applies.

NOTE 101 Attention is drawn to the fact that additional requirements on the safe installation of CENTRALLY-SITED VACUUM CLEANERS are not addressed by this standard but need to be taken into account.

NOTE 102 This standard applies to machines for COMMERCIAL USE. The following list, although not comprehensive, gives an indication of locations that are included in the scope:

- public use areas such as hotels, schools, hospitals;
- industrial locations, for example factories and manufacturing shops;
- retail outlets, for example shops and supermarkets;
- business premises, for example offices and banks;
- all uses other than normal housekeeping purposes.

They are not equipped with a traction drive. The following power systems are covered:

- mains powered motors up to a RATED VOLTAGE of 250 V for single-phase appliances and 480 V for other appliances.
- battery powered motors.

1DV.2 DE Modification to replace the paragraph and dashed list following note 102 with following:

They are not equipped with a traction drive. Machines equipped with traction drive are under the scope of CSA C22.2 No. 60335-2-72 / UL 60335-2-72. The following power systems are covered:

- mains powered motors up to a RATED VOLTAGE of 250 V for single-phase appliances and 480 V for other appliances,

– **battery powered motors.**

This standard also applies to machines handling HAZARDOUS DUST, such as asbestos.

NOTE 103 Additional requirements for machines handling HAZARDOUS DUST are given in Annex [AA](#). Attention is drawn to the fact that in many countries additional requirements on hazardous substances might apply.

NOTE 104 Radioactive substances are not covered by definition of HAZARDOUS DUST for the purposes of this standard.

This standard does not apply to

- vacuum cleaners and water-suction cleaning appliances for household use (IEC 60335-2-2);
- floor treatment machines for COMMERCIAL USE (IEC 60335-2-67, IEC 60335-2-72);
- spray extraction machines for COMMERCIAL USE (IEC 60335-2-68);
- hand-held mains-operated electrical garden blowers, vacuums and blower vacuums (IEC 60335-2-100);
- hand-held and transportable motor-operated electric tools (IEC 60745 series, IEC 61029 series, IEC 62841 series);
- appliances for medical purposes (IEC 60601-1);
- machines designed for use in corrosive environments;
- machines designed for picking up liquids with a flash point below 55 °C;
- machines designed for use in explosive environments (dust, vapour or gas), except those designed for use in zone 22.

NOTE 105 The flash point temperature limit may vary in different countries. National regulations will need to be taken into account.

NOTE 106 Additional requirements for vacuum cleaners designed for collecting COMBUSTIBLE DUST in zone 22 are given in Annex [CC](#).

NOTE 107 Attention is drawn to the fact that in many countries additional requirements on the safe use of the equipment covered can be specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

1DV.3 DE Modification to replace the dashed items following “This standard does not apply to” with the following:

- **vacuum cleaners and water-suction cleaning appliances for household use (CAN/CSA-E60335-2-2, CSA C22.2 No. 243 / UL 1017)**
- **floor treatment machines for COMMERCIAL USE, (CSA C22.2 No. 60335-2-67 / UL 60335-2-67, CSA C22.2 No. 60335-2-72 / UL 60335-2-72);**
- **spray extraction machines for COMMERCIAL USE (CSA C22.2 No. 60335-2-68 / UL 60335-2-68);**

- hand-held mains-operated electrical garden blowers, vacuums and blower vacuums (CSA C22.2 No. 243 / UL 1017);
- hand-held and transportable motor-operated electric tools (CSA C22.2 No. 60745 series, UL 60745 series, CAN/CSA-E1029 series, UL 987, CSA C22.2 No. 71.2, CSA C22.2 No. 62841 series, UL 62841 series);
- appliances for medical purposes (CAN/CSA-C22.2 No. 60601-1, UL 60601-1, AAMI ES60601-1);
- machines designed for use in corrosive environments;
- machines designed for picking up flammable liquids;
- machines designed for use in explosive environments (dust, vapour or gas);

NOTE Machines designed for use in hazardous locations are evaluated according to requirements of the CE Code and the NEC.

- machines with steam cleaning function (These machines are evaluated to this standard and the applicable requirements for steam cleaning from CSA C22.2 No. 243, UL 1017).

1DV.4 DE Modify Clause 1 by deleting Note 106:

This Note does not apply.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60312-1, *Vacuum cleaners for household use – Part 1: Dry vacuum cleaners – Methods for measuring the performance*

IEC 60335-2-41, *Household and similar electrical appliances – Safety – Part 2-41: Particular requirements for pumps*

IEC 61540, *Petit appareillage – Dispositifs différentiels mobiles sans dispositif de protection contre les surintensités incorporé pour usages domestiques et analogues (PCDM)*

ISO 2602, *Statistical interpretation of test results – Estimation of the mean – Confidence interval*

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

ISO 7731, *Ergonomics – Danger signals for public and work areas – Auditory danger signals*

ISO 11428, *Ergonomics – Visual danger signals – General requirements, design and testing*

2DV DE Modify Clause 2 of the Part 2 by adding the following normative references:

AAMI ES60601-1, Medical electrical equipment – Part 1: General requirements for basic safety and essential performance

ASTM F655, Standard Specification for Test Carpets and Pads for Vacuum Cleaner Testing

IEC TS 62885-1:2018, Surface cleaning appliances – Part 1: General requirements on test material and test equipment

ISO 13849-1, Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design

CSA C22.1:18, Canadian Electrical Code (CE Code), Part I

CSA C22.2 No. 0:20, General requirements – Canadian Electrical Code, Part II

CSA C22.2 No. 0.23:15 (R2020), General requirements for battery-powered appliances

CSA C22.2 No. 71.2-10 (R2020), Electric bench tools

CSA C22.2 No. 243-17, Vacuum Cleaners, Blower Machines, and Household Floor Finishing Machines

CAN/CSA-C22.2 No. 60335-1:16, Household and similar electrical appliances – Safety – Part 1: General requirements

CSA C22.2 No. 60335-2-67:21, Household and similar electrical appliances – Safety – Part 2-67: Particular requirements for floor treatment machines, for commercial use

CSA C22.2 No. 60335-2-68:20, Household and similar electrical appliances – Safety – Part 2-68: Particular requirements for spray extraction machines, for commercial use

CSA C22.2 No. 60335-2-72:21, Household and similar electrical appliances – Safety – Part 2-72: Particular requirements for floor treatment machines with or without traction drive, for commercial use

CSA C22.2 No. 60601-1:14 (R2018), Medical electrical equipment – Part 1: General requirements for basic safety and essential performance

CSA C22.2 No. 60745 series, Hand-held motor-operated electric tools

CSA C22.2 No. 62841 series, Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery

CAN/CSA-E1029 series, Safety of Transportable Motor-Operated Electric Tools

CAN/CSA-E60335-2-2:06 (R2015), Household and similar electrical appliances – Safety – Part 2-2: Particular requirements for vacuum cleaners and water-suction cleaning appliances

CAN/CSA-E60335-2-41:13 (R2018), Household and similar electrical appliances – Safety – Part 2-41: Particular requirements for pumps

NFPA 30 2018, *Flammable and Combustible Liquids Code*

NFPA 484 2019, *Standard for Combustible Metals*

NFPA 652 2019, *Standard on the Fundamentals of Combustible Dust*

NFPA 664, 2020, *Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities*

UL 778, *Motor-Operated Water Pumps*

UL 987, *Stationary and Fixed Electric Tools*

UL 1017, *Vacuum Cleaners, Blower Machines, and Household Floor Finishing Machines*

UL 2595, *General requirements for battery-powered appliances*

UL 60335-1, *Household and similar electrical appliances – Safety – Part 1: General requirements*

UL 60335-2-67, *Household and similar electrical appliances – Safety – Part 2-67: Particular requirements for floor treatment machines, for commercial use*

UL 60335-2-68, *Household and similar electrical appliances – Safety – Part 2-68: Particular requirements for spray extraction machines, for commercial use*

UL 60335-2-72, *Household and similar electrical appliances – Safety – Part 2-72: Particular requirements for floor treatment machines with or without traction drive, for commercial use*

UL 60601-1, *Medical electrical equipment – Part 1: General requirements for basic safety and essential performance*

UL 60745 series, *Hand-held motor-operated electric tools*

UL 62841 series, *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1.9 Replacement:

NORMAL OPERATION

conditions under which the machine is operated in normal use, obtained at the following power input P_m of the vacuum motor:

$$P_m = 0,5 (P_f + P_i)$$

where

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

P_i is the input, in watts, when the machine 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 measurements are made with the machine fitted with a clean dust bag and filter and with the water container, if any, empty. If the machine is intended for use only with a hose, detachable nozzles are removed and the hose is laid out straight. If the machine is provided with a hose as an optional accessory, it is operated without the hose.

Electrically driven devices, 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 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:

- the agitating device operates on a carpet as specified in IEC 60312-1;
- the mean load P_r is determined when using the device in the following way:

After setting the device, the device is 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 for determining P_f , i.e. no airflow restrictions, and measurements are taken after 3 min;
- the device is adjusted to the carpet pile height;
- it is necessary to move the agitating device slowly across the carpet to avoid carpet damage.

Soiled water discharge pumps, if applicable, are 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 works during the test, unless an interlock device is provided to prevent combined operation of both motors.

Machines equipped with an inflating function are also operated whilst equipped with the hose as described in the instructions for use. The hose is placed in a straight line away from the machine. Power adjustment controls are set to the highest input power.

Machines equipped with a blowing function are also operated whilst equipped with the two hoses or as described in the instructions for use. Both hoses are placed in a straight line away from the machine. Power adjustment controls are set to the highest input power. The blowing hose is not equipped with any attachments, e.g. nozzles.

3.1.9DV.1 D2 Modify the first dashed item in 3.1.9 of the Part 2 by replacing it with the following:

– the agitating device operates on a carpet as specified in IEC 60312-1, IEC TS 62885-1, or ASTM F655;

3.1.9DV.2 D2 Modification: Add the following at the end of 3.1.9 of the Part 2:

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 shall be allowed to operate. 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, shall be rendered inoperative.

A VACUUM RELIEF VALVE or similar device that complies with the VACUUM RELIEF VALVE endurance test shall be allowed to operate during the Temperature test.

3.4.2DV D1 Modification: Replace 3.4.2DV of the Part 1 with the following:

SAFETY EXTRA-LOW VOLTAGE

voltage not exceeding 42,4 V peak a.c. or d.c. between conductors and between conductors and earth

3.101

WATER-SUCTION CLEANING MACHINE

machine for sucking up a water-based cleaning solution

3.102

BACK-PACK VACUUM CLEANER

vacuum cleaner designed to have the power source and collector carried on the OPERATOR's back by means of a supporting device

3.103

MOTORIZED CLEANING HEAD

hand-held or hand-guided cleaning device connected to the machine, with an integrated electrical motor

Note 1 to entry: The permanently attached main cleaning head is not regarded as a MOTORIZED CLEANING HEAD.

3.104

HAZARDOUS DUST

non-radioactive dust which is hazardous to health if inhaled, ingested or in contact with the skin

Note 1 to entry: IEC Directive 79/831/EEC amending 67/548/EEC lists dusts for which the general indication of nature of risk is specified as very toxic, harmful, corrosive or irritant; some dusts can be subject to an exposure limit in the country of use; micro-organisms can be considered as dusts creating a hazard to the health of a person.

Note 2 to entry: Requirements for machines intended to pick up HAZARDOUS DUST are specified in Annex [AA](#).

3.105**COMBUSTIBLE DUST**

finely divided solid particles, 500 µm or less in nominal size, which may be suspended in air, may settle out of the atmosphere under their own weight, may burn or glow in air, and may form explosive mixtures with air at atmospheric pressure and normal temperatures

Note 1 to entry: This includes dust and grit as defined in ISO 4225.

Note 2 to entry: The term solid particles is intended to address particles in the solid phase and not the gaseous or liquid phase, but does not preclude a hollow particle.

[SOURCE: IEC 60050-426:2008, 426-02-18]

3.105DV DE Modify 3.105 by adding the following note:

Note 3DV to entry: See Annex [AA](#).

3.106**EXPLOSIVE DUST ATMOSPHERE**

mixture with air, under atmospheric conditions, of flammable substances in the form of dust, fibres or flyings which, after ignition, permits self-sustaining propagation

Note 1 to entry: Minimum ignition energy values for common dusts can be found in Annex [BB](#).

Note 2 to entry: Requirements for machines intended to pick up COMBUSTIBLE DUST in an EXPLOSIVE ATMOSPHERE are specified in Annex [CC](#).

[SOURCE: IEC 60050-426:2008, 426-01-08, modified: the notes to entry have been added]

3.106DV DE Delete Note 2.

This Note does not apply.

3.107**ESD PROTECTED AREA****EPA**

area with a minimum risk for electrostatic discharge that could damage electronic devices, and in which people present in that area are not subjected to any additional risk

Note 1 to entry: Requirements for machines intended to pick up dust in ESD PROTECTED AREAS are specified in Annex [DD](#).

3.108**DUST EXTRACTOR**

stationary or portable equipment specifically designed to be connected to dust-generating machines

Note 1 to entry: A vacuum cleaner is designed to pick up already settled dust.

3.109**CENTRALLY-SITED VACUUM CLEANER**

vacuum cleaner that is connected to a ducting system installed in the building

Note 1 to entry: During use, the nozzle and its associated hose are connected to one of the suction inlets of the ducting system.

3.110

GUARD

part of the machine specifically designed to provide protection by means of a physical barrier, such as, for example, a casing, a shield, a cover, a screen, a door, an enclosure or a fence; other parts of the machine that fulfil a primarily operational function, such as, for example, the frame of the machine, may also fulfil a protective function but are not referred to as GUARDS

Note 1 to entry: Three main kinds of GUARDS can be distinguished: fixed GUARDS, interlocking moveable GUARDS and adjustable GUARDS. Interlocking movable GUARDS are required where frequent access is envisaged, while fixed guards can be used where frequent access is not envisaged.

3.111

OPERATOR

person installing, operating, adjusting, cleaning, moving, or performing USER MAINTENANCE on the machine

3.112

TEST SOLUTION

solution which consists of 20 g of NaCl and 1 ml of a solution of 28 % by mass of dodecyl sodium sulphate in each 8 l of water

Note 1 to entry: The chemical designation of dodecyl sodium sulphate is $C_{12}H_{25}NaSO_4$.

3.113

COMMERCIAL USE

intended use of machines covered by this standard, i.e. not intended for normal housekeeping purposes by private persons but which may be a source of danger to the public

I.e. in particular that

- the machines may be used by cleaning contractors, cleaning staff, etc.;
- they are used in commercial or public premises (i.e. offices, shops, hotels, hospitals, schools, etc.) or in industrial (plants, etc.) and light industrial (workshops, etc.) environments.

Note 1 to entry: COMMERCIAL USE is also called professional use.

3.114

MOBILE MACHINE

machine capable of being moved from one location to another

Note 1 to entry: This includes portable and hand-held appliances, and excludes fixed and stationary appliances.

[SOURCE: IEC 60050-151:2001, 151-16-45, modified: term modified, deletion of the mention of the use of vehicles in the definition and addition of the note to entry]

3.115

MWF VACUUM CLEANER

vacuum cleaner for picking up liquids, intended to be used by rescue and firefighting services, integrating a pump for a continuous disposal of the sucked up liquid

Note 1 to entry: MWF is the abbreviation of Mobile Wet vacuum cleaners for rescue and Firefighting and rescue services.

3.116

INFLATING FUNCTION

operation mode with the clean air exhaust used to inflate objects with the standard suction hose connected to the air outlet of the machine

Note 1 to entry: Only one hose is connected to the machine at a time.

3.117

BLOWING FUNCTION

operation mode with the clean air exhaust connected to an air exhaust hose as specified in the instructions for use, the purpose being to transport the clean exhaust air away from the working location

Note 1 to entry: In this case, two hoses are connected to the vacuum cleaner simultaneously.

3.118DV D2 Add the following definition to Clause 3 of the Part 2:

VACUUM RELIEF VALVE

mechanical device that ensures a flow of air to cool the motor in the event of a blockage of the main air inlet

3.119DV D2 Add the following definition to Clause 3 of the Part 2:

SAFETY-CRITICAL FUNCTION

function(s) required by this standard, the loss of which would cause the appliance to function in a manner that exposes the user to a risk that exceeds the risk permitted by this end product standard under abnormal conditions

3.120DV D2 Add the following definition to Clause 3 of the Part 2:

LOW-VOLTAGE LIMITED-ENERGY (LVLE) CIRCUIT

a circuit involving an a.c. voltage of not more than 30 V r.m.s. or 42,4 V peak, or a d.c. voltage of 60 V and supplied by any of the following:

– a combination of a BATTERY source or an isolated transformer secondary winding and one or more resistors, or a regulating network complying with Items (a) – (c):

a) The maximum load current drawn under any condition of loading, including short circuit, using a resistor is measured 60 s after the application of the load. The resistor is continuously readjusted during this 1 min. period to maintain maximum load current. The measured load current is not exceeding the value listed in [Table 3.120DV](#).

b) With reference to the specified voltage limit, measurement is made with the unit connected to the intended supply voltage and with all loading circuits disconnected.

c) The performance is not affected by malfunction of a single component, excluding resistors. The network complies with the value in [Table 3.120DV](#); or

– a BATTERY with output current limited by overcurrent protection in accordance with [Table 3.120DV](#).

NOTE: A LOW-VOLTAGE LIMITED-ENERGY CIRCUIT is also known as a LVLE CIRCUIT.

**Table 3.120DV
Rating for secondary fuse or circuit protector**

Circuit voltage (V r.m.s.)	Current (A)
20 or less	5
More than 20 but not greater than 60	100/V ^a
^a V is the maximum output voltage, regardless of the load, with the primary energized.	

4 General requirement

This clause of Part 1 is applicable except as follows.

Replacement of the first paragraph by the following:

Machines shall be constructed so that they function safely so as to cause no danger to persons or surroundings during normal use, even in the event of carelessness, and during installation, adjusting, maintenance, cleaning, repairing or transportation.

Addition:

For the purpose of this standard, the term 'appliance' as used in Part 1 is to be read as 'machine'.

4DV.1 DE Modification to the third paragraph of the Part 2 by replacing "cause no danger to persons or surroundings" with "reduce the risk of fire, electric shock, and/or injury to persons".

4DV.2 DE Modification by adding the following to the Part 2:

In Canada, general requirements applicable to these products are provided in CSA C22.2 No. 0.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

5.101 *The TEST SOLUTION is to be stored in a cool atmosphere and used within seven days after its preparation.*

5.102DV D2 Addition of the following clause to Clause 5 of the Part 2:

Machines provided with general-use socket outlets shall be tested with the socket outlets unloaded unless otherwise specified.

5.14DV D2 Modification to add the following note to 5.14 of the Part 1:

NOTE 101DV Attention is drawn to the second paragraph of 5.14, as this requires the evaluation of Class II constructions within Class I machines.

5.17DV D2 Modification to replace 5.17 of the Part 1 with the following:

Battery operated appliances are tested in accordance with Annex [B](#).

6 Classification

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

6.1 Replacement:

Vacuum cleaners and their attachments shall be of one of the following classes with respect to the protection against electric shock:

- CLASS I,
- CLASS II, or
- CLASS III.

Metal parts that may continuously contact the body shall be considered as handles for which 22.36 applies.

Compliance is checked by inspection and by the relevant tests.

6.1DV D2 Modification to add the following paragraph after the third dashed item of Subclause 6.1 of the Part 2:

Machines provided with general-use socket-outlets shall be CLASS I.

6.2 Addition:

Water suction cleaning machines and products intended for outdoor use and storage shall be at least IPX4.

6.2DV D2 Modification to replace 6.2 of the Part 2 with the following:

Products intended for outdoor use and outdoor storage shall be at least IPX4.

7 Marking and instructions

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

7.1 Replacement of the 4th dashed item as follows:

- the business name and address of the manufacturer and, if applicable, his authorized representative; any address shall be sufficient to ensure postal contact;

Addition: