IEC 60335-2-67

Edition 5.0 2021-05
REDLINE VERSION

INTERNATIONAL STANDARD

colour inside

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

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 23.080; 91.140.65

ISBN 978-2-8322-9776-6

Warning! Make sure that you obtained this publication from an authorized distributor.

® Registered trademark of the International Electrotechnical Commission

CONTENTS

FOREWORD 4
INTRODUCTION 2
1 Scope 8
2 Normative references 9
3 Terms and definitions 9
4 General requirement 11
5 General conditions for the tests 11
6 Classification 11
7 Marking and instructions 12
8 Protection against access to live parts 16
9 Starting of motor-operated appliances 16
10 Power input and current 16
11 Heating 16
~~12 Void~~ .....
12 Charging of metal-ion batteries 16
13 Leakage current and electric strength at operating temperature 17
14 Transient overvoltages 17
15 Moisture resistance 17
16 Leakage current and electric strength 19
17 Overload protection of transformers and associated circuits 19
18 Endurance 20
19 Abnormal operation 20
20 Stability and mechanical hazards 21
21 Mechanical strength 22
22 Construction 24
23 Internal wiring 26
24 Components 26
25 Supply connection and external flexible cords 27
26 Terminals for external conductors 28
27 Provision for earthing 28
28 Screws and connections 28
29 Clearances, creepage distances and solid insulation 28
30 Resistance to heat and fire 28
31 Resistance to rusting 29
32 Radiation, toxicity and similar hazards 29
Annexes 34
~~Annex B (normative) Appliances powered by rechargeable batteries that are recharged in the appliance~~ .....
Annex B (normative) Battery-operated appliances, separable batteries and detachable batteries for battery-operated appliances 36
~~Annex S (normative) Battery-operated appliances powered by batteries that are non-rechargeable or not recharged in the appliance~~ .....

Annex AA (normative) Precast paving slabs 38
Annex BB (normative) Requirements for internal combustion engine powered machines using liquefied petroleum gas (LPG) 39
Annex CC (informative) Emission of acoustical noise 42
Annex DD (informative) Emission of vibration 45
Bibliography 46
Index of defined terms 47

Figure 101 – Impact test apparatus 30
Figure 102 – Apparatus for testing the abrasion resistance of current-carrying hoses 31
Figure 103 – Apparatus for testing the resistance to flexing of current-carrying hoses 32
Figure 104 – Configuration of the hose for the freezing treatment 32
Figure 105 – Flexing positions for the hose after removal from the freezing cabinet 33
Figure 106 – Warning symbol: Do not inhale exhaust fumes 33

Table 12 – Pull force and torque 28
Table CC.1 – Determination of uncertainty 44

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-67: Particular requirements for floor treatment machines, for commercial use

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.
2) The formal decisions or agreements of 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 IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
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.

This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 60335-2-67:2012+AMD1:2016 CSV. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 60335-2-67 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. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2012 and its Amendment 1: 2016. It constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

– editorial and technical alignment with IEC 60335-1:2020.

The text of this International Standard is based on the following documents:

CDV	Report on voting
61J/735/CDV	61J/742A/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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 sixth edition (2020) 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: Particular requirements for floor treatment machines, 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:

– 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.

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.

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 committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document 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.

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 2-67: Particular requirements for floor treatment machines, 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 powered floor treatment machines intended for commercial indoor or outdoor use for the following applications:

– scrubbing,
– wet or dry pick-up,
– polishing and dry buffing,
– application of wax, sealing products and powder based detergents,
– shampooing,
– stripping, grinding and scarifying

of floors with an artificial surface.

~~Their~~ These machines have a cleaning motion which is more lateral or periodic than linear.

NOTE 101 By contrast, the cleaning motion of machines covered by IEC 60335-2-72 is more linear than lateral or periodic.

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~~ These machines are not equipped with a **traction drive**.

NOTE 103 Machines for the same intended function but equipped with a traction drive are covered by IEC 60335-2-72.

The following power systems are covered:

– internal combustion engines,
– mains powered motors up to a **rated voltage** of 250 V for single-phase appliances and 480 V for other appliances,
– ~~battery-powered motors~~ **battery-operated machines**.

~~Battery-powered machines~~ **Battery-operated machines** may be equipped with a built-in battery charger.

This standard does not apply to

– vacuum cleaners and water-suction cleaning appliances for household use (IEC 60335-2-2);
– floor treatment appliances for household use (IEC 60335-2-10);
– spray extraction machines for **commercial use** (IEC 60335-2-68);
– wet and dry vacuum cleaners, including power brush, for **commercial use** (IEC 60335-2-69);

NOTE 104 IEC 60335-2-68 and IEC 60335-2-69 cover only machines without traction drive.

– floor treatment machines with or without **traction drive**, for **commercial use** (IEC 60335-2-72);
– hand-held and transportable motor-operated electric **tools** (IEC 60745 series, IEC 61029 series, IEC 62841 series);
– machines designed for use in corrosive or explosive environments (dust, vapour or gas);
– machines designed for picking up hazardous dusts (as defined in IEC 60335-2-69), inflammable substances, or glowing particles;
– machines designed for use in vehicles or on board of ships or aircraft.

NOTE ~~103~~105 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.

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

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

IEC 60335-2-67

Edition 5.0 2021-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

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

Appareils électrodomestiques et analogues – Sécurité – Partie 2-67: Exigences particulières pour les machines de traitement des sols, à usage commercial



IEC 60335-2-67:2021-05(en-fr)

CONTENTS

FOREWORD 4
INTRODUCTION 7
1 Scope 8
2 Normative references 9
3 Terms and definitions 9
4 General requirement 11
5 General conditions for the tests 11
6 Classification 11
7 Marking and instructions 12
8 Protection against access to live parts 15
9 Starting of motor-operated appliances 16
10 Power input and current 16
11 Heating 16
12 Charging of metal-ion batteries 16
13 Leakage current and electric strength at operating temperature 16
14 Transient overvoltages 17
15 Moisture resistance 17
16 Leakage current and electric strength 19
17 Overload protection of transformers and associated circuits 19
18 Endurance 19
19 Abnormal operation 19
20 Stability and mechanical hazards 20
21 Mechanical strength 21
22 Construction 24
23 Internal wiring 26
24 Components 26
25 Supply connection and external flexible cords 27
26 Terminals for external conductors 28
27 Provision for earthing 28
28 Screws and connections 28
29 Clearances, creepage distances and solid insulation 28
30 Resistance to heat and fire 28
31 Resistance to rusting 28
32 Radiation, toxicity and similar hazards 28
Annexes 33
Annex B (normative) Battery-operated appliances, separable batteries and detachable batteries for battery-operated appliances 34
Annex AA (normative) Precast paving slabs 35
Annex BB (normative) Requirements for internal combustion engine powered machines using liquefied petroleum gas (LPG) 36
Annex CC (informative) Emission of acoustical noise 39
Annex DD (informative) Emission of vibration 42

Bibliography 43
Index of defined terms 44

Figure 101 – Impact test apparatus 29
Figure 102 – Apparatus for testing the abrasion resistance of current-carrying hoses 30
Figure 103 – Apparatus for testing the resistance to flexing of current-carrying hoses 31
Figure 104 – Configuration of the hose for the freezing treatment 31
Figure 105 – Flexing positions for the hose after removal from the freezing cabinet 32
Figure 106 – Warning symbol: Do not inhale exhaust fumes 32

Table 12 – Pull force and torque 27
Table CC.1 – Determination of uncertainty 41

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-67: Particular requirements for floor treatment machines, for commercial use

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.
2) The formal decisions or agreements of 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 IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
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.

IEC 60335-2-67 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. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2012 and its Amendment 1: 2016. It constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

– editorial and technical alignment with IEC 60335-1:2020.

The text of this International Standard is based on the following documents:

CDV	Report on voting
61J/735/CDV	61J/742A/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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 sixth edition (2020) 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: Particular requirements for floor treatment machines, 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:

– 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.

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.

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 committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document 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.

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 2-67: Particular requirements for floor treatment machines, 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 powered floor treatment machines intended for commercial indoor or outdoor use for the following applications:

– scrubbing,
– wet or dry pick-up,
– polishing and dry buffing,
– application of wax, sealing products and powder based detergents,
– shampooing,
– stripping, grinding and scarifying

of floors with an artificial surface.

These machines have a cleaning motion which is more lateral or periodic than linear.

NOTE 101 By contrast, the cleaning motion of machines covered by IEC 60335-2-72 is more linear than lateral or periodic.

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.

These machines are not equipped with a **traction drive**.

NOTE 103 Machines for the same intended function but equipped with a traction drive are covered by IEC 60335-2-72.

The following power systems are covered:

– internal combustion engines,
– mains powered motors up to a **rated voltage** of 250 V for single-phase appliances and 480 V for other appliances,
– **battery-operated machines**.

Battery-operated machines may be equipped with a built-in battery charger.

This standard does not apply to

– vacuum cleaners and water-suction cleaning appliances for household use (IEC 60335-2-2);

– floor treatment appliances for household use (IEC 60335-2-10);
– spray extraction machines for **commercial use** (IEC 60335-2-68);
– wet and dry vacuum cleaners, including power brush, for **commercial use** (IEC 60335-2-69);

NOTE 104 IEC 60335-2-68 and IEC 60335-2-69 cover only machines without traction drive.

– floor treatment machines with or without **traction drive**, for **commercial use** (IEC 60335-2-72);
– hand-held and transportable motor-operated electric **tools** (IEC 60745 series, IEC 61029 series, IEC 62841 series);
– machines designed for use in corrosive or explosive environments (dust, vapour or gas);
– machines designed for picking up hazardous dusts (as defined in IEC 60335-2-69), inflammable substances, or glowing particles;
– machines designed for use in vehicles or on board of ships or aircraft.

NOTE 105 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.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

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

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

SOMMAIRE

AVANT-PROPOS 48
INTRODUCTION 51
1 Domaine d'application 52
2 Références normatives 53
3 Termes et définitions 53
4 Exigences générales 55
5 Conditions générales d'essais 56
6 Classification 56
7 Marquages et instructions 56
8 Protection contre l'accès aux parties actives 60
9 Démarrage des appareils à moteur 61
10 Puissance et courant 61
11 Echauffements 61
12 Charge des batteries à ions métalliques 61
13 Courant de fuite et rigidité diélectrique à la température de régime 61
14 Surtensions transitoires 61
15 Résistance à l'humidité 62
16 Courant de fuite et rigidité diélectrique 64
17 Protection contre la surcharge des transformateurs et des circuits associés 64
18 Endurance 64
19 Fonctionnement anormal 64
20 Stabilité et dangers mécaniques 66
21 Résistance mécanique 67
22 Construction 69
23 Câblage interne 72
24 Composants 72
25 Raccordement au réseau et câbles souples extérieurs 72
26 Bornes pour conducteurs externes 74
27 Dispositions en vue de la mise à la terre 74
28 Vis et connexions 74
29 Distances dans l'air, lignes de fuite et isolation solide 74
30 Résistance à la chaleur et au feu 74
31 Protection contre la rouille 74
32 Rayonnement, toxicité et dangers analogues 74
Annexes 79
Annexe B (normative) Appareils alimentés par batteries, batteries séparables et batteries amovibles pour appareils alimentés par batteries 80
Annexe AA (normative) Dalles préfabriquées 81
Annexe BB (normative) Exigences relatives aux machines qui fonctionnent sur moteur à combustion interne au gaz de pétrole liquéfié (GPL) 82
Annexe CC (informative) Emission de bruit acoustique 85
Annexe DD (informative) Emission de vibrations 88

Bibliographie 89
Index des termes définis 90

Figure 101 – Appareillage d'essai de chocs 75
Figure 102 – Appareillage pour l'essai de résistance à l'abrasion des flexibles conducteurs 76
Figure 103 – Appareillage pour l'essai de résistance à la flexion des flexibles conducteurs 77
Figure 104 – Configuration du flexible pour le conditionnement à basse température 77
Figure 105 – Positions du flexible lors des flexions effectuées après le retrait de l'enceinte à basse température 78
Figure 106 – Symbole de mise en garde: Ne pas inhaler les gaz d'échappement 78

Tableau 12 – Force de traction et couple 73
Tableau CC.1 – Détermination de l'incertitude 87

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

_____

APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

Partie 2-67: Exigences particulières pour les machines de traitement des sols, à usage commercial

AVANT-PROPOS

1) La Commission Electrotechnique Internationale (IEC) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de l'IEC). L'IEC a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. À cet effet, l'IEC – entre autres activités – publie des Normes internationales, des Spécifications techniques, des Rapports techniques, des Spécifications accessibles au public (PAS) et des Guides (ci-après dénommés "Publication(s) de l'IEC"). Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec l'IEC, participent également aux travaux. L'IEC collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
2) Les décisions ou accords officiels de l'IEC concernant les questions techniques représentent, dans la mesure du possible, un accord international sur les sujets étudiés, étant donné que les Comités nationaux de l'IEC intéressés sont représentés dans chaque comité d'études.
3) Les Publications de l'IEC se présentent sous la forme de recommandations internationales et sont agréées comme telles par les Comités nationaux de l'IEC. Tous les efforts raisonnables sont entrepris afin que l'IEC s'assure de l'exactitude du contenu technique de ses publications; l'IEC ne peut pas être tenue responsable de l'éventuelle mauvaise utilisation ou interprétation qui en est faite par un quelconque utilisateur final.
4) Dans le but d'encourager l'uniformité internationale, les Comités nationaux de l'IEC s'engagent, dans toute la mesure possible, à appliquer de façon transparente les Publications de l'IEC dans leurs publications nationales et régionales. Toutes divergences entre toutes Publications de l'IEC et toutes publications nationales ou régionales correspondantes doivent être indiquées en termes clairs dans ces dernières.
5) L'IEC elle-même ne fournit aucune attestation de conformité. Des organismes de certification indépendants fournissent des services d'évaluation de conformité et, dans certains secteurs, accèdent aux marques de conformité de l'IEC. L'IEC n'est responsable d'aucun des services effectués par les organismes de certification indépendants.
6) Tous les utilisateurs doivent s'assurer qu'ils sont en possession de la dernière édition de cette publication.
7) Aucune responsabilité ne doit être imputée à l'IEC, à ses administrateurs, employés, auxiliaires ou mandataires, y compris ses experts particuliers et les membres de ses comités d'études et des Comités nationaux de l'IEC, pour tout préjudice causé en cas de dommages corporels et matériels, ou de tout autre dommage de quelque nature que ce soit, directe ou indirecte, ou pour supporter les coûts (y compris les frais de justice) et les dépenses découlant de la publication ou de l'utilisation de cette Publication de l'IEC ou de toute autre Publication de l'IEC, ou au crédit qui lui est accordé.
8) L'attention est attirée sur les références normatives citées dans cette publication. L'utilisation de publications référencées est obligatoire pour une application correcte de la présente publication.
9) L'attention est attirée sur le fait que certains des éléments du présent document de l'IEC peuvent faire l'objet de droits de brevet. L'IEC ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de brevets.

L'IEC 60335-2-67 a été établie par le sous-comité 61J: Appareils de nettoyage à moteur électrique pour usage commercial, du comité d'études 61 de l'IEC: Sécurité des appareils électrodomestiques et analogues. Il s'agit d'une Norme internationale.

Cette cinquième édition annule et remplace la quatrième édition parue en 2012 et son Amendement 1:2016. Elle constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

– alignement rédactionnel et technique sur l'IEC 60335-1:2020.

Le texte de cette Norme internationale est issu des documents suivants:

CDV	Rapport de vote
61J/735/CDV	61J/742A/RVC

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/standardsdev/publications.

La présente partie 2 doit être utilisée conjointement avec la dernière édition de l'IEC 60335-1 et ses amendements. Elle a été établie sur la base de la sixième édition (2020) de cette norme.

NOTE 1 L'expression "la Partie 1" utilisée dans la présente norme fait référence à l'IEC 60335-1.

La présente partie 2 complète ou modifie les articles correspondants de l'IEC 60335-1, de façon à transformer cette publication en norme IEC: Exigences particulières pour les machines de traitement des sols, à usage commercial.

Lorsqu'un paragraphe particulier de la Partie 1 n'est pas mentionné dans cette partie 2, ce paragraphe s'applique pour autant que cela soit raisonnable. Lorsque la présente norme mentionne "addition", "modification" ou "remplacement", le texte correspondant de la Partie 1 doit être adapté en conséquence.

NOTE 2 Le système de numérotation suivant est utilisé:

– les paragraphes, tableaux et figures qui s'ajoutent à ceux de la Partie 1 sont numérotés à partir de 101;

– à l'exception de celles qui sont dans un nouveau paragraphe ou de celles qui concernent des notes de la Partie 1, les notes sont numérotées à partir de 101, y compris celles des articles ou paragraphes qui sont remplacés;

– les annexes qui sont ajoutées sont désignées AA, BB, etc.

NOTE 3 Les caractères d'imprimerie suivants sont utilisés:

– exigences: caractères romains;

– *modalités d'essais: caractères italiques;*

– notes: petits caractères romains.

Les termes en **gras** dans le texte sont définis à l'Article 3. Lorsqu'une définition concerne un adjectif, l'adjectif et le nom associé figurent également en gras.

Une liste de toutes les parties de la série IEC 60335, publiées sous le titre général *Appareils électrodomestiques et analogues – Sécurité*, se trouve sur le site web de l'IEC.

NOTE 4 L'attention des Comités nationaux est attirée sur le fait que les fabricants d'appareils et les organismes d'essai peuvent avoir besoin d'une période transitoire après la publication d'une nouvelle publication IEC, ou d'une publication amendée ou révisée, pour fabriquer des produits conformes aux nouvelles exigences et pour adapter leurs équipements aux nouveaux essais ou aux essais révisés.

Le comité recommande que le contenu de cette publication soit entériné au niveau national au plus tôt 12 mois et au plus tard 36 mois après la date de publication.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous webstore.iec.ch dans les données relatives au document recherché. À cette date, le document sera

- reconduit,
- supprimé,
- remplacé par une édition révisée, ou
- amendé.

IMPORTANT – Le logo "*colour inside*" qui se trouve sur la page de couverture de cette publication indique qu'elle contient des couleurs qui sont considérées comme utiles à une bonne compréhension de son contenu. Les utilisateurs devraient, par conséquent, imprimer cette publication en utilisant une imprimante couleur.

INTRODUCTION

Il a été considéré en établissant cette Norme internationale que l'exécution de ses dispositions était confiée à des personnes expérimentées et ayant une qualification appropriée.

La présente norme reconnaît le niveau de protection internationalement accepté contre les dangers électriques, mécaniques, thermiques, liés au feu et au rayonnement des appareils lorsqu'ils fonctionnent comme en usage normal en tenant compte des instructions du fabricant. Elle couvre également les situations anormales auxquelles on peut s'attendre dans la pratique et elle tient compte de la façon dont les phénomènes électromagnétiques peuvent affecter le fonctionnement sûr des appareils.

Cette norme tient compte autant que possible des exigences de l'IEC 60364, de façon à rester compatible avec les règles d'installation quand l'appareil est raccordé au réseau d'alimentation. Cependant, des règles nationales d'installation peuvent être différentes.

Si un appareil relevant du domaine d'application de la présente norme comporte également des fonctions couvertes par une autre partie 2 de l'IEC 60335, la partie 2 correspondante est appliquée à chaque fonction séparément, dans la limite du raisonnable. Si cela est applicable, on tient compte de l'influence d'une fonction sur les autres fonctions.

Lorsqu'une partie 2 ne comporte pas d'exigences complémentaires pour couvrir les risques traités dans la Partie 1, la Partie 1 s'applique.

NOTE 1 Cela signifie que les comités d'études responsables pour les parties 2 ont déterminé qu'il n'était pas nécessaire de spécifier des exigences particulières pour l'appareil en question en plus des exigences générales.

Cette norme est une norme de famille de produits traitant de la sécurité d'appareils et a préséance sur les normes horizontales et génériques couvrant le même sujet.

NOTE 2 Les normes horizontales et génériques couvrant un risque ne sont pas applicables parce qu'elles ont été prises en considération lorsque les exigences générales et particulières ont été étudiées pour la série de normes IEC 60335. Par exemple, dans le cas des exigences de température de surface pour de nombreux appareils, des normes génériques, comme l'ISO 13732-1 pour les surfaces chaudes, ne sont pas applicables en plus de la Partie 1 ou des parties 2.

Un appareil conforme au texte de la présente norme ne sera pas nécessairement jugé conforme aux principes de sécurité de la norme si, lorsqu'il est examiné et soumis aux essais, il apparaît qu'il présente d'autres caractéristiques qui compromettent le niveau de sécurité visé par ces exigences.

Un appareil utilisant des matériaux ou présentant des modes de construction différents de ceux décrits dans les exigences de cette norme peut être examiné et essayé en fonction de l'objectif poursuivi par ces exigences et, s'il est jugé pratiquement équivalent, il peut être estimé conforme aux principes de sécurité de la norme.

APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

Partie 2-67: Exigences particulières pour les machines de traitement des sols, à usage commercial

1 Domaine d'application

L'article de la Partie 1 est remplacé par le texte suivant:

La présente partie de l'IEC 60335 traite de la sécurité des machines de traitement des sols destinées à un usage commercial en intérieur ou en extérieur pour les applications suivantes:

– le brossage,
– le ramassage à sec ou en présence d'eau,
– le polissage et le polissage à sec,
– l'application de cire, de produits d'étanchéité et de détergents à base de poudre,
– le nettoyage par shampouineuse,
– le décapage, l'abrasion et la scarification

des sols avec une surface artificielle.

Ces machines présentent un mouvement de nettoyage plus latéral ou périodique que linéaire.

NOTE 101 En revanche, le mouvement de nettoyage des machines couvertes par l'IEC 60335-2-72 est plus linéaire que latéral ou périodique.

NOTE 102 La présente norme s'applique aux machines à **usage commercial**. La liste suivante, bien que non exhaustive, donne une indication des endroits inclus dans le domaine d'application:

– zones ouvertes au public, telles que les hôtels, les écoles, les hôpitaux;
– sites industriels, par exemple usines et ateliers de fabrication;
– commerces de détail, par exemple magasins et supermarchés;
– locaux commerciaux, par exemples bureaux et banques;
– tous les usages autres que l'utilisation domestique normale.

Ces machines ne sont pas équipées d'une **commande de dispositif de déplacement**.

NOTE 103 Les machines conçues pour la même fonction prévue mais équipées d'une commande de dispositif de déplacement sont couvertes par l'IEC 60335-2-72.

Les systèmes d'alimentation suivants sont couverts:

– moteurs à combustion interne,
– moteurs alimentés par le réseau de **tension assignée** inférieure ou égale à 250 V pour les appareils monophasés et à 480 V pour les autres appareils,
– **machines alimentées par batteries**.

Les **machines alimentées par batteries** peuvent être équipées d'un chargeur de batterie intégré.

La présente norme ne s'applique pas:

– aux aspirateurs et aux appareils de nettoyage à aspiration d'eau à usage domestique (IEC 60335-2-2);
– aux appareils de traitement des sols à usage domestique (IEC 60335-2-10);
– aux machines de nettoyage par pulvérisation et aspiration à **usage commercial** (IEC 60335-2-68);
– aux aspirateurs qui fonctionnent en présence d'eau ou à sec, y compris les brosses motorisées, à **usage commercial** (IEC 60335-2-69);

NOTE 104 L'IEC 60335-2-68 et l'IEC 60335-2-69 couvrent uniquement les machines sans commande de dispositif de déplacement.

– aux machines de traitement des sols avec ou sans **commande de dispositif de déplacement**, à **usage commercial** (IEC 60335-2-72);
– aux **outils** électroportatifs et portables à moteur (série IEC 60745, série IEC 61029, série IEC 62841);
– aux machines destinées à être utilisées dans des environnements corrosifs ou explosifs (poussière, vapeur ou gaz);
– aux machines destinées à aspirer de la poussière dangereuse (comme défini dans l'IEC 60335-2-69), des substances inflammables ou des particules incandescentes;
– aux machines destinées à être utilisées dans des véhicules ou à bord de navires ou d'avions.

NOTE 105 L'attention est attirée sur le fait que, dans de nombreux pays, des exigences supplémentaires relatives à l'utilisation en toute sécurité de l'équipement couvert peuvent être spécifiées par les organismes sanitaires nationaux, par les organismes nationaux responsables de la protection des travailleurs, par les organismes nationaux responsables de l'alimentation en eau et par des organismes similaires.

2 Références normatives

L'article de la Partie 1 est applicable, avec l'exception suivante.

Addition:

IEC TS 62885-1, *Surface cleaning appliances – Part 1: General requirements on test material and test equipment* (disponible en anglais seulement)

ISO 6344-2, *Abrasifs appliqués – Granulométrie – Partie 2: Détermination de la distribution granulométrique des macrograins P12 à P220*