

Safety of household and similar electrical appliances —

Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for industrial and commercial use

The European Standard EN 60335-2-69:1998, with the incorporation of amendments A1:2000 and A11:2002, has the status of a British Standard

ICS 97.080

National foreword

This British Standard is the English language version of EN 60335-2-69:1998, including amendments A1:2000 and A11:2002. It was derived by CENELEC from IEC 60335-2-69:1997, including amendment 1:2000. It supersedes BS EN 60335-2-69:1996 which will be withdrawn on 2002-04-01.

The CENELEC common modifications have been implemented at the appropriate places in the text. The start and finish of each common modification is indicated in the text by tags [C] [C]. Where a common modification has been introduced by amendment, the tags carry the number of the amendment. For example, the common modifications introduced by CENELEC amendment A11 are indicated by [C11] [C11].

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1] [A1]. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by [A1] [A1].

The UK participation in its preparation was entrusted by Technical Committee CPL/61, Safety of household and similar electrical appliances, to Subcommittee CPL/61/10, Floor treatment machines (industrial), which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
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Summary of pages

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English version

Safety of household and similar electrical appliances — Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for industrial and commercial use

(includes amendments A1:2000 + A11:2002)

(IEC 60335-2-69:1997 + A1:2000, modified)

Sécurité des appareils électrodomestiques et
analogues —

Partie 2-69: Règles particulières pour les aspirateurs
fonctionnant en présence d'eau ou à sec, y compris
les brosses motorisées, à usage industriel et
commercial

(inclut les amendements A1:2000 + A11:2002)

(CEI 60335-2-69:1997 + A1:2000, modifiée)

Sicherheit elektrischer Geräte für den
Hausgebrauch und ähnliche Zwecke —

Teil 2-69: Besondere Anforderungen für Staub- und
Wassersauger einschließlich kraftbetriebener
Bürsten für industrielle und gewerbliche Zwecke
(enthält Änderungen A1:2000 + A11:2002)

(IEC 60335-2-69:1997 + A1:2000, modifiziert)

This European Standard was approved by CENELEC on 1998-10-01. Amendment A1 was approved by CENELEC on 2000-09-01 and amendment A11 was approved by CENELEC on 2002-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The text of document 61J/57/FDIS, future second edition of IEC 60335-2-69 prepared by SC 61J of the IEC Technical Committee 61, was submitted to the IEC-CENELEC parallel vote in October 1996. The results of the vote were discussed during the Edinburgh meeting of CENELEC TC 61 in May 1997 when it was decided to circulate a new draft under the enquiry procedure, document CLC/TC 61 (SEC) 1121. The comments were discussed during the Fehraltorf meeting in October 1997 when it was decided to submit a draft for EN 60335-2-69 to the formal vote.

This draft was circulated in June 1998 and was approved by CENELEC as EN 60335-2-69 on 1998-10-01.

This European Standard replaces EN 60335-2-69:1995.

The following dates are applicable:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1999-04-01
- date on which the national standards conflicting with the EN have to be withdrawn (dow) 2002-04-01

This standard has to be used in conjunction with EN 60335-1, *Safety of household and similar electrical appliances — Part 1: General requirements*. It was established on the basis of the 1994 edition of that standard. Amendments and revisions of part 1 have also to be taken into account and the dates when such changes become applicable will be stated in the relevant amendment or revision of Part 1.

This Part 2 supplements or modifies the corresponding clauses of EN 60335-1, so as to convert it into the European Standard: *Safety requirements for wet and dry vacuum cleaners, including power brush, 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 of Part 1 is to be adapted accordingly.

Subclauses and figures which are additional to those in Part 1 are numbered starting with 101. Annexes which are additional to those in Part 1 are lettered AA, BB, etc.

Special national conditions causing a deviation from this European Standard are listed in Annex ZA and are in addition to those in EN 60335-1.

There are no national deviations from this European Standard, other than those listed in Annex ZB to EN 60335-1.

NOTE 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 2. When a definition of part 1 concerns an adjective, the adjective and the associated noun are also in bold.

Foreword to amendment A1

The text of document 61J/110/FDIS, future amendment to IEC 60335-2-69:1997 prepared by SC 61J of the IEC Technical Committee 61, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 60335-2-69 on 2000-09-01.

The following dates are applicable:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2001-06-01
- date on which national standards conflicting with the amendment have to be withdrawn (dow) 2003-09-01

This amendment supplements or modifies the corresponding clauses of EN 60335-2-69:1998.

There are no special national conditions causing a deviation from this amendment.

There are no national deviations from this amendment.

Foreword to amendment A11

A proposal to amend EN 60335-2-69:1998, document CLC/TC 61(DE)536B, was discussed during the Delft meeting in May 2001 when it was decided to submit a draft for an amendment to the Unique Acceptance Procedure.

The draft was circulated in November 2001 and was approved by CENELEC as amendment A11 to EN 60335-2-69 on 2002-10-01.

The following dates are applicable:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2003-10-01
- date on which the national standards conflicting with the amendment have to be withdrawn (dow) 2005-10-01

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Introduction

An investigation by CENELEC TC 61 has shown that all risks from products within the scope of this standard are fully covered by the Low Voltage Directive, 73/23/EEC. If the product has mechanical moving parts, a risk assessment in accordance with the Machinery Directive, 89/392/EEC, has shown that the risks are mainly of electrical origin and consequently this directive is not applicable. However, the relevant essential safety requirements of the Machinery Directive are covered by this standard together with the principal objectives of the Low Voltage Directive.

1 Scope

This clause of Part 1 is applicable except as follows.

Addition:

This standard applies to electrical motor-operated vacuum cleaners and includes appliances and stationary equipment specifically designed for wet suction, dry suction, or wet and dry suction for industrial and commercial use with or without attachments, for example for suction to withdraw dust or the like from work benches and production machines.

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

This standard also applies to machines handling hazardous dust, e.g. asbestos, or liquids for which additional national requirements apply.

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.

Modification:

Replace the first two dashed lines of note 3 by:

- appliances for household use to which IEC 335-2-2 applies;
- centrally sited stationary vacuum cleaning systems;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (vapour or gas).

Addition:

NOTE 101 For battery-operated appliances, reference shall be made to IEC 335-2-72.

2 Definitions

This clause of Part 1 is applicable except as follows.

2.2.9 Replacement:

normal operation

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-min 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 appliance fitted with a clean dust bag and filter and with the water container, if any, empty. If the appliance is intended for use only with a hose, detachable nozzles are removed and 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, 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 **A1.1.2** of IEC 312;
- 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 should 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.

2.101

soiled water discharge pump

a pump for discharging the soiled water from the machine

Soiled water discharge pumps — if any — 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 machine 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 General requirement

This clause of Part 1 is applicable.

4 General conditions for the tests

This clause of Part 1 is applicable.

5 Void

6 Classification

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

6.1 Replacement

Vacuum cleaners and their attachments shall be **class I**, **class II** or **class III** with respect to their protection against electric shock.

Appliances carried on the body during use shall be **class II** or **class III**.

Compliance is checked by inspection and by the relevant tests.

6.2 Addition:

Water suction appliances shall be so constructed that neither water nor foam from detergents can penetrate into the motor or come in contact with **live parts**.

Water suction appliances shall be at least IPX4 according to IEC 529.

Compliance is checked by inspection and the test of 19.101.

7 Marking and instructions

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

7.1 Addition:

- The maximum **rated power input** of the electrically energized nozzle shall be marked near the receptacle.
- Electrically energized nozzles for vacuum cleaners for wet use shall be marked: “Do not immerse”.

7.9 Addition:

The operation of the motor is deemed to be an adequate indication of the position of the switch which exclusively controls the vacuum motor.

Ⓒ

7.12 Addition:

The front cover of the instruction manual shall include the substance of the following:

CAUTION Read the instruction manual before using the appliance.

This wording may be replaced by symbols Nos. 0434 and 1641 of ISO 7000. If these symbols are used, their meaning is to be explained in the instructions for use.

The instruction manual shall include the substance of the following warnings, as applicable:

- CAUTION This appliance is not suitable for picking up hazardous dust;
- CAUTION This appliance is for dry use only and is not to be used or stored outdoors in wet conditions;
- WARNING Only use the brushes provided with the appliance or those specified in the instruction manual. The use of other brushes may impair safety.

The instruction manual shall give details regarding the following, as applicable:

- the precautions to be taken when using the appliance under specific conditions such as handling flammable liquids or dust, and dust hazardous to health;
- a statement that the appliance is to be disconnected from its power source during cleaning or maintenance and when replacing parts or converting the appliance to another function,
 - for mains operated appliances, the plug is to be removed from the socket-outlet,
 - for battery operated appliances, the key of the supply switch is to be removed or an equivalent disconnection is to be made;
- the intended use of brushes which are specified for the appliance.

The instruction manual shall state the A-weighted sound pressure level L_{PA} in dB(A) emitted by the appliance. If the A-weighted sound pressure level exceeds 85 dB(A), it shall also state the sound power level L_{WA} in dB(A) and that appropriate ear protection has to be used.

NOTE The sound level is measured in accordance with EN 60704-2-1. Ⓒ

Ⓒ The instruction manual shall include the substance of the following:

This appliance is suitable for commercial use, for example in hotels, schools, hospitals, factories, shops, offices and rental businesses.

The instruction manual for mains operated appliances shall include the substance of the following:

- do not allow the rotating brushes to come into contact with the supply cord;
- regularly examine the supply cord for damage, such as cracking or ageing. If damage is found, replace the cord before further use;
- only replace the supply cord with the type specified in the instruction manual;
- only use the socket outlet on the appliance for purposes specified in the instruction manual.

For wet suction appliances, the instruction manual shall state the substance of the following:

- CAUTION If foam or liquid escapes from the appliance, switch off immediately;
- regularly clean the water level limiting device in accordance with the instructions and examine it for signs of damage. Ⓒ

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1 Addition:

NOTE 101 The soiled liquid picked up by the wet suction appliance is considered as conductive.

[A]

8.1.4 Add after the last paragraph:

Isolated battery systems of 18 cells to 24 cells of either acid or alkaline electrochemistry, including gel batteries, shall be regarded as **Class III** provided that:

- the maximum voltage per cell on charge does not exceed 2,7 V;
- there are no **earthed parts** (see Clause 27);
- conductive parts cannot fall on to and thereby bridge **live parts** of opposite polarity (see Clause 22). **[A]**

9 Starting of motor-operated appliances

No requirement.

10 Power input and current

This clause of Part 1 is applicable.

11 Heating

This clause of Part 1 is applicable except as follows.

11.3 Addition:

If it is necessary to dismantle the appliance for fitting thermocouples or other wiring, the input shall be measured before and after fitting at the lowest possible load, for example, with closed suction openings, with brushes not in contact with the floor, with declutched drive, etc. to check that the assembling has been accomplished properly.

11.4 Not applicable.

11.5 Addition:

For the heating test, the normal load P_r on the motor driving the moving brushes can be simulated by a brake or other means.

11.6 Not applicable.

12 Void

13 Leakage current and dielectric strength at operating temperature

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

13.2 Addition

- **Class I** appliances where several motors operate at the same time.....3,5 mA

14 Void