



# SLOVENSKI STANDARD SIST EN 60335-2-69:2009

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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 industrial and commercial use  
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SIST EN 60335-2-69:2009  
Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke -- Teil 2-69: Besondere Anforderungen für Staub- und Wasserauger einschließlich kraftbetriebener Bürsten für industrielle und gewerbliche Zwecke

Appareils électrodomestiques et analogues - Sécurité -- 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

**Ta slovenski standard je istoveten z: EN 60335-2-69:2009**

## **ICS:**

97.080      Aparati za nego tal      Floor treatment appliances

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 60335-2-69**

September 2009

ICS 97.080

Supersedes EN 60335-2-69:2003 + A1:2004 + A2:2008

English version

**Household and similar electrical appliances -  
Safety -  
Part 2-69: Particular requirements for wet and dry vacuum cleaners,  
including power brush, for commercial use  
(IEC 60335-2-69:2002 + A1:2004 + A2:2007, modified)**

Appareils électrodomestiques  
et analogues -  
Sécurité -  
Partie 2-69: Règles particulières  
pour les aspirateurs fonctionnant  
en présence d'eau ou à sec,  
y compris les brosses motorisées,  
à usage commercial  
(CEI 60335-2-69:2002 + A1:2004 +  
A2:2007, modifiés)

Sicherheit elektrischer Geräte  
für den Hausgebrauch  
und ähnliche Zwecke -  
Teil 2-69: Besondere Anforderungen  
für Staub- und Wasserauger  
einschließlich kraftbetriebener Bürsten  
für den gewerblichen Gebrauch  
(IEC 60335-2-69:2002 + A1:2004 +  
A2:2007, modifiziert)

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This European Standard was approved by CENELEC on 2009-09-01. 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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

**CENELEC**

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

**Central Secretariat: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

In the light of the necessity to adapt EN 60335-2-69 with regard to the requirements of the Machinery Directive 2006/42/EC, a draft was prepared by CENELEC TC61/WG6/J in co-operation with the MD Consultant, taking also into account the results of CENELEC TC61/WG6 work on EN 60335-1.

The approach to amend EN 60335-2-69:2003 aiming toward listing the standard under the MD was discussed and approved during the Kista meeting of CENELEC TC 61 in June 2008 (see CLC/TC 61/SEC/1649), when it was decided to submit a draft for an amendment to the Unique Acceptance Procedure.

The draft was circulated as FprAC in December 2008 and was approved by CENELEC as a new edition of EN 60335-2-69 on 2009-09-01.

This European Standard supersedes EN 60335-2-69:2003 + A1:2004 + A2:2008.

In this European Standard the common modifications to the International Standard IEC 60335-2-69:2002 + A1:2004 + A2:2007 are indicated by a vertical line in the left margin of the text.

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) 2009-12-29
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2009-12-29

This Part 2 has to be used in conjunction with EN 60335-1, Household and similar electrical appliances – Safety – Part 1: General requirements. It was established on the basis of the 2002 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 commercial use.

When a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies. When this standard states "addition", "modification" or "replacement", the relevant text of Part 1 is to be adapted accordingly.

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive 2006/42/EC. See Annex ZZ.

NOTE 1 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.;
- subclauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letter Z.

NOTE 2 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.

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.

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## Contents

Introduction .....	6
1 Scope .....	7
2 Normative references .....	8
3 Definitions .....	8
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 .....	14
9 Starting of motor-operated appliances .....	14
10 Power input and current .....	14
11 Heating .....	15
12 Void .....	15
13 Leakage current and electric strength at operating temperature .....	15
14 Transient overvoltages .....	15
15 Moisture resistance .....	15
16 Leakage current and electric strength .....	17
17 Overload protection of transformers and associated circuits .....	17
18 Endurance .....	17
19 Abnormal operation .....	17
20 Stability and mechanical hazards .....	18
21 Mechanical strength .....	19
22 Construction .....	21
23 Internal wiring .....	23
24 Components .....	23
25 Supply connection and external flexible cords .....	23
26 Terminals for external conductors .....	25
27 Provision for earthing .....	25
28 Screws and connections .....	25
29 Clearances, creepage distances and solid insulation .....	25
30 Resistance to heat and fire .....	25
31 Resistance to rusting .....	25
32 Radiation, toxicity and similar hazards .....	25
Annex A (normative) Routine tests .....	29
Annex AA (normative) Particular requirements for vacuum cleaners and dust extractors for the collection of hazardous dusts .....	29
Annex BB (informative) List of dusts which present an explosion risk when subject to ignition conditions .....	41
Annex CC (normative) Particular requirements for vacuum cleaners and dust extractors for the collection of dusts which present an explosion risk .....	47

Annex DD (normative) Particular requirements for vacuum cleaners for use in ESD protected areas .....	54
Annex ZA (normative) Special national conditions .....	57
Annex ZC (normative) Normative references to international publications with their corresponding European publications .....	57
Annex ZE (informative) Specific additional requirements for appliances and machines intended for commercial use .....	59
Annex ZZ (informative) Coverage of Essential Requirements of Directive 2006/42/EC .....	59
 Bibliography .....	 60
 Table 12 – Pull force and torque .....	 24
Table AA.1 – Penetration limits .....	33
Table BB.1 – Explosion parameters .....	41
 Figure 101 – Impact test apparatus .....	 26
Figure 102 – Apparatus for testing the abrasion resistance of current-carrying hoses .....	27
Figure 103 – Apparatus for testing the resistance to flexing of current-carrying hoses .....	27
Figure 104 – Configuration of the hose for the freezing treatment .....	28
Figure 105 – Flexing positions for the hose after removal from the freezing cabinet .....	28
Figure AA.1.1 – Warning label for dust class H machines .....	38
Figure AA.1.2 – Warning label for dust class L and dust M machines .....	38
Figure AA.2 – Test method for essential filter material .....	39
Figure AA.3 – In situ essential filter element test .....	39
Figure AA.4 – Assembled machine test .....	39
Figure AA.Z1 – Sequence and selection of tests according to Clauses AA.22.201, AA.22.203, and AA.22.207 .....	40
Figure CC.1 – Marking – Type 22 vacuum cleaners .....	53
Figure CC.2 – Marking – Type 22 dust extractors .....	53

## Introduction

It has been assumed in the drafting of this European 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 machines 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 machines.

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 machine is connected to the supply mains. However, national wiring rules may differ.

If a machine within the scope of this standard also incorporates functions that are covered by another Part 2 of EN 60335, the relevant Part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

This standard is a product family standard dealing with the safety of machines and takes precedence over horizontal and generic standards covering the same subject.

A machine 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.

A machine employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

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# 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 European Standard deals with the safety of electrical motor-operated vacuum cleaners, including **back-pack vacuum cleaners**, for wet suction, dry suction, or wet and dry suction, intended for commercial indoor or outdoor use with or without attachments.

NOTE Z101 **Commercial use** of these vacuum cleaners is for example their use in hotels, schools, hospitals, factories, shops and offices for other than normal housekeeping purposes.

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 Z102 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 Z103 Radioactive substances are not covered by definition of **hazardous dust** for the purpose of this standard.

NOTE Z104 Attention is drawn to the fact that in many countries additional requirements on the safe use of the equipment covered may be specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

This standard does not apply to

- machines designed to be part of a production process;
- 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 Z105 Additional requirements for vacuum cleaners designed for collecting combustible dust in zone 22 are given in Annex CC.

- vacuum cleaners and water-suction cleaning appliances for household use as covered by IEC 60335-2-2;
- spray extraction machines as covered by IEC 60335-2-68;
- floor treatment machines for commercial use;

NOTE Z106 IEC 60335-2-67 covers floor cleaning and floor treatment machines for industrial and commercial use. IEC 60335-2-72 covers automatic floor treatment machines for industrial and commercial use.

- hand-held mains-operated electrical garden blowers, vacuums and blower vacuums as covered by IEC 60335-2-100;
- centrally sited stationary vacuum cleaning systems;
- **hand-held appliances**;

- hand-held and transportable motor-operated electric tools.

NOTE Z107 The IEC 60745 series covers hand-held motor-operated electric tools; the IEC 61029 series covers transportable motor-operated electric tools.

## 2 Normative references

This clause of Part 1 is applicable except as follows.

*Addition:*

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

IEC 60335-2-2, *Household and similar electrical appliances – Safety – Part 2-2: Particular requirements for vacuum cleaners and water suction cleaning appliances*

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

IEC 60335-2-100, *Household and similar electrical appliances – Safety – Part 2-100: Particular requirements for hand-held mains-operated garden blowers, vacuums and blower vacuums*

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

IEC 61241-1-1, *Electrical apparatus for use in the presence of combustible dust – Part 1-1: Electrical apparatus protected by enclosures and surface temperature limitation – Specification for apparatus*

IEC 61241-10:2004, *Electrical apparatus for use in the presence of combustible dust – Part 10: Classification of areas where combustible dusts are or may be present*

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*

## 3 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  $P_f$  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;
- the mean load  $P_f$  is determined when using the device in the following way:
  - After setting the device, the device shall be moved twice over a distance of 5 m in the direction giving the highest load;
- the motor responsible for the airflow operates under the same conditions as determining  $P_f$ , i.e. no airflow restrictions, and measurements are taken after 3 min;
- the device is adjusted to the carpet pile height;
- 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 shall work during the test, unless an interlock device is provided to prevent combined operation of both motors.

### 3.Z101

#### **water-suction cleaning machine**

machine for sucking up a water-based cleaning solution

### 3.Z102

#### **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.Z103

#### **motorized cleaning head**

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

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

**3.Z104****hazardous dust**

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

NOTE 1 EC 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 may be subject to an exposure limit in the country of use; micro-organisms may be considered as dusts creating a hazard to the health of a person.

NOTE 2 Requirements for machines intended to pick up **hazardous dust** are specified in Annex AA.

**3.Z105****combustible dust**

dust with a particle size below 1 mm, able to undergo an exothermic reaction with air when ignited

**3.Z106****explosive atmosphere (dust)**

atmosphere where the dust will explode when simultaneously subjected to the following conditions:

- the dust must be combustible;
- the dust must be in suspension in the atmosphere which must contain sufficient oxygen to support combustion;
- the dust must have a particle size distribution that will propagate flame;
- the dust concentration in the suspension must be within the explosive range;
- the dust suspension must be in contact with an ignition source of sufficient energy.

NOTE 1 Minimum ignition energy values for common dusts can be found in Annex BB.

NOTE 2 Requirements for machines intended to pick up **combustible dust** in an **explosive atmosphere** are specified in Annex CC.

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**3.Z107****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 Requirements for machines intended to pick up dust in **ESD protected areas** are specified in Annex DD.

**3.Z108****dust extractor**

suction machine with filtration which can be fitted to a machine tool or be placed adjacent to an operation where dust is being generated

**3.Z109****guard**

part of the machine specifically designed to provide protection by means of a physical barrier

**3.Z110****operator**

person installing, operating, adjusting, maintaining, cleaning or moving the machine

**3.Z111****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 The chemical designation of dodecyl sodium sulphate is C<sub>12</sub>H<sub>25</sub>NaSO<sub>4</sub>.

**3.Z112****risk**

probability of being exposed to an injury or damage to health

**3.Z113****commercial use**

intended use of machines covered by this standard in a professional way.

For the purpose of this standard **commercial use** may be read as not intended for domestic use

**4 General requirement**

This clause of Part 1 is applicable except as follows.

*Replace 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’.

**5 General conditions for the tests**

This clause of Part 1 is applicable except as follows.

*Addition:*

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**5.Z101** *The test solution is to be stored in a cool atmosphere and used within seven days after its preparation.*

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**6 Classification**

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

**6.1 Replacement:**

Vacuum cleaners and their attachments shall be one of the following classes with respect to the protection against contact with **live parts**:

- **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.*

**6.2 Addition:**

**Water suction cleaning machines** shall be at least IPX4.

## 7 Marking and instructions

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

### 7.1 *Replace the 4<sup>th</sup> 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:*

Machines shall be marked in addition with the following:

- serial number, if any;
- designation of the machine, may be achieved by a combination of letters and/or numbers;
- designation of series or type, allowing the technical identification of the product. This may be achieved by a combination of letters and/or numbers and may be combined with the designation of machine;
- year of construction, i.e. the year in which the manufacturing process is completed.

Machines equipped with wheels shall be marked with the mass of the most usual configuration in kg.

*Compliance is checked by inspection.*

#### 7.1.Z101 **Motorized cleaning heads** shall be marked with their model or type reference.

*Compliance is checked by inspection.*

#### 7.1.Z102 Power outlets for accessories shall be marked with the maximum load in watts on the power outlet or close to it.

*Compliance is checked by inspection.*

[additions to 7.6, 7.9 deleted]

### 7.12 *Addition:*

The front cover of the instructions shall include the substance of the following warning:

WARNING Read the instruction manual before using the machine.

This wording may be replaced by symbols 0434 and either 1641 or 0790 of ISO 7000.

The words “Original instructions” shall appear on the language version(s) verified by the manufacturer.

The instructions shall contain at least the following:

- the business name and full address of the manufacturer and, if applicable, his authorized representative;
- designation of series or type of the machine as marked on the machine itself, except for the serial number;
- the general description of the machine;
- the intended use of the machine and the auxiliary equipment as covered by the scope of this standard;
- the meaning of the symbols used on the machine and in the instructions;

- drawings, diagrams, descriptions and explanations necessary for the safe use, maintenance and repair of the machine and for checking its correct functioning;
- technical data including the markings on the machine;
- information regarding putting into service, safe operation, handling, transportation, and storage of the machine taking into account its weight;
- instructions to enable adjustment and maintenance to be carried out safely, including the protective measures that should be taken during these operations;
- the conditions in which the machine meets the requirement of stability during use, transportation, assembly, dismantling when out of service, testing or foreseeable breakdowns;
- the operating method to be followed in the event of accident (e.g. contact with detergents: rinse with an abundance of clean water) or breakdown to prevent unsafe situations.

The instructions shall contain the substance of the following:

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

The instructions shall indicate the type and frequency of inspections and maintenance required for safe operation, including preventive maintenance measures. They shall, if applicable, give the specifications of the spare parts if they affect the health and safety of the **operator**, e.g. filter elements.

In addition, the instructions shall give the following information, if applicable:

- for battery operated machines, instructions regarding the precautions to be taken for safe charging;
- precautions to be taken when changing brushes or other attachments;
- information on the detergents or other liquids that may be used including the choice and use of Personal Protective Equipment (PPE);
- essential characteristics of auxiliary equipment which may be fitted to the machine;
- information regarding safe disposal of batteries;
- purposes of the socket outlet on the machine;
- the precautions to be taken when using the machine under specific conditions such as handling flammable liquids or dusts and dusts hazardous to health;
- the intended use of the brushes specified for the machine.

**7.12.Z101** The instructions shall include information on the A-weighted emission sound pressure level  $L_{pA}$  in dB(A) emitted by the machine, measured in accordance with IEC 60704-2-1. If the A-weighted emission sound pressure level exceeds 80 dB(A), it shall also state the sound power level  $L_{WA}$  in dB(A). Additional information shall be given to use appropriate ear protection. In addition, the uncertainty surrounding these values shall be given.

NOTE 1 For the measurement, the following condition has to be taken into account:

- The size of the carpet shall be 1 m x 1 m.
- For the uncertainties relevant standards have to be taken into account; i.e. the uncertainty  $K_{pA}$  and  $K_{WA}$  shall be calculated in accordance with ISO 4871.

NOTE 2 Noise reduction at vacuum cleaners is an integral part of the design process and shall be achieved by particularly applying measures at source to control noise, see for example ISO 11688-1. The success of the applied noise reduction measures is assessed on the basis of the actual noise emission values in relation to other machines of the same type with comparable non-acoustical technical data.

**7.12.Z102** The instructions shall include warnings concerning ways in which the machine shall not be used that experience has shown might occur. At least, it shall include the substance of the following warnings, if applicable.

- **WARNING** Operators shall be adequately instructed on the use of these machines.
- **WARNING** This machine is not suitable for picking up hazardous dust.