

INTERNATIONAL STANDARD

NORME INTERNATIONALE



AMENDMENT 2
AMENDEMENT 2

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

**Appareils électrodomestiques et analogues – Sécurité –
Partie 2-2: Exigences particulières pour les aspirateurs et les appareils
de nettoyage à aspiration d'eau**



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FOREWORD

This amendment has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

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

FDIS	Report on voting
61/5115/FDIS	61/5143/RVD

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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.

NOTE 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.

1 Scope

Add the following as a new second paragraph.

Battery-operated appliances and other d.c. supplied appliances are within the scope of this standard. Dual supply appliances, either mains-supplied or battery-operated, are regarded as **battery-operated appliances** when operated in the battery mode.

2 Normative references

Replace the reference to IEC 60312 by the following:

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

Add the following new references:

IEC 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*

ISO 216, *Writing paper and certain classes of printed matter – Trimmed sizes – A and B series, and indication of machine direction*

ISO 7010:2011, *Graphical symbols – Safety colours and safety signs – Registered safety signs*

ISO 14688-1, *Geotechnical investigation and testing – Identification and classification of soil – Part 1: Identification and description*

3 Terms and definitions

3.1.9 Add the following text to the description of P_i :

If P_i cannot be measured due to the appliance suction motor stopping before 20 s, the air inlet is gradually blocked to the extent that the motor stops after 20^{+5}_0 s. In this case P_i is the maximum value of power input in the last two seconds before the motor shuts off.

In the last paragraph replace IEC 60312 by IEC 60312-1.

Add the following new definition:

3.107

ash vacuum cleaner

vacuum cleaner intended to vacuum cold ash from fireplaces, chimneys, ovens, ash-trays and similar places of ash accumulation

5 General conditions for the test

5.2 Add the following to the addition:

The test of 19.105 may be carried out on a separate appliance.

7 Markings and instructions

7.1 Add the following to the addition.

Ash vacuum cleaners shall be marked with symbol ISO 7000-0434A (2004-01), symbol ISO 7000-0790 (2004-01) and symbol ISO 7010 W021.

7.6 Replace IEC 60417-5935 (2002-10) by IEC 60417-5935 (2012-09).

Add the following new symbol:



[symbol ISO 7010 W021] warning; risk of fire / flammable materials

7.12 In the last paragraph of the addition replace IEC 60417-5935 (2002-10) by IEC 60417-5935 (2012-09).

Add the following new subclause:

7.12.1 Addition:

The instructions for **ash vacuum cleaners** shall include the substance of the following:

This appliance is intended to pick up cold ash from fireplaces, chimneys, ovens, ash-trays, and similar places of ash accumulation.

WARNING: Risk of fire

- do not pick up hot, glowing or burning ash. Pick up cold ash only;
- the dust container must be emptied and cleaned before and after each use;
- do not use paper dust bags or bags made from similar flammable materials;
- do not use any other vacuum cleaner to vacuum ash;
- do not rest the ash vacuum cleaner on flammable or polymeric surfaces, including carpeting and vinyl tile.

7.14 Replace the first paragraph of the addition by the following:

The height of symbol IEC 60417-5935 (2012-09), symbol ISO 7000-0434A (2004-01), symbol ISO 7000-0790 (2004-01) and symbol ISO 7010 W021 shall be at least 15 mm.

Add the following new subclause:

7.15 Addition:

Symbol ISO 7000-0434A (2004-01) shall be located next to symbol ISO 7000-0790 (2004-01).

7.101 In the last paragraph of the requirement delete “except those of **class III construction** having a **working voltage** up to 24 V”.

11 Heating

11.3 Add the following to the addition:

Where the accessible external surfaces are suitably flat and access permits, then the test probe of Figure 105 may be used to measure the temperature rises of accessible external surfaces specified in Table 101. The probe is applied with a force of $4\text{ N} \pm 1\text{ N}$ to the surface in such a way that the best possible contact between the probe and the surface is ensured.

NOTE 102 The probe may be held in place using a laboratory stand clamp or similar device. Any measuring instrument giving the same results as the probe can be used.

Add the following new subclause:

11.8 Addition:

During the test, the temperature rises are monitored continuously and shall not exceed the values shown in Table 101.

The temperature rise limits in Table 3 specified for “External enclosure of **motor-operated appliances** except handles held in normal use” and the corresponding footnotes are not applicable.

Add the following new table:

Table 101 – Maximum temperature rises for specified accessible external surfaces under normal operating conditions

Surface ^c	Temperature rise of accessible external surfaces ^f K		
	Surfaces of portable appliances situated on the floor ^d	Surfaces of hand held appliances and other appliances ^e	Surfaces of centrally sited vacuum cleaners
Bare metal	38	42	48
Coated metal ^a	42	49	59
Glass and ceramic	51	56	65
Plastic and plastic coating > 0,4 mm ^b	58	62	74

^a Metal is considered coated when a coating having a minimum thickness of 90 µm made by enamel or non-substantially plastic coating is used.

^b The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.

^c When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of the coated metal or of glass and ceramic material apply.

^d Within 25 mm from air outlets the above values can be increased by 10 K.

^e Within 25 mm from air outlets the above values can be increased by 5 K.

^f Surfaces that are inaccessible to a 75 mm diameter probe having a hemispherical end are not measured.

15 Moisture resistance

15.101 In the third paragraph of the test specification replace “free-fall test procedure 1 of IEC 60068-2-32” by “test Free fall – Procedure 1 of IEC 60068-2-31”.

19 Abnormal operation

19.1 Add the following as a new last paragraph:

Vacuum cleaners that stop automatically when there is a blockage are also subject to the test of 19.4.

Add the following new subclause:

19.4 Addition:

The appliance is tested under the conditions specified in Clause 11 with the inlet blocked. Any control that is allowed to disconnect the suction motor during the P_i determination of 3.1.9 is short-circuited.

Add the following new subclause:

19.105 Ash vacuum cleaners shall not cause a risk of fire or electric shock when operated under the following test conditions:

The **ash vacuum cleaner** is prepared for operation according the instruction for use, but switched off.

The empty container of the **ash vacuum cleaner** is filled up to two-thirds of its useable volume with paper balls. Each paper ball is made out of crumpled sheets of A4 copy paper having a weight in the range 70 g/m² to 120 g/m² in accordance with ISO 216. Each paper sheet shall be crumpled to a size so that it fits into a cube having sides of 10 cm.

The paper balls are ignited with a burning paper strip positioned in the centre of the paper balls top layer. After 1 min the container is closed and kept in this position until steady conditions are reached.

During the tests, the appliance shall not emit flames or molten material.

Afterwards, this test is repeated with a new sample but with all suction motors switched on immediately after the closing of the container. If the **ash vacuum cleaner** has a control for air flow adjustment, the test shall be done with minimum and maximum air flow settings.

After the test the appliance shall comply with 19.13.

21 Mechanical strength

Add the following new subclause:

21.106 A handle intended for carrying an appliance shall be constructed to withstand the weight of the appliance without damage. This requirement is not applicable to **hand-held vacuum cleaners** or **automatic battery operated cleaners**.

Compliance is checked by the following test.

The load, consisting of the weight of the appliance with its dust receptacle filled with dry medium grade sand according to ISO 14688-1 shall be uniformly applied over a 75 mm width at the centre of the handle without clamping. If the receptacle is marked with a maximum dust level then the sand is added to this level. The load shall be started at zero and gradually increased so that the test value is reached in 5 s to 10 s and shall be maintained for 1 min.

When more than one handle is furnished on an appliance, and the appliance is unable to be carried by one handle, the force shall be distributed between the handles. The distribution of force shall be determined by measuring the percentage of the appliance weight sustained by each handle with the appliance in the normal carrying position.

When an appliance is furnished with more than one handle and can be carried by only one handle, each handle shall sustain the total force. A **water-suction cleaning appliance** that is completely supported in the hand or by the body during use shall be filled to maximum normal capacity with water when determining the weight of the appliance and during the test. For an appliance with separate tanks for clean solution and recovery, only the largest tank shall be filled to maximum.

After the test, there shall be no damage to the handle, its securing means, or that portion of the appliance to which the handle is attached. Damage to the finish, small dents and small chips are ignored.

22 Construction

Add the following new subclauses:

22.102 Ash vacuum cleaners shall be equipped with a finely woven metal pre-filter or a pre-filter manufactured using flame retardant material with a GWFI as specified in 30.2.101. All parts including accessories in direct contact with ash located before the pre filter shall be made out of metal or made of a non-metallic material complying with 30.2.102. Metal containers shall have a minimum wall thickness of 0,35 mm.

Compliance is checked by inspection, by measurement, by the tests of 30.2.101 and 30.2.102 if applicable and by the following test.

Test probe C from IEC 61032 shall not penetrate the finely woven metal pre-filter when applied with a force of 3 N.

22.103 The length of hoses supplied with **ash vacuum cleaners** shall be limited.

Compliance is checked by measuring the length of the hose between the part normally held in the hand and where it enters the ash container.

The fully extended length shall not exceed 2 m.

30 Resistance to heat and fire

Add the following new subclauses:

30.2.101 The container and filters of **ash vacuum cleaners** shall have a glow-wire flammability index (GWFI) of at least 850 °C according to IEC 60695-2-12, the test samples used for the classification shall be not thicker than the relevant part of the **ash vacuum cleaner**.

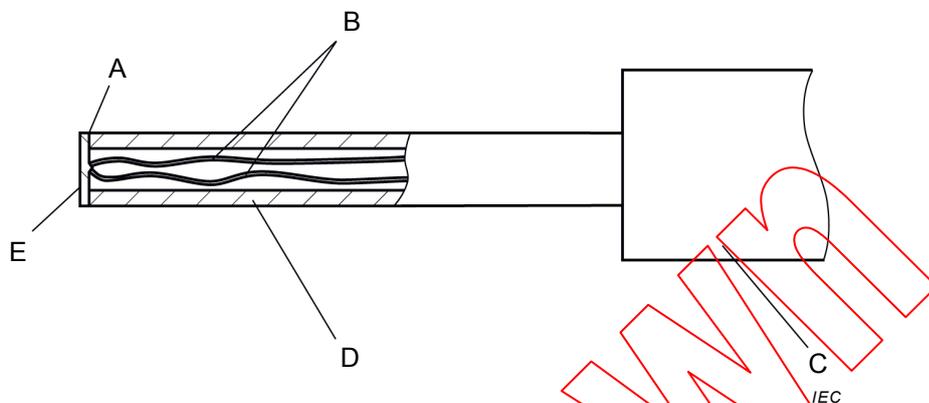
*As an alternative, the container and filters of **ash vacuum cleaners** shall have a glow-wire ignition temperature (GWIT) of at least 875 °C according to IEC 60695-2-13, the test samples used for the classification shall be not thicker than the relevant part of the **ash vacuum cleaner**.*

*As an alternative the container and filters of **ash vacuum cleaners** are subjected to the glow wire test of IEC 60695-2-11 with a test severity of 850 °C. The value of $t_e - t_i$ shall not exceed 2 s.*

30.2.102 All nozzles, deflectors and connectors located upstream of the pre-filter made out of non-metallic material are subjected to the needle flame test in accordance of Annex E. The needle flame test is not applicable to parts that comprise material classified as V-0 or V-1 according to IEC 60695-11-10 provided that the test sample used for the classification was not thicker than the relevant part of the **ash vacuum cleaner**.

Figures

Add the following new figure:



Key

- A adhesive
- B thermocouple wires 0,3 mm diameter to IEC 60584-1 Type K (chrome alumel)
- C handle arrangement permitting a contact force of $4\text{ N} \pm 1\text{ N}$
- D polycarbonate tube: inside diameter 3 mm, outside diameter 5 mm
- E tinned copper disc with flat contact face: 5 mm diameter, 0,5 mm thick

Figure 105 – Probe for measuring surface temperatures

<https://standards.globalspec.com/stdn/IEC60335-2-2-2009-amd2-2016>

Withdrawing

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IEC 60335-2-2:2009/AMD2:2016

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