

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Vacuum cleaners and dust extractors providing equipment protection level Dc for the collection of combustible dusts – Particular requirements

Aspirateurs et extracteurs de poussières procurant un niveau de protection du matériel Dc, pour la collecte des poussières combustibles – Exigences particulières



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

VACUUM CLEANERS AND DUST EXTRACTORS PROVIDING EQUIPMENT PROTECTION LEVEL Dc FOR THE COLLECTION OF COMBUSTIBLE DUSTS – PARTICULAR REQUIREMENTS

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International standard IEC 62784 has been prepared by subcommittee 61J: Electrical motor-operated cleaning appliances for commercial use, of IEC technical committee 61: Safety of household and similar electrical appliances.

This standard cancels and replaces Annex CC of IEC 60335-2-69, on which this standard is based.

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

FDIS	Report on voting
61J/660/FDIS	61J/667/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

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- withdrawn,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

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INTRODUCTION

This document 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 document 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.

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.

IEC 62784 contains the result of the work of IEC SC61J JWG1. The joint working group was established in April 2009 to prepare, or ensure the coordination of (within SC61J) international standards and specifications for vacuum cleaners and dust extractors in collaboration with TC31, intended for the collection of dusts which present an explosion risk.

This document for "vacuum cleaners and dust extractors providing equipment protection level Dc for the collection of combustible dusts" reflects the final agreement of JWG1.

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VACUUM CLEANERS AND DUST EXTRACTORS PROVIDING EQUIPMENT PROTECTION LEVEL D_c FOR THE COLLECTION OF COMBUSTIBLE DUSTS – PARTICULAR REQUIREMENTS

1 Scope

This International Standard covers electrical mobile motor-operated vacuum cleaners Equipment Protection Level (EPL) D_c.

This includes dust extractors, for wet suction or dry suction, intended for commercial indoor use with or without attachments, to collect combustible dust in an explosive dust atmosphere.

The requirements for the construction and testing covered by this document are applied in addition to the requirements for commercial and industrial vacuum cleaners in IEC 60335-2-69.

This document supplements and modifies the requirements of IEC 60079-0. Whenever a requirement of this standard is in conflict with a requirement of IEC 60079-0 the requirement of this standard will take precedence.

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.

This document does not cover specific hazards associated with extreme ambient temperatures (less than –20 °C or higher than 40 °C) unless otherwise marked by the manufacturer as given in IEC 60079-0. The temperatures shall not exceed the temperature range of –20 °C to +60 °C.

This document does not cover motorized cleaning heads for which additional requirements are under consideration.

This document does not apply to

- back-pack vacuum cleaners;
- vacuum cleaners with a traction drive;
- vacuum cleaners and water-suction cleaning appliances for household use (IEC 60335-2-2);
- floor treatment machines for commercial use (IEC 60335-2-67, IEC 60335-2-72);
- spray extraction machines for commercial use (IEC 60335-2-68);
- hand-held mains-operated electrical garden blowers, vacuums and blower vacuums (IEC 60335-2-100);
- hand-held and transportable motor-operated electric tools (IEC 62841 series);
- appliances for medical purposes (IEC 60601-1);
- machines designed for use in corrosive environments;
- machines designed for picking up flammable liquids;
- machines designed for use in explosive environments due to the presence of explosive substances or pyrotechnical products, or unstable chemical substances.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60079-0:2011, *Explosive atmospheres – Part 0: Equipment – General requirements*

IEC 60079-31, *Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"*

IEC 60335-2-69, *Household and similar electrical appliances – Safety – Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for commercial use*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60079-0, IEC 60079-31, IEC 60335-2-69 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

combustible dust

finely divided solid particles, 500 µm or less in nominal size, which may form explosive mixtures with air at standard atmospheric pressure and temperatures

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

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

3.2

explosive dust atmosphere

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

Note 1 to entry: Minimum ignition energy values for common dusts can be found in IEC 60335-2-69.

[SOURCE: IEC 60050-426:2008, 426-01-08, modified – The note to entry has been added]

3.3

mobile machine

transportable equipment

machine that is capable of being moved from one location to another

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

[SOURCE: IEC 60050-151:2001, 151-16-45, modified – "Machine" has been added and "generally by using vehicles" has been deleted. The note to entry has been added]

3.4

electrostatic earthing

connection to earth with a maximum resistance of 1 MΩ

3.5

conductive part

part made of materials with a specific resistance of not more than 10 kΩ

3.6

electrostatic dissipative

having an intermediate resistivity (100 kΩm to < 1 GΩm) or resistance (10 kΩ to < 100 GΩ) that lies between the conductive and insulating ranges

Note 1 to entry: Dissipative materials or objects are neither conductive nor insulating but, like conductive items, safely limit contact charging and/or dissipate even the maximum charging currents associated with their designed application when in contact with earth.

4 Constructional requirements

4.1 General

Vacuum cleaners covered by this document minimize the risk of ignition during normal operation (intended use). By fulfilling the requirements specified in this standard, any misuse which can reasonably be anticipated is addressed. The requirements given in this standard apply to each machine, including all accessories, such as nozzles, hoses, unless otherwise stated.

4.2 General protection requirements

Vacuum cleaners shall be constructed as follows:

- 1) The machine already fulfils the requirements for commercial vacuum cleaners of IEC 60335-2-69.
- 2) The motor, switch, cord and plug shall comply with the requirements of IEC 60079-31 for EPL Dc.
- 3) The following parts of the vacuum cleaner shall be conductive or electrostatic dissipative, bonded and connected to the earth terminal of the connection facility:
 - a) impeller;
 - b) tools;
 - c) non-metal parts of the machine;
 - d) hose.
- 4) Isolated metal parts coming into contact with the dust are not permitted. All metal parts are bonded and connected to the earth terminal of the connection facility.
- 5) The suction air through the hose shall be filtered prior to contacting the impeller of the motor. Flow-through motors are not permitted.
- 6) Only electrical components of EPL Da can be located inside of the dust collection containment.

4.3 Classification according filter construction

Vacuum cleaners covered by this standard provide dust classes L, M, or H in accordance with IEC 60335-2-69.

4.4 Supply connection and external flexible cords

Supply cords and plugs shall comply with IEC 60079-31 for EPL Dc if the connection is intended to be made within the hazardous area.

4.5 Connection facilities and termination compartments

Terminal compartments for external conductors shall comply with IEC 60079-31 for EPL Dc.

5 Type verification and type tests

Compliance with the requirements of this standard is checked by inspection, examination and tests, as appropriate.

End-to-end hose resistance of the hose assembly shall be less than 1 MΩ.

6 Routine tests

The manufacturer shall also carry out routine tests required by the standards listed in Clause 2 which were used for the examination and testing of the equipment and are appropriate for this product group with EPL Dc and are applicable for this product group.

7 Marking and instructions

Marking shall be in accordance with IEC 60079-0.

The symbol provided for the “type of protection used” for the appliance is to be “62784”.

An example for this marking is "Ex 62784 IIIC T135 °C Dc".

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