DRAFT International Standard

IEC/DIS 63086-1

Household and similar electrical air cleaning appliances — Methods for measuring the performance —

Part 1: General requirements

Appareils électrodomestiques et analogues de purification de l'air — Méthodes de mesure de la performance —

Partie 1: Exigences générales

ICS: 91.140.30; 23.120

ISO/TC **142**

Secretariat: **UNI**

Voting begins on:
2026-06-19

Voting terminates on:
2026-09-11

This document is circulated as received from the committee secretariat.

This draft is submitted to a parallel vote in ISO and in IEC.

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Reference number
IEC/DIS 63086-1:2026(en)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Household and similar electrical air cleaning appliances - Methods for measuring the performance - Part 1: General requirements

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IEC 63086-1 has been prepared by subcommittee 59N: Electrical air cleaners for household and similar purposes, of IEC technical committee 59: Performance of household and similar electrical appliances, in co-operation with ISO technical committees 142: Cleaning equipment for air and other gases and 146, subcommittee 6: Indoor air.

It is published as a double logo International Standard.

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

Draft	Report on voting
59N/XX/FDIS	59N/XX/RVD

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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.

In this standard, the following print types are used:

– terms defined in Clause 3: bold type.

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/publications.

A list of all parts in the IEC 63086 series, published under the general title *Household and similar electrical air cleaning appliances - Methods for measuring the performance*, can be found on the IEC website.

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, or
– revised.

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1 Scope

This part of IEC 63086 applies to electrically powered household and similar air cleaners having a rated input voltage

– up to and including 250 V for single-phase AC circuits;
– up to and including 480 V line-to-line for three-phase AC circuits;
– up to and including 48 V for DC circuits.

For combination products, this document is to be used to measure the performance of the appliance at reducing the test pollutants .

This document is not applicable to:

– appliances intended exclusively for industrial purposes;
– appliances intended for use in medical treatment locations, such as surgical suites, laboratories, medical treatment rooms;
– cooking fume extractors (see IEC 61591 [1]).

NOTE 1 See Clause 4 for examples of different technologies and placements of household and similar air cleaners.

NOTE 2 Battery-operated appliances are within the scope of this document. Dual-supply appliances, either mains-supplied or battery-operated, are regarded as battery-operated appliances when operated in the battery mode.

NOTE 3 A cooking fume extractor and an air cleaner differ significantly in their main use. A cooking fume extractor is designed to capture fumes close to the cooking surface in a kitchen environment. In the case of the cooking fume extractor, the focus is on the direct capture of the cooking fumes (first yield capture rate), whereas in the case of air cleaners, the focus is on general household air pollutant reduction.

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 62301, *Household electrical appliances - Measurement of standby power*

IEC 60704-2-19, *Household and similar electrical appliances - Test code for the determination of airborne acoustical noise - Part 2-19: Particular requirements for air cleaners*

3 Terms, definitions and abbreviated terms

For the purposes of this document, the following terms and definitions apply.

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

– IEC Electropedia: available at https://www.electropedia.org/
– ISO Online browsing platform: available at https://www.iso.org/obp

3.1 Terms and definitions

3.1.1
air cleaner
electrically powered household, or similar, appliance that employs one or multiple technologies to reduce one or more types of indoor air pollutants

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3.1.2
robotic air cleaner
air cleaner (3.1.1) that operates and changes its physical location autonomously without user intervention

Note 1 to entry: The robotic air cleaner (3.1.2) can consist of a part that houses the air cleaning function and can have a docking station and/or other accessories to assist its operation.

3.1.3
fresh-air air cleaner
air cleaner (3.1.1) connected to the external environment, which provides pollutant-reduced outdoor air into an indoor space

Note 1 to entry: The fresh-air air cleaner (3.1.3) can also include other auxiliary functions, such as heat exchange.

Note 2 to entry: The term "fresh" indicates in this context that the supplied outdoor air typically has a lower CO_2 content than the air in an occupied room. However, this does not imply that the supplied air is free of pollutants.

3.1.4
combination products
air cleaner (3.1.1) that includes a secondary function besides air cleaning within the same housing, such as humidifying, dehumidifying, heating, or air conditioning

3.1.5
DUT
device under test
air cleaner (3.1.1) undergoing examination

3.1.6
test chamber
self-contained room with determined volume, shape, and dimensions, which is used to measure the performance of the DUT (3.1.5)

3.1.7
test pollutant
specific air pollutant, including three main categories: particulate matter, gases, and microorganisms

3.1.8
operation decay rate
reduction rate of the test pollutant (3.1.7) in the test chamber (3.1.6), due to operation of the DUT (3.1.5)

Note 1 to entry: The unit is per hour (h^{-1}).

3.1.9
CADR
clean air delivery rate
effective flow rate of clean air with respect to the test pollutant (3.1.7) delivered by the DUT (3.1.5)

Note 1 to entry: The unit is cubic metres per hour ($m^3\ h^{-1}$).

Note 2 to entry: The CADR (3.1.9)is calculated as the product of the measured operation decay rate (3.1.8) and the associated test chamber (3.1.6) volume.

3.1.10
automatic operation mode
setting of the DUT (3.1.5) chosen by the user in which the performance is regulated by the air cleaner (3.1.1) without further user interaction

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3.1.11
manual operation mode
setting of the DUT (3.1.5), chosen by the user that is not influenced by further external operator interaction, air quality sensor data, and/or timers throughout the duration of the test

3.1.12
maximum performance operation mode
manual operation mode (3.1.11) where the DUT (3.1.5) is set to the highest flow rate with all air cleaning functions switched on and set to maximum, where applicable

Note 1 to entry: If the DUT (3.1.5) has zero flow rate, the CADR (3.1.9) is measured with all air cleaning functions switched on.

Note 2 to entry: "All air cleaning functions switched on" implies that the requirements for testing are that all available filters, either for particle and gas filtration, or a combination of both, are inserted in the DUT (3.1.5) for each type of test described in IEC 63086-2 (all parts) [2].

3.1.13
energy efficiency in maximum performance operation mode
volume of cleaned air provided by consumption of a certain amount of energy calculated by dividing the CADR (3.1.9) of the DUT (3.1.5) by the electrical power input

Note 1 to entry: The unit is cubic metres per watt hour ($m^3\ W^{-1}\ h^{-1}$).

3.1.14
test chamber air treatment unit
ventilation, filtration and/or air-conditioning system attached to the test chamber (3.1.6) for setting specific values for temperature and relative humidity as well as reducing the background concentration of the test pollutant (3.1.7) prior to the test

3.2 Abbreviated terms

CADR	clean air delivery rate
DUT	device under test

4 Classification

4.1 Types of technologies used in air cleaners

Air cleaners can use for example the following air cleaning technologies or combinations:

– mechanical filtration;
– electrostatic filtration;
– physical and/or chemical adsorption;
– chemical catalysis;
– photocatalysis;
– plasma;
– UV-C irradiation;
– ozone generation;
– hydroxyl generation.

4.2 Areas of placement for air cleaners

Air cleaners can for example be placed in the following areas:

– floor;
– table;

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