

Fume cupboards - Part 3: Type test methods

Sorbonnes - Partie 3 : Méthodes d'essai de type

Abzüge - Teil 3: Baumusterprüfverfahren

05/2019

National Foreword

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Fume cupboards - Part 3: Type test methods

Sorbonnes - Partie 3 : Méthodes d'essai de type

Abzüge - Teil 3: Baumusterprüfverfahren

This European Standard was approved by CEN on 15 March 2019.

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European foreword

This document (EN 14175-3:2019) has been prepared by Technical Committee CEN/TC 332 “Laboratory equipment”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2019, and conflicting national standards shall be withdrawn at the latest by November 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14175-3:2003.

In comparison with the previous edition, the following technical modification have been made:

- introduction was deleted;
- scope clarified and referene to EN 14175-4 and EN 14175-6 was added;
- inclusion of new terms 3.4 and 3.5 with defintions;
- information testing on walk-in fume cupboards clarified;
- limitation of usage of SF_6 as trace gas according to national legislation;
- revision of data analysis and result in 5.3.6 and 5.4.5;
- inclusion of Annex B “A-deviations”.

EN 14175 consists of the following parts, under the general title *Fume cupboards*:

- *Part 1: Vocabulary*
- *Part 2: Safety and performance requirements*
- *Part 3: Type test methods*
- *Part 4: On-site test methods*
- *Part 5: Recommendations for installation and maintenance* (Technical Specification)
- *Part 6: Variable air volume fume cupboards*
- *Part 7: Fume cupboards for high heat and acidic load*

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1 Scope

This document specifies type test methods for the assessment of safety and performance of fume cupboards connected to an exhaust air system. Relevant requirements are specified in EN 14175-2.

For terms and their definitions, EN 14175-1 applies. For safety and performance requirements of fume cupboards, EN 14175-2 applies. For on-site test methods of fume cupboards, EN 14175-4 applies. For the type testing and on-site testing of variable air volume (VAV) fume cupboards, EN 14175-6 applies in addition to this standard. For fume cupboards for high heat and acidic load, EN 14175-7 applies.

For the testing of recirculation filtration fume cupboards, EN 17242:—¹ applies.

For the testing of microbiological safety cabinets, EN 12469 applies.

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.

EN 12665, *Light and lighting — Basic terms and criteria for specifying lighting requirements*

EN 14175-1:2003, *Fume cupboards — Part 1: Vocabulary*

EN 14175-2:2003, *Fume cupboards — Part 2: Safety and performance requirements*

EN 14175-6, *Fume cupboards — Part 6: Variable air volume fume cupboards*

EN ISO 5167-1, *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full — Part 1: General principles and requirements (ISO 5167-1)*

EN ISO 12569, *Thermal performance of buildings and materials — Determination of specific airflow rate in buildings — Tracer gas dilution method (ISO 12569)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14175-1:2003 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

plane of sash

plane in the middle between the innermost and the outermost screen surfaces of that part of the sash forming the upper boundary of the test sash opening

[SOURCE: EN 14175-1:2003, 5.4, modification — plane is defined in more detail]

¹ Under preparation. Stage at the time of publication: prEN 17242:2018.

3.2**inner measurement plane**

plane of sash at the type test opening, except where the plane of sash does not meet the work surface of the fume cupboard

Note 1 to entry: In the latter case, it is a non-vertical plane bounded

- at the top by the lowest point of the upper edge of the type test opening in the plane of the sash,
- at the bottom by the uppermost point of the lower edge of the opening closest to the plane of sash, and
- at the sides by the side edges of the opening.

Note 2 to entry: See examples in Figures 1 and 2.

Note 3 to entry: This definition replaces the definition given in EN 14175-1:2003, 7.7.

3.3**containment factor**

C_F

ratio of the calculated volume concentration of tracer gas in the workspace of the fume cupboard to the measured volume concentration in the inner or outer measurement plane

Note 1 to entry: The containment factor is not a constant value but depends on the extract volume flow rate and the measured concentration of tracer gas.

3.4**protection factor**

P_F

ratio of the volume flow rate of the tracer gas to the measured volume flow rate of the tracer gas in the tidal breathing flow

Note 1 to entry: The protection factor should not be compared to other known protection factors, e.g. respiratory protective equipment.

3.5**tidal breathing flow**

volume flow rate of air moved in and out of human lungs during sedentary breathing

Note 1 to entry: For healthy adults, it is in the range of 6 l/min to 10 l/min. For the purposes of this standard, 10 l/min is used.

4 Test room and general test conditions**4.1 Dimensions and construction**

The test room shall consist of an enclosure of cuboid shape, constructed of suitable materials, within a building or laboratory. The internal width and length shall be not less than 4,0 m and the ceiling height not less than 2,7 m. The ceiling and floor shall be level and the room shall be devoid of internal supports, internal walls or other obstacles to the airflow.