



SLOVENSKI STANDARD

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Fume cupboards - Part 4: On-site test methods

Abzüge - Teil 4: Vor-Ort Prüfverfahren

Sorbonnes - Partie 4: Méthodes d'essai sur site

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EUROPEAN STANDARD
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Fume cupboards - Part 4: On-site test methods

Sorbonnes - Partie 4: Méthodes d'essai sur site

Abzüge - Teil 4: Vor-Ort Prüfverfahren

This European Standard was approved by CEN on 22 July 2004.

CEN 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 CEN 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 CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EN 14175-4:2004 (E)**Foreword**

This document (EN 14175-4:2004) 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of an identical text or by endorsement, at the latest by March 2005, and conflicting national standards shall be withdrawn at the latest by March 2005.

The tests established in this standard should be carried out by trained personnel.

This European Standard 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 (in preparation)
- Part 6: Variable air volume fume cupboards (in preparation)

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According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This document specifies a selection of on-site test methods for the following general purpose fume cupboards:

- Fume cupboards designed in accordance with Part 2 of this European Standard and type tested in accordance with Part 3 of this European Standard.
- Fume cupboards designed in accordance with Part 2 of this European Standard and not type tested.

The test methods are designed to be used at the place of installation of the fume cupboard, usually a laboratory. They are used for commissioning after installation, for maintenance and for qualification purposes. For certain customer requirements additional or modified test methods may be necessary.

It is in the responsibility of the purchaser or user of a fume cupboard to decide which tests are to be performed. The commissioning testing can be selected and carried out from the type test methods. For routine testing, the number of test methods selected can be further reduced.

2 Normative references

The following referenced documents are indispensable for the application 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 14175-1:2003, *Fume cupboards – Part 1: Vocabulary*.

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

EN 14175-3:2003, *Fume cupboards – Part 3: Type test methods*.

EN 61672-1, *Electroacoustics – Sound level meters – Part 1: Specifications (IEC 61672-1:2002)*.

EN ISO 11202, *Acoustics – Noise emitted by machinery and equipment – Measurement of emission sound pressure levels at a work station and at other specified positions – Survey method in situ (ISO 11202:1995)*.

ISO 5221, *Air distribution and air diffusion -- Rules to methods of measuring air flow rate in an air handling duct*.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14175-1:2003 and EN 14175-3:2003 apply.

NOTE Attention is drawn to EN 14175-3 where some definitions given in EN 14175-1 have been modified.

4 General on-site test conditions

Windows and doors of the room shall remain closed during measurements. There shall be no unnecessary obstructions or equipment in neighbourhood of the fume cupboard under test.

The general and the specific test conditions during all on-site tests, including make-up air sources and all extract air openings, shall be carefully considered and documented in the on-site test report according to Clause 9.

EN 14175-4:2004 (E)**5 Commissioning testing of type tested fume cupboards****5.1 Scope and purpose**

The following test methods are considered to be appropriate for the commissioning test after installation of a fume cupboard which has been type tested in accordance with EN 14175-3 before installation. It is the aim of commissioning testing to show the correct installation of the fume cupboard and to check adverse effects of the room air flow and of the extract system on the performance of the installed empty fume cupboard under its intended design conditions.

The final purpose and extent of the commissioning test should be agreed upon between purchaser and supplier.

5.2 Inspections

5.2.1 Inspections are usually optical inspections, if appropriate, aided by simple measurement equipment, such as tape-measure. The following items should be proven by inspection.

5.2.2 Observance of the manufacturer's installation instructions (see EN 14175-2:2003, 10b).

5.2.3 Protection against splashes (see EN 14175-3:2003, 6.3)

5.2.4 Sash suspension and sash stop (see EN 14175-3:2003, 6.1 and 6.4)

5.2.5 Sash displacement force (see EN 14175-3:2003, 6.2)

5.2.6 Conformity of the fume cupboard to the type tested unit

5.2.7 Services (see EN 14175-2:2003, Clause 9)

5.2.8 Materials (see EN 14175-2:2003, Clause 6)

5.2.9 Correct mechanical assembling and integrity after installation

5.2.10 Pressure relief if supplied (see EN 14175-2:2003, 7.2.4)

5.2.11 Accessibility of construction parts (see EN 14175-2:2003, 7.2.5)

5.3 Manufacturer's declarations or type test certification

5.3.1 The following items shall be covered by manufacturer's declarations.

5.3.1.1 Lighting (see EN 14175-2:2003, 9.4)

5.3.1.2 Services

5.3.1.3 Materials

5.3.2 The following items shall be proven by the type test certificate of the fume cupboard.

5.3.2.1 Containment (see EN 14175-3:2003, 5.3)

5.3.2.2 Robustness of containment (see EN 14175-3:2003, 5.4)

5.3.2.3 Air exchange efficiency (see EN 14175-3:2003, 5.5)

5.4 Face velocity test

5.4.1 Objectives

The aim of the face velocity test as part of the commissioning testing is to verify the face velocity pattern compared to the type test result in order to check either correct installation of the fume cupboard or adverse effects of the room air conditions. Another aim should be to obtain a reference value for comparison in subsequent routine tests.

5.4.2 Test equipment and probe positions

According to EN 14175-3:2003, 5.2.1 and 5.2.2.

5.4.3 Test procedure and test results

The fume cupboard shall work with the intended working conditions. No other equipment than the test equipment shall be present inside the fume cupboard. The measurements and the calculation of the test results shall be performed at the type test opening(s) and at the actual air volume flow rate in accordance with EN 14175-3:2003, 5.2.3 and 5.2.4.

If the air volume flow rate is other than that established in the type test, it shall be noted.

NOTE Such a deviation can affect the face velocity pattern.

5.4.4 Test report

The calculated test results and the deviation of these test results from those specified in the type test certificate shall be reported (see 9.1).

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5.5 Extract volume flow rate test

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5.5.1 Objectives

The aim of the extract volume flow rate test as part of the commissioning testing is to verify the extract air volume flow compared to the intended volume flow and the correct installation of the fume cupboard. Additional purpose of the test is to obtain reference values for easy and fast routine testing (see Clause 6).

The extract volume flow discharged from a fume cupboard can generally be measured according to ISO 5221. When the requirements for the use of this method are not fulfilled, one of the following methods can be applied.

5.5.2 Average face velocity method

5.5.2.1 Principle, test equipment and probe positions

This method determines the extract volume flow by measuring the face volume flow in the sash opening by making sure that all the extract air is flowing through the sash opening. Test equipment and probe positions in accordance with EN 14175-3:2003, 5.2.1 and 5.2.2.

5.5.2.2 Preparation

Any significant leakage, slit or opening of the fume cupboard, except of the test sash opening, shall be sealed by adhesive tape or appropriate air tight material. The sealing material shall be removed after the face velocity measurement.

The test shall be carried out with the fume cupboard's sash(es) set at one of the type test sash opening(s) (see EN 14175-3:2003, 4.4.2).

5.5.2.3 Test procedure and test results

According to EN 14175-3:2003, 5.2.3 and 5.2.4.