



DPC: 24/30491491 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

Date: 18 July 2024

Origin: European

Latest date for receipt of comments: 10 September 2024

Project No. 2024/01155

Responsible committee: LBI/1/1 Laboratory furniture and fittings

Interested committees:

Title: Draft BS EN 17242 BS Recirculatory Filtration Fume Cabinets.

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

WARNING: THIS IS A DRAFT AND MUST NOT BE REGARDED OR USED AS A BRITISH STANDARD. THIS DRAFT IS NOT CURRENT BEYOND 10 September 2024

This draft is issued to allow comments from interested parties; all comments will be given consideration prior to publication. No acknowledgement will normally be sent. **See overleaf for information on the submission of comments.**

No copying is allowed, in any form, without prior written permission from BSI except as permitted under the Copyright, Designs and Patent Act 1988 or for circulation within a nominating organization for briefing purposes. Electronic circulation is limited to dissemination by e-mail within such an organization by committee members.

Further copies of this draft may be purchased from BSI Shop <http://shop.bsigroup.com> or from BSI Customer Services, Tel: +44(0) 20 8996 9001 or email cservices@bsigroup.com. British, International and foreign standards are also available from BSI Customer Services.

Information on the co-operating organizations represented on the committees referenced above may be obtained from <https://standardsdevelopment.bsigroup.com/>.

Responsible Committee Secretary: Ms Ellena Cullum (BSI)

Direct tel:

E-mail: ellena.cullum@bsigroup.com

Full document details: 24/30491491 DC

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
------------------	------------------------

1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

English Version

Recirculatory Filtration Fume Cabinets

Hottes à recirculation

Umluft-Filter-Einhausungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 332.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions	5
4 Classification of RFFC	6
5 Requirements of RFFC.....	7
5.1 General requirements.....	7
5.2 Sound pressure level	7
5.3 Gas and vapour filtration	7
5.4 High efficiency particulate filtration	8
5.5 Filter monitoring arrangements	8
5.5.1 RFFCs without continuous filter monitoring	8
5.5.2 RFFCs with continuous filter monitoring.....	9
6 Face velocity measurements.....	9
7 Performance tests of filtration of a RFFC	9
7.1 Test rooms and test conditions for filtration and containment test	9
7.2 Filtration of gases and vapours.....	9
7.2.1 Filtration tests for gas and vapour	9
7.2.2 Analysers and detectors	10
7.2.3 Test procedure.....	10
7.2.4 Gas and vapour filtration test report.....	14
7.3 Test of gas and vapour sensors.....	15
7.4 Filtration for particulates	15
8 Containment test with IPA.....	16
8.1 General.....	16
8.2 Tracer vapour	16
8.3 Containers	16
8.4 Connecting tubing.....	16
8.5 Gas analyser	17
8.6 Time constant of the test system.....	17
8.7 Sampling probe.....	17
8.8 Sampling manifold.....	17
8.9 Data recording	17
8.10 Test condition	17
8.10.1 General.....	17
8.10.2 Positioning the containers to evaporate tracer vapour.....	17
8.11 Sampling probe grid	17
8.11.1 General.....	17
8.11.2 Downstream sampling probe grid	18
8.11.3 Outer measurement plane sampling probe grid	19
8.12 Test procedure.....	21
8.13 Data analysis and results	21
9 Test according to EN 14175-3 and robustness tests	22

10	On site testing of RFFC's	22
10.1	General	22
10.2	Test report for commissioning of type tested RFFCs.....	23
10.3	Test report for routine testing of type tested RFFCs (see Clause7).....	23
11	Marking	24
12	Product manual.....	24
	Annex A (informative) Filtration test protocol for inorganic acid filters.....	26
	Annex B (informative) Information on national and European regulations and guidelines that may impact the usage of RFFCs	27
	Bibliography	28

European foreword

This document (prEN 17242:2024) has been prepared by Technical Committee CEN/TC 332 “Laboratory equipment”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

1 Scope

This document applies to recirculatory filtration fume cabinets (RFFC).

Recirculatory filtration fume cabinets are devices intended to protect their users by means of:

- the ability to contain hazardous concentrations or quantities of airborne contaminants;
- the ability to remove hazardous concentrations or quantities of airborne contaminants from air exhausted from within the fume cabinet by means of filtration before the air is recirculated (to the room in which the fume cabinet is located).

This document includes design and manufacturing requirements together with type testing procedures.

This document does not specify requirements for the use of a mixture of chemicals, but provides guidance on how to proceed.

NOTE For special applications and usage such as CMR substances, local regulation can apply. These local regulations can result on restriction of usage.

This document is not intended to address fume cupboards, or devices used as animal accommodation. For fume cupboards, the standard series EN 14175 applies. For 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 1822-1, *High efficiency air filters (EPA, HEPA and ULPA) — Part 1: Classification, performance testing, marking*

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

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

EN 14175-3:2019, *Fume cupboards — Part 3: Type test methods*

EN 14175-4, *Fume cupboards — Part 4: On-site test methods*

EN 61010-1, *Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 1: General requirements (IEC 61010-1)*

EN ISO 14644-3:2019, *Cleanrooms and associated controlled environments — Part 3: Test methods (ISO 14644-3:2019, Corrected version 2020-06)*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in EN 14175-1 and the following apply.

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

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

3.1 filtration system

assembly of components that are used to remove/trap airborne contaminants

Note 1 to entry: It can be arranged to remove/trap particulates and/or gases/vapours by means of a single filter or a combination of two or more filters.

3.2 recirculatory filtration fume cabinets RFFC

fume cabinet equipped to move air (with a fan) and remove quantities or concentrations of hazardous airborne contaminants from the air stream before recirculation to the room in which it is located

3.3 gas and vapours filter

filter used to remove vapours or gases from an air stream

EXAMPLE An activated carbon filter.

3.4 particulate filter

filter used to remove particulates from an air stream

EXAMPLE A HEPA filter.

3.5 limit value

exposure limit of the challenge chemicals

Note 1 to entry: Expressed in 10^{-6} (ppm V) or in mg/m^3 .

Note 2 to entry: In this document, the value is the lowest published European limit in GESTIS databases.

3.6 normal sash opening

maximum height or width to which the sash should be opened during use of the fume cupboard and at which point a stop or other device is fitted to prevent the opening being exceeded under normal use

4 Classification of RFFC

The RFFC of the present document has the following 3-part classification:

X (general type of application) / **Y** (filter class) / **Z** (monitoring arrangement)

The details are set out below.

X: General type of application:

- Class A: RFFCs with integral filters;
- Class B: RFFCs with associated filters.

Y: Filters:

- 1: particulate filter only;

- 2: gas and vapour filter only;
- 3: particulate and gas and vapour filters;
- 4: other filtration devices or arrangements including those for RFFCs having internal, filtered recirculation.

Z: Filter monitoring arrangements:

- 0: no filter condition monitoring arrangements;
- 1: in-built continuous filter condition monitoring arrangements applicable to the filter application.

EXAMPLE Examples for the designation of a RFFC with integral particulate and chemical filters and continuous filter conditioning monitoring would be:

Class A/3/1.

5 Requirements of RFFC

5.1 General requirements

When the RFFC is in operation, an air flow indicator shall show unambiguously the correct function of the cabinet's air flow. Accurate air flow settings shall be indicated in the user's manual and any deviation shall be noted. In addition, means shall be provided to easily check or self check the correct functioning of the airflow indicator.

The airflow indicator shall be provided to monitor the air flow, as established in the type test.

It shall incorporate audible and visual alarms to warn the operator in case of incorrect air flow.

RFFC shall comply with EN 61010-1.

RFFC shall comply with the requirements of EN 14175-2:2003, Clause 5, Clause 6 and Clause 7.

5.2 Sound pressure level

When tested in accordance with EN ISO 3744, the sound pressure level shall be measured using a sound meter conforming to EN 61672-1:2013. The sampling microphone shall be mounted centrally at a distance of 1 000 mm from the face of the RFFC and at a height of 1 500 mm from floor, with the RFFC operating at nominal operating speed, according to manufacturer's recommendations.

The sound pressure level of the RFFC in operation shall not exceed 65 dB(A), when the background noise level is less than 55 dB(A). If the background noise level exceeds 55 dB(A) then the corrected A-weighted level should not exceed 65 dB(A).

5.3 Gas and vapour filtration

The manufacturer shall label installed filters in such a way as to clearly identify the type of chemicals that can be trapped. The label shall be visible from the front of the cabinet. For the use of a mixture of chemicals a risk assessment shall be performed with the help of the instructions for use in order to select the appropriate filter(s).

NOTE 1 A suitable method to label filters is to follow the codification defined in EN 14387:2021, Table 2.

According to the risk assessment and RFFCs capability, the user of the RFFC should clearly indicate the list of chemicals that are allowed to be used on a label visible from the front of the cabinet. Each time an application that is performed in the RFFC is modified, the risk assessment shall be updated.