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Respiratory protective devices – Filtering half masks to protect against particles – Requirements, testing, marking

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The European Standard EN 149:2001+A1/2009 has the status of a Swedish Standard. This document contains the official English version of EN 149:2001+A1/2009.

This standard supersedes the Swedish Standard SS-EN 149, edition 2 and SS-EN 149/AC:2002, edition 1.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 149:2001+A1

May 2009

ICS 13.340.30

Supersedes EN 149:2001

English Version

Respiratory protective devices - Filtering half masks to protect against particles - Requirements, testing, marking

Appareils de protection respiratoire - Demi-masques filtrants contre les particules - Exigences, essais, marquage

Atemschutzgeräte - Filtrierende Halbmasken zum Schutz gegen Partikeln - Anforderungen, Prüfung, Kennzeichnung

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Foreword

This document (EN 149:2001+A1:2009) has been prepared by Technical Committee CEN/TC 79 "Respiratory protective devices", 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of an identical text or by endorsement, at the latest by November 2009, and conflicting national standards shall be withdrawn at the latest by November 2009.

This European Standard supersedes A1 EN 149:2001 A1.

This European Standard was approved by CEN on 8 March 2001 and includes Corrigendum 1 issued by CEN on 24 July 2002 and Amendment 1 approved by CEN on 26 March 2009.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

The modifications of the related CEN Corrigendum have been implemented at the appropriate places in the text and are indicated by the tags AC AC.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

Annex A is informative.

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

Introduction

A given respiratory protective device can only be approved when the individual components satisfy the requirements of the test specification which may be a complete standard or part of a standard, and practical performance tests have been carried out successfully on complete apparatus where specified in the appropriate standard. If for any reason a complete apparatus is not tested then simulation of the apparatus is permitted provided the respiratory characteristics and weight distribution are similar to those of the complete apparatus.

1 Scope

This European Standard specifies minimum requirements for filtering half masks as respiratory protective devices to protect against particles except for escape purposes.

Laboratory and practical performance tests are included for the assessment of compliance with the requirements.

2 Normative references

A1 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. **A1**

EN 132, *Respiratory protective devices - Definitions of terms and pictograms*

EN 134, *Respiratory protective devices - Nomenclature of components*

EN 143, *Respiratory protective devices - Particle filters - Requirements, testing, marking*

A1 EN 13274-7, *Respiratory protective devices – Methods of test – Part 7: Determination of particle filter penetration* **A1**

ISO 6941, *Textile fabrics - Burning behaviour - Measurement of flame spread properties of vertically oriented specimens*

3 Terms and definitions

For the purposes of this European Standard the definitions given in EN 132 and the nomenclature given in EN 134 apply **A1** together with the following:

3.1

re-useable particle filtering half mask

particle filtering half mask intended to be used for more than a single shift **A1**

4 Description

A particle filtering half mask covers the nose and mouth and the chin and may have inhalation and/or exhalation valve(s). The half mask consists entirely or substantially of filter material or comprises a facepiece in which the main filter(s) form an inseparable part of the device.

It is intended to provide adequate sealing on the face of the wearer against the ambient atmosphere, when the skin is dry or moist and when the head is moved.

Air enters the particle filtering half mask and passes directly to the nose and mouth area of the facepiece or, via an inhalation valve(s) if fitted. The exhaled air flows through the filter material and/or an exhalation valve (if fitted) directly to the ambient atmosphere.

These devices are designed to protect against both solid and liquid aerosols.

5 Classification

Particle filtering half masks are classified according to their filtering efficiency and their maximum total inward leakage. There are three classes of devices:

FFP1, FFP2 and FFP3.

The protection provided by an FFP2 - or FFP3 - device includes that provided by the device of lower class or classes.

A1 In addition, particle filtering half masks are classified as single shift use only or as re-usable (more than one shift). **A1**

6 Designation

Particle filtering half masks meeting the requirements of this European Standard shall be designated in the following manner:

A1 Particle filtering half mask EN 149, year of publication, classification, option (where "D" is an option for a non re-useable particle filtering half mask and mandatory for re-useable particle filtering half mask). **A1**

A1 EXAMPLE Particle filtering half mask EN 149:2001 FFP1 NR D **A1**

7 Requirements

7.1 General

In all tests all test samples shall meet the requirements.

7.2 Nominal values and tolerances

Unless otherwise specified, the values stated in this European Standard are expressed as nominal values. Except for temperature limits, values which are not stated as maxima or minima shall be subject to a tolerance of $\pm 5\%$. Unless otherwise specified, the ambient temperature for testing shall be (16 - 32) °C, and the temperature limits shall be subject to an accuracy of ± 1 °C.

7.3 Visual inspection

The visual inspection shall also include the marking and the information supplied by the manufacturer.

7.4 Packaging

Particle filtering half masks shall be offered for sale packaged in such a way that they are protected against mechanical damage and contamination before use.

Testing shall be done in accordance with 8.2.

7.5 Material

Materials used shall be suitable to withstand handling and wear over the period for which the particle filtering half mask is designed to be used.

After undergoing the conditioning described in 8.3.1 none of the particle filtering half masks shall have suffered mechanical failure of the facepiece or straps.

Three particle filtering half masks shall be tested.

When conditioned in accordance with 8.3.1 and 8.3.2 the particle filtering half mask shall not collapse.

Any material from the filter media released by the air flow through the filter shall not constitute a hazard or nuisance for the wearer.

Testing shall be done in accordance with 8.2.

7.6 Cleaning and disinfecting

A1 If the particle filtering half mask is designed to be re-useable, the materials used shall withstand the cleaning and disinfecting agents and procedures to be specified by the manufacturer. **A1**

Testing shall be done in accordance with 8.4 and 8.5.

A1) With reference to 7.9.2, after cleaning and disinfecting the re-usable particle filtering half mask shall satisfy the penetration requirement of the relevant class.

Testing shall be done in accordance with 8.11. **A1)**

7.7 Practical performance

The particle filtering half mask shall undergo practical performance tests under realistic conditions. These general tests serve the purpose of checking the equipment for imperfections that cannot be determined by the tests described elsewhere in this standard.

Where practical performance tests show the apparatus has imperfections related to wearer's acceptance, the test house shall provide full details of those parts of the practical performance tests which revealed these imperfections.

Testing shall be done in accordance with 8.4.

7.8 Finish of parts

Parts of the device likely to come into contact with the wearer shall have no sharp edges or burrs.

Testing shall be done in accordance with 8.2.

7.9 Leakage

7.9.1 Total inward leakage

The laboratory tests shall indicate that the particle filtering half mask can be used by the wearer to protect with high probability against the potential hazard to be expected.

The total inward leakage consists of three components: face seal leakage, exhalation valve leakage (if exhalation valve fitted) and filter penetration.

For particle filtering half masks fitted in accordance with the manufacturer's information, at least 46 out of the 50 individual exercise results (i.e. 10 subjects x 5 exercises) for total inward leakage shall be not greater than

25 % for FFP1

11 % for FFP2

5 % for FFP3

and, in addition, at least 8 out of the 10 individual wearer arithmetic means for the total inward leakage shall be not greater than

22 % for FFP1

8 % for FFP2

2 % for FFP3.

Testing shall be done in accordance with 8.5.