

# ILNAS

Institut luxembourgeois de la normalisation  
de l'accréditation, de la sécurité et qualité  
des produits et services

## ILNAS-EN 149:2001

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

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

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

04/2001



## National Foreword

This European Standard EN 149:2001 was adopted as Luxembourgish Standard ILNAS-EN 149:2001.

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

- Participate in the design of standards
- Foresee future developments
- Participate in technical committee meetings

<https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html>

### **THIS PUBLICATION IS COPYRIGHT PROTECTED**

Nothing from this publication may be reproduced or utilized in any form or by any mean - electronic, mechanical, photocopying or any other data carries without prior permission!

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

This European Standard was approved by CEN on 8 March 2001.

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 Management Centre 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

## Contents

	Page
Foreword.....	5
Introduction .....	5
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions .....	6
4 Description.....	6
5 Classification .....	6
6 Designation.....	6
7 Requirements .....	6
7.1 General .....	6
7.2 Nominal values and tolerances.....	7
7.3 Visual inspection.....	7
7.4 Packaging.....	7
7.5 Material.....	7
7.6 Cleaning and disinfecting.....	7
7.7 Practical performance.....	7
7.8 Finish of parts.....	7
7.9 Leakage .....	8
7.9.1 Total inward leakage.....	8
7.9.2 Penetration of filter material.....	8
7.10 Compatibility with skin .....	8
7.11 Flammability.....	9
7.12 Carbon dioxide content of the inhalation air.....	9
7.13 Head harness .....	9
7.14 Field of vision .....	9
7.15 Exhalation valve(s).....	9
7.16 Breathing resistance.....	10

7.17	Clogging.....	10
7.17.1	General .....	10
7.17.2	Breathing resistance.....	10
7.17.3	Filter penetration .....	11
7.18	Demountable parts.....	11
8	Testing.....	11
8.1	General .....	11
8.2	Visual inspection.....	11
8.3	Conditioning .....	11
8.3.1	Simulated wearing treatment .....	11
8.3.2	Temperature conditioning.....	12
8.3.3	Mechanical strength .....	12
8.3.4	Flow conditioning .....	12
8.4	Practical performance.....	12
8.4.1	General .....	12
8.4.2	Walking test .....	12
8.4.3	Work simulation test.....	13
8.5	Leakage .....	13
8.5.1	General test procedure.....	13
8.5.2	Method .....	15
8.6	Flammability .....	17
8.7	Carbon dioxide content of the inhalation air.....	17
8.8	Strength of attachment of exhalation valve housing .....	18
8.9	Breathing Resistance .....	18
8.9.1	Test samples and fixture.....	18
8.9.2	Exhalation resistance .....	18
8.9.3	Inhalation resistance .....	19
8.10	Clogging.....	19
8.10.1	Principle .....	19
8.10.2	Test equipment.....	19
8.10.3	Test conditions.....	19

<b>8.10.4</b>	<b>Test procedure .....</b>	<b>21</b>
<b>8.10.5</b>	<b>Assessment of clogging .....</b>	<b>21</b>
<b>8.11</b>	<b>Filter penetration .....</b>	<b>21</b>
<b>9</b>	<b>Marking .....</b>	<b>21</b>
<b>9.1</b>	<b>Packaging .....</b>	<b>21</b>
<b>9.2</b>	<b>Particle filtering half mask .....</b>	<b>22</b>
<b>10</b>	<b>Information to be supplied by the manufacturer .....</b>	<b>22</b>
<b>Annex A (informative) Marking .....</b>		<b>36</b>
<b>Annex ZA (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives .....</b>		<b>37</b>
<b>Bibliography .....</b>		<b>38</b>

## Foreword

This European Standard 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 October 2001, and conflicting national standards shall be withdrawn at the latest by October 2001.

This European Standard supersedes EN 149:1991.

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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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*

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.

### 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.

### 6 Designation

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

Particle filtering half mask EN 149, year of publication, class, option.

EXAMPLE Particle filtering half mask EN 149 (2000) FFP3D.

### 7 Requirements

#### 7.1 General

In all tests all test samples shall meet the requirements.