



SLOVENSKI STANDARD

SIST EN 141:1996

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Oprema za varovanje dihal - Filtri za pline in kombinirani filtri - Zahteve, preskušanje, označevanje

Respiratory protective devices - Gas filters and combined filters - Requirements, testing, marking

Atenschutzgeräte - Gasfilter und Kombinationsfilter - Anforderungen, Prüfung, Kennzeichnung

Appareils de protection respiratoire - Filtres anti-gaz et filtres combinés - Exigences, essais, marquage

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ICS:

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EUROPEAN STANDARD

EN 141

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English version

Respiratory protective devices - Gas filters and combined filters - Requirements, testing, marking

Appareils de protection respiratoire - Atemschutzgeraete - Gasfilter und
 Filtres anti-gaz et filtres combinés - Kombinationsfilter - Anforderungen,
 Exigences, essais, marquage Pruefung, Kennzeichnung

This European Standard was accepted by CEN on 1990-08-08.

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN 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 CEN Central Secretariat has the same status as the official versions.

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CEN

European Committée for Standardization
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 Europäisches Komitee für Normung

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FOREWORD

This European Standard has been drawn up by CEN/TC 79 "Respiratory protective devices", the Secretariat of which is held by DIN.

The work was allocated in 1975 to Sub-Group 4 (SG 4) "Filters and absorption devices" with the Finish Standardization Institute (SFS) as secretariat.

A first draft was circulated in January 1981 to all CEN Members. As a result of this enquiry, 6 members approved while 5 others disapproved the document.

During the following years all comments received were discussed at subsequent meetings of SG 4. CEN/TC 79 finally decided to proceed with the formal vote and the Document was finally adopted in January 1990.

In accordance with Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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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 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 Object and Field of Application

This European Standard refers to gas filters and combined filters for use as components in unassisted respiratory protective devices with the exception of escape apparatus and filtering facepieces.

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

Some filters complying with this standard may also be suitable for use with other types of respiratory protective devices and if so shall be tested and marked according to the appropriate European Standard.

2 References

EN 143 Respiratory protective devices; Particle Filters; Requirements, testing, marking

EN 148 Part 1 Respiratory protective devices; Threads for facepieces; Standard thread connection

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3 Definition and description

Gas filters remove specified gases and vapours.

Combined filters remove dispersed solid and/or liquid particles, and specified gases and vapours.

4 Classification

According to their application and protection capacity gas and combined filters are classified in types and classes.

4.1 Types of filters

Gas filters are contained in one of the following types or combinations of them. If a filter is a combination of types, it shall meet the requirements of each type separately.

4.1.1 Types A, B, E and K

Type A: For use against certain organic gases and vapours with a boiling point higher than 65 °C as specified by the manufacturer.

Note:

The requirements for filters for use against organic low boiling compounds will be given in a separate standard.

Type B: For use against certain inorganic gases and vapours as specified by the manufacturer (excluding carbon monoxide).

Type E: For use against sulphur dioxide and other acidic gases and vapours as specified by the manufacturer.

Type K: For use against ammonia and organic ammonia derivatives as specified by the manufacturer.

4.1.2 Special filters

These filters shall always incorporate a P3 filter.

Type NO-P3: For use against nitrogen oxides, e.g. NO, NO₂, NO_x.

Type Hg-P3: For use against mercury.

4.2 Classes of filters

Gas filters of types A, B, E and K are classified in terms of capacity as follows

Class 1	Low capacity filters
Class 2	Medium capacity filters
Class 3	High capacity filters

The protection provided by a class 2 or class 3 filter includes that provided by the corresponding filter of lower class or classes.

Special filters are not classified.

5 Requirements

5.1 General

If the gas filter is combined with a particle filter, the combined filter shall meet the filtration efficiency requirement for the particle filter as described in EN 143 in addition to the requirements described below.

The connection between filter(s) and facepiece shall be robust and leaktight.

The connection between filter and facepiece may be achieved by a permanent or special type of connection or by a screw thread connection (including threads other than standard threads). If a standard thread is used it shall be in accordance with the European Standard EN 148 part 1. If the filter is a twin filter designated to be used with a twin filter facepiece, it shall not be possible to connect it to the standard thread connector.

The filter shall be readily replaceable without use of special tools and shall be designed or marked to prevent incorrect assembly.

The particle filter of combined filters shall be on the influent side of the gas filter.

The maximum weight of filter(s) designated to be used directly connected to a half mask is 300 g.

The maximum weight of filter(s) designated to be used directly connected to a full face mask is 500 g.

5.2 Materials

The filter shall be made of suitable material to withstand normal usage and exposures to those temperatures, humidity and corrosive environments that are likely to be encountered. Internally it shall withstand corrosion by the filtering media. (standards.iteh.ai)

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

5.3 Mechanical strength

Before testing for breathing resistance and protection capacity the filters shall be subjected to a test in accordance with 6.2 simulating rough usage of the filter.

After this treatment the filters shall show no mechanical defects and shall meet the requirements for breathing resistance and protection capacity.

5.4 Breathing resistance

The resistance imposed by filter(s) to the flow of air shall be as low as possible and in no case exceed the values shown in table 1 when tested in accordance with 6.3.

Table 1 - Maximum breathing resistance

Filter type and class	Maximum resistance in mbar*)	
	at 30 l/min	at 95 l/min
<u>Types A, B, E and K</u>		
1	1,0	4,0
1-P1	1,6	6,1
1-P2	1,7	6,4
1-P3	2,2	8,2
2	1,4	5,6
2-P1	2,0	7,7
2-P2	2,1	8,0
2-P3	2,6	9,8
3	1,6	6,4
3-P1	2,2	8,5
3-P2	2,3	8,8
3-P3	2,8	10,6
<u>Special filters</u>		
NO-P3	2,6	9,8
Hg-P3	2,6	9,8

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Note: For particle filters P1, P2 and P3, see EN 143.

*) 1 bar = 10^5 N/m^2 = 100 kPa

5.5 Protection capacity

When tested in accordance with 6.4 filters shall meet the appropriate requirements of tables 2 and 3.

Table 2 - Protection capacity of gas filters of types A, B, E and K

Filter type and class	Test gas	Minimum capacity at test condition g	Minimum breakthrough time at test condition min
A 1	Tetrachloromethane (CCl ₄)	15,4	80
B 1	Chlorine (Cl ₂)	1,8	20
	Hydrogen sulphide (H ₂ S)	1,7	40
	Hydrogen cyanide (HCN)	0,84	25
E 1	Sulphur dioxide (SO ₂)	1,6	20
K 1	Ammonia (NH ₃)	1,05	50
A 2	Tetrachloromethane (CCl ₄)	38,4	40
B 2	Chlorine (Cl ₂)	9,0	20
	Hydrogen sulphide (H ₂ S)	8,5	40
	Hydrogen cyanide (HCN)	4,2	25
E 2	Sulphur dioxide (SO ₂)	8,0	20
K 2	Ammonia (NH ₃)	4,2	40
A 3	Tetrachloromethane (CCl ₄)	115,2	60
B 3	Chlorine (Cl ₂)	27,0	30
	Hydrogen sulphide (H ₂ S)	25,6	60
	Hydrogen cyanide (HCN)	11,8	35
E 3	Sulphur dioxide (SO ₂)	23,9	30
K 3	Ammonia (NH ₃)	12,6	60