



SLOVENSKI STANDARD

SIST EN 141:2001

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SIST EN 141:1996

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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 <https://standards.iteh.ai/catalog/standards/sist/9730aa51-0009-40db-a269-55d0abcdac03/sist-en-141-2001>

Ta slovenski standard je istoveten z: EN 141:2000

ICS:

13.340.30	Varovalne dihalne naprave	Respiratory protective devices
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en

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English version

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

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

Atemschutzgeräte - Gasfilter und Kombinationsfilter -
Anforderungen, Prüfung, Kennzeichnung

This European Standard was approved by CEN on 7 January 2000.

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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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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 replaces EN 141:1990.

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 August 2000, and conflicting national standards shall be withdrawn at the latest by August 2000.

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.

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.

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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 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 gas filters and combined filters for use as components in unassisted respiratory protective devices. AX filters against low boiling organic compounds, SX filters against specific named compounds and CO filters are excluded.

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 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.

- <https://standards.iteh.ai/catalog/standards/sist/9730aa51-0009-40db-a269-5540abcd-67611011-1f-2000>
- 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.*
- EN 148-1** *Respiratory protective devices - Threads for facepieces - Part 1: Standard thread connection.*
- EN 371** *Respiratory protective devices - AX gas filters and combined filters against low boiling organic compounds - Requirements, testing, marking.*
- EN 372** *Respiratory protective devices - SX gas filters and combined filters against specific named compounds - Requirements, testing, marking.*

3 Definitions

For the purposes of this European Standard the definitions in EN 132 and the nomenclature given in EN 134 apply.

4 Description

Air enters the gas or combined filter(s) and passes to the facepiece after removal of gases and vapours or gases, vapours and particles.

5 Classification

5.1 Introduction

Gas and combined filters are classified in types and classes according to their application and gas capacity.

5.2 Types of filters

5.2.1 Gas filters

Gas filters are produced in one of the following types:

- **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.
- **Type B** For use against certain inorganic gases and vapours as specified by the manufacturer (excluding e.g. 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.

5.2.2 Multi-type gas filters

Filters which are a combination of two or more of the above types and which meet the requirements of each type separately.

5.2.3 Combined filters

Gas or multi-type gas filters incorporating a particle filter.

5.2.4 Special filters

Special filters are:

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

These filters shall always incorporate a P3 filter according to EN 143.

5.3 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.

The classification of combined filter(s) includes that of particle filter(s) according to EN 143.

Special filters are not classified.

6 Designation

Gas filters and combined filters meeting the requirements of this standard shall be designated in the following manner:

- gas filter EN 141, filter type, class
- combined filter EN 141 filter type, class, option
 - e.g. gas filter EN 141 A2
 - gas filter EN 141 A1B2
 - combined filter EN 141 A2P3
 - combined filter EN 141 A2B2E2K2P3D or ABEK2P3D

NOTE If the class of each gas filter type of a multi-type gas filter is the same, the above shortened designation is permissible. If the classes are not the same, the designation shall be written to show the class of each type.

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 standard are expressed as nominal values. Except for temperature limits, values which are not stated as maximum or minimum shall be subject to a tolerance of $\pm 5\%$. Unless otherwise specified, the ambient temperature for testing shall generally be $(24 \pm 8)^\circ\text{C}$ but for the mechanical tests $(20 \pm 10)^\circ\text{C}$, and the temperature limits shall be subject to an accuracy of $\pm 1^\circ\text{C}$.

7.3 Visual inspection

The visual inspection shall be carried out prior to laboratory tests and as specified elsewhere in this standard.

Testing shall be done in accordance with 8.2.

7.4 Connection

The connection between filter(s) and facepiece or other device(s) with which it is intended to be used shall be robust and leaktight.

The connection between filter and facepiece may be achieved by a permanent or special connector or a screw thread including a thread conforming to EN 148-1.

Threads conforming to EN 148-2 or EN 148-3 shall not be used.

If the filter is designated to be used on a multiple filter facepiece or has any other thread, it shall not be possible to connect it to a thread conforming to EN 148-1, EN 148-2 or EN 148-3.

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.

Testing shall be done in accordance with 8.2.

7.5 Mass

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

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

Testing shall be done in accordance with 8.1.

7.6 Multiple filters

Where filtering devices are designed to use more than one filter (i.e. multiple filter device), through which the flow is proportioned, all requirements given in this European standard are to be met by the complete set of filters (e.g. the total mass of a filter set designated to be used directly connected to a half mask shall not exceed 300 g).

If, however, it is possible that a single filter of a multiple filter device may be used alone, then the requirements of the full flow rate for the tests, as stated in this European standard, shall be met.

In the information supplied by the manufacturer all necessary information on how to use multiple filters shall be given.

Testing shall be done in accordance with 8.1 and 8.2.

7.7 Material

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.

Any material of the filter media or any gaseous products that may be released by the air flow through the filter shall not be known to constitute a hazard or nuisance for the wearer.

Testing shall be done in accordance with 8.2.

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7.8 Packaging

Filters shall be offered for sale packaged in such a way that they are protected against mechanical damage or visual contamination before use.

Where appropriate, filters shall be factory sealed to protect the filter media against environmental influences and in such a way that the breaking of the factory sealing can be identified.

Testing shall be done in accordance with 8.2.

7.9 Mechanical strength (M.S.)

Filters shall be subjected to the mechanical strength test when required by the relevant clauses of this standard.

Testing shall be done in accordance with 8.3.

After this treatment the filters shall show no mechanical defect and shall meet the requirement of the relevant clauses.

Testing shall be done in accordance with 8.2.

7.10 Temperature conditioning (T.C.)

Filters shall be subjected to the temperature conditioning test when required by the relevant clauses of this standard.

Testing shall be done in accordance with 8.4.

After the treatment the filters shall show no signs of damage and shall meet the requirement of the relevant clauses.

Testing shall be done in accordance with 8.2.

7.11 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.

Four filters shall be tested, two after the test for mechanical strength according to 8.3 and two after the test for mechanical strength according to 8.3 followed by the temperature conditioning test according to 8.4.

Testing shall be done in accordance with 8.6.

Table 1 — Maximum breathing resistance and maximum breathing resistance after clogging

Filter type and class	Maximum resistance in mbar ^{*)}		Maximum resistance after clogging in mbar ^{*)} at 95 l/min
	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	8,0
1-P2	1,7	6,4	9,0
1-P3	2,2	8,2	9,0
2	1,4	5,6	
2-P1	2,0	7,7	9,6
2-P2	2,1	8,0	10,6
2-P3	2,6	9,8	10,6
3	1,6	6,4	
3-P1	2,2	8,5	10,4
3-P2	2,3	8,8	11,4
3-P3	2,8	10,6	11,4
<u>Special filters</u>			
NO-P3	2,6	9,8	10,6
Hg-P3	2,6	9,8	10,6

^{*)} 1 bar = 10⁵ N/m² = 100 kPa

7.12 Gas capacity

Filters shall meet the appropriate requirements of Table 2 and Table 3.

Three filters shall be tested after the test for mechanical strength according to 8.3.

Testing shall be done in accordance with 8.7.

NOTE 1 The minimum breakthrough time is intended only for laboratory tests under standardized conditions. It does not give an indication of the possible service time in practical use. Possible service times can differ from the breakthrough times determined according to this standard in both directions, positive or negative, depending on the conditions of use.

NOTE 2 The breakthrough concentration is an arbitrary value and it is used only to define the end point of the filter capacity under laboratory testing conditions.