SLOVENSKI STANDARD
SIST EN 12942:2024

01-marec-2024

Nadomešča:
SIST EN 12942:1999
SIST EN 12942:1999/A1:2003
SIST EN 12942:1999/A2:2009

Oprema za varovanje dihal - Zaščitna obrazna, polobrazna ali četrtinska maska s tlačno filtracijo zraka - Zahteve, preskušanje, označevanje

Respiratory protective devices - Powered filtering devices incorporating full face masks, half masks or quarter masks - Requirements, testing, marking

Atemschutzgeräte - Gebläsefiltergeräte mit Vollmaske, Halbmaske oder Viertelmaske - Anforderungen, Prüfung, Kennzeichnung

Appareils de protection respiratoire - Appareils filtrants à ventilation assistée avec masques complets, demi-masques ou quarts de masques - Exigences, essais, marquage

Ta slovenski standard je istoveten z: **EN 12942:2023**

ICS:

13.340.30	Varovalne dihalne naprave	Respiratory protective devices

SIST EN 12942:2024 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12942

December 2023

ICS 13.340.30

Supersedes EN 12942:1998

English Version

Respiratory protective devices - Powered filtering devices incorporating full face masks, half masks or quarter masks - Requirements, testing, marking

Appareils de protection respiratoire - Appareils filtrants à ventilation assistée avec masques complets, demi-masques ou quarts de masques - Exigences, essais, marquage

Atemschutzgeräte - Gebläsefiltergeräte mit Vollmaske, Halbmaske oder Viertelmaske - Anforderungen, Prüfung, Kennzeichnung

This European Standard was approved by CEN on 9 August 2021.

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 CEN-CENELEC 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 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.

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

This document (EN 12942:2023) 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 June 2024 and conflicting national standards shall be withdrawn at the latest by June 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12942:1998.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

The following main technical changes have been made compared to EN 12942:1998:

a) Clause 4 Designation was deleted;

b) number of test samples was added to the requirements, where necessary;

c) classification table was amended to cover Hg and NO filter for all classes (TM1, TM2 and TM3);

d) nominal values and tolerances were added;

e) clogging was deleted;

f) warning facilities were amended to cover low energy and low flow warning;

g) visual inspection was changed to inspection and detailed list inserted;

h) test substances and number of test subjects for inward leakage test was changed;

i) test for noise level was adapted to the test procedure specified in ISO 16900-14:2020;

j) Annex A was deleted;

k) figures were adapted to the changes made in the test procedures, where appropriate.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, 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 the United Kingdom.

1 Scope

This document specifies minimum requirements for powered Respiratory Protective Devices (RPD) incorporating a tight-fitting respiratory interface. It does not cover devices designed for use in circumstances where there is or might be an oxygen deficiency.

Escape RPD and filters for use against CO are not covered by this document.

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

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 136:1998, *Respiratory protective devices — Full face masks — Requirements, testing, marking*

EN 140:1998, *Respiratory protective devices — Half masks and quarter masks — Requirements, testing, marking*

EN 148-1:2018, *Respiratory protective devices — Threads for facepieces — Part 1: Standard thread connection*

EN 148-2:1999, *Respiratory protective devices — Threads for facepieces — Part 2: Centre thread connection*

EN 148-3:1999, *Respiratory protective devices — Threads for facepieces — Part 3: Thread connection M 45 × 3*

EN 175:1997, *Personal protection — Equipment for eye and face protection during welding and allied processes*

EN 13274-2:2019, *Respiratory protective devices — Methods of test — Part 2: Practical performance tests*

EN 13274-4:2020, *Respiratory protective devices — Methods of test — Part 4: Flame test*

EN 13274-7:2019, *Respiratory protective devices — Methods of test — Part 7: Determination of particle filter penetration*

EN ISO 16321-1:2022, *Eye and face protection for occupational use — Part 1: General requirements (ISO 16321-1:2021)*

EN ISO 16321-3:2022, *Eye and face protection for occupational use — Part 3: Additional requirements for mesh protectors (ISO 16321-3:2021)*

EN ISO 16972:2020, *Respiratory protective devices — Vocabulary and graphical symbols (ISO 16972:2020)*

ISO 16900-14:2020, *Respiratory protective devices — Methods of test and test equipment — Part 14: Measurement of sound pressure level*

3 Terms and definitions, description and symbols

For the purposes of this document, the terms and definitions given in EN ISO 16972:2020 and the following apply.

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

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp/

3.1 Terms and definitions

3.1.1
as received
not pre-conditioned or modified to carry out a test

[SOURCE: EN ISO 16972:2020, definition 3.16]

3.1.2
ready for assembly state
component with seals, plugs or other environmental protective means, if applicable, still in place

[SOURCE: EN ISO 16972:2020, definition 3.195]

3.1.3
respiratory interface
RI
part of a respiratory protective device (RPD) that forms the protective barrier between the wearer's respiratory tract and the ambient atmosphere

Note 1 to entry: The RI is connected to the filtering part of the RPD or the part managing the supply of breathable gas.

[SOURCE: EN ISO 16972:2020, definition 3.202]

3.1.4
tight-fitting respiratory interface
RI that forms a protective barrier between the wearers respiratory tract and the ambient atmosphere by forming a seal to the wearer’s skin

[SOURCE: EN ISO 16972:2020, definition 3.241]

3.1.5
powered filtering RPD
filtering RPD in which air is moved through the filter(s) by means of a blower to supply the wearer with breathable air

[SOURCE: EN ISO 16972:2020, definition 3.180]

3.1.6
unencapsulated filter
filter that in itself is not contained in a rigid housing

[SOURCE: EN ISO 16972:2020, definition 3.247]

3.1.7
manufacturer's minimum design condition
lowest level of operating conditions of the device as stated by the manufacturer at which the complete RPD will still meet the requirements for the designated class

[SOURCE: EN ISO 16972:2020, definition 3.137]

3.2 Description

Each device typically consists of:

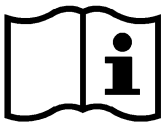
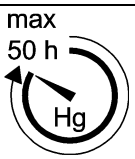
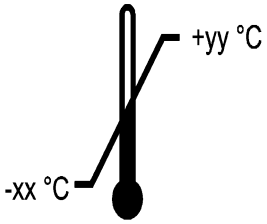
— a tight-fitting respiratory interface, e.g. a full face mask, a half mask or a quarter mask which can be combined with other types of PPE;

— a blower unit with an energy supply intended to be carried/worn by the wearer which supplies filtered ambient air to the respiratory interface. The energy supply for the blower unit can or cannot be carried on the person;

— a filter or filters through which all air supplied passes;

— one or more exhalation valves or other outlets through which exhaled air and air in excess of the wearer's demand is discharged.

3.3 Symbols

3.3.1		"See information supplied by the manufacturer"
3.3.2		Crossed out 2: Symbol “for single shift use only” During one shift multiple use is allowed.
3.3.3		Hour glass “end of shelf life” YYYY-MM Key: YYYY = year, MM = month
3.3.4		Maximum time of use of Hg filters
3.3.5		Temperature range of storage conditions Key: -xx °C to +yy °C
3.3.6		Maximum humidity of storage conditions Key: <xx %

4 Classification

The complete devices are classified and designated according to the maximum inward leakage and maximum particle filter penetration as given in Table 1 and strength of hoses and couplings as given in Table 2.

Table 1 — Classification

Classification of complete device			Maximum inward leakage (TIL or IL) [a] %		Maximum particle filter penetration %	
			Power			
Class	Gasfilter type and class (if applicable)	Particle filter (if applicable)	On	Off	NaCl	Paraffin oil
TM1	A1, A2 or A3 B1, B2 or B3 E1, E2 or E3 K1, K2 or K3 AX SX	P	5	5	5	5
	Hg P NO P				0,05	0,05
TM2	A1, A2 or A3 B1, B2 or B3 E1, E2 or E3 K1, K2 or K3 AX SX	P	0,5	1	0,5	0,5
	Hg P NO P				0,05	0,05
TM3	A1, A2 or A3 B1, B2 or B3 E1, E2 or E3 K1, K2 or K3 AX SX	P	0,05	0,1	0,05	0,05
	Hg P NO P					

EXAMPLE TM2A2P: a powered filtering device incorporating a tight-fitting RI (TM) fitted with a combined gas filter and a particle filter (A2P) and where the inward leakage of the complete device is 0,5 % or less.

[a] TIL for combined and particle filter systems only. IL for gas filter systems.

Check in accordance with 7.3.

5 Requirements

5.1 General

All test samples specified in the related test clauses shall meet the relevant requirements.

Where it is required in a specific clause the manufacturer shall declare that a risk assessment, e.g. a Failure Modes and Effect Analysis (FMEA) concerning these specific requirements has been conducted.

NOTE Further information is given in EN IEC 60812 [1].

If the manufacturer claims that the RPD may be used in potentially explosive atmospheres it shall comply with the appropriate requirements.

If the RPD is intended to provide additional protection, e.g. head protection, eye protection, face protection, or including protective clothing it shall additionally comply with the relevant requirements of the standards covering those related PPE.

Check in accordance with 6.3.

It shall not be possible to connect any part of the RPD to a thread conforming to EN 148-2:1999 or EN 148-3:1999.

Check in accordance with 6.3.

When the RPD manufacturer states that an accessory is intended for use with the RPD, the RPD including the accessory shall be tested.

Check in accordance with 6.3 and test in accordance with the appropriate test method.

Depending on the design of the RPD all air flow rates can be influenced by:

— possible flow settings of the RPD,

— service life,

— the charging status of the battery,

— different filter types,

— alarm settings,

— use of accessories,

— hose length, and

— other factors, if applicable.

All results of measured air flow rates are deemed to be volumetric flow rates and shall be corrected to 20 °C, 1 013 hPa according to Formula (1).

$$Q_{cor} = Q_m \cdot k \cdot \left(\frac{P_m}{T_m} \right) \quad (1)$$

where

Q_{cor} is the corrected air flow;

Q_m is the measured air flow;

k is a constant 0,289 [K/hPa], i.e. 293 K divided by 1 013 hPa (20°C);

P_m is the pressure during measurement in hPa;

T_m is the temperature during measurement in K.

5.2 Values and tolerances

Temperature limits, values which describe test conditions and that are not stated as maxima or minima shall be subject to a tolerance of ± 5 %. Unless otherwise specified, the ambient conditions for testing shall be between 16 °C and 32 °C and (50 ± 30) % relative humidity.

Any temperature limits specified shall be subject to an accuracy of ± 1 °C.

5.3 Ergonomics

The requirements of this document are intended to take account of the interaction between the wearer, the RPD, and where possible the working environment in which the RPD is likely to be used. The RPD shall satisfy 5.5, 5.11 and 5.12.

Testing shall be performed in accordance with EN 13274-2:2019.

5.4 Design

The finish of any part of the device likely to be in contact with the wearer shall be free from sharp edges and burrs.

Check in accordance with 6.3 and test in accordance with EN 13274-2:2019.

5.5 Materials

5.5.1 General

Materials used shall be suitable to withstand the intended use and conditions (e.g. temperatures, humidity and corrosive environments) as stated by the manufacturer, unless otherwise specified in this document.

The manufacturer shall supply a declaration that this was addressed by a risk assessment, e.g. a FMEA.

Check in accordance with 6.3.

5.5.2 Skin compatibility

Materials that may come into direct contact with the wearer's skin or that can affect the quality of the breathing air shall not be known to be likely to cause skin irritation or any other adverse effects to health.

The manufacturer shall supply a declaration that this was addressed by a risk assessment, e.g. a FMEA.

Check in accordance with 6.3.

5.6 Mechanical strength (optional)

After conditioning in accordance with 6.2.1, blower units and battery casings (if separate from the blower unit) shall show no significant deformation of major components, nor shall these components separate from each other.

The requirements of 5.7, 5.9 to 5.14 and 5.16 to 5.20 shall be met and the RPD shall be marked in accordance with 7.3 d).

5.7 Resistance to temperature

After conditioning at the extremes of temperature and humidity in accordance with 6.2.2, the RPD components including filters in their ready for assembly state shall show no significant deformation of major components, nor shall these components separate from each other or from the complete RPD. The requirements of 5.8 to 5.14 and 5.16 to 5.20 shall be met.