SLOVENSKI STANDARD
SIST EN 14594:2018

01-julij-2018

Nadomešča:
SIST EN 14594:2005
SIST EN 14594:2005/AC:2006

Oprema za varovanje dihal - Dihalni aparat na stisnjeni zrak s trajnim pretokom - Zahteve, preskušanje in označevanje

Respiratory protective devices - Continuous flow compressed air line breathing devices - Requirements, testing and marking

Atemschutzgeräte - Druckluft-Schlauchgeräte mit kontinuierlichem Luftstrom - Anforderungen, Prüfung und Kennzeichnung

Appareils de protection respiratoire - Appareils de protection respiratoire isolants à adduction d'air comprimé à débit continu - Exigences, essais et marquage

Ta slovenski standard je istoveten z: **EN 14594:2018**

ICS:

13.340.30	Varovalne dihalne naprave	Respiratory protective devices

SIST EN 14594:2018 **en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 14594

May 2018

ICS 13.340.30

Supersedes EN 14594:2005

English Version

Respiratory protective devices - Continuous flow compressed air line breathing devices - Requirements, testing and marking

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This European Standard was approved by CEN on 16 March 2018.

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

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European foreword

This document (EN 14594:2018) 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of an identical text or by endorsement, at the latest by November 2018, and conflicting national standards shall be withdrawn at the latest by November 2018.

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

This document supersedes EN 14594:2005.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential health and safety requirements of EU Regulation(s).

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

The following main technical changes have been made compared to EN 14594:2005:

a) requirements for cleaning and disinfection deleted;

b) visual inspection changed to inspection and detailed list inserted;

c) test for noise level adapted to the test procedure specified in ISO 16900-14;

d) requirements and test method for protective clothes specified;

e) test for leaktightness added;

f) Annex A deleted;

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

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies minimum requirements for continuous flow compressed air line breathing devices for use with a full face mask, half mask, hood, helmet or suit, and devices used in abrasive blasting operations, as a Respiratory Protective Device (RPD).

Escape RPD and diving apparatus are not covered by this document.

Laboratory and practical performance tests are included for the assessment of conformance to 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 132:1998, *Respiratory protective devices — Definitions of terms and pictograms*

EN 134:1998, *Respiratory protective devices — Nomenclature of components*

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, *Respiratory protective devices — Threads for facepieces — Part 1: Standard thread connection*

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

EN 148-3, *Respiratory protective devices — Threads for facepieces — Part 3: Tread connection M 45 x 3*

EN 166:2001, *Personal eye-protection — Specifications*

EN 169, *Personal eye-protection — Filters for welding and related techniques — Transmittance requirements and recommended use*

EN 170, *Personal eye-protection — Ultraviolet filters — Transmittance requirements and recommended use*

EN 171, *Personal eye-protection — Infrared filters — Transmittance requirements and recommended use*

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

EN 379, *Personal eye-protection — Automatic welding filters*

EN 397:2012+A1:2012, *Industrial safety helmets*

EN 12021, *Respiratory equipment — Compressed gases for breathing apparatus*

EN 12941:1998, *Respiratory protective devices — Powered filtering devices incorporating a helmet or a hood — Requirements, testing, marking*

EN 13274-1:2001, *Respiratory protective devices — Methods of test — Part 1: Determination of inward leakage and total inward leakage*

EN 13274-2:2001, *Respiratory protective devices — Methods of test — Part 2: Practical performance tests*

EN 13274-3:2001, *Respiratory protective devices — Methods of test — Part 3: Determination of breathing resistance*

EN 13274-4:2001, *Respiratory protective devices — Methods of test — Part 4: Flame tests*

EN 13274-6, *Respiratory protective devices — Methods of test — Part 6: Determination of carbon dioxide content of the inhalation air*

EN ISO 4674 (all parts), *Rubber- or plastics-coated fabrics — Determination of tear resistance*

EN ISO 7854:1997, *Rubber- or plastics-coated fabrics — Determination of resistance to damage by flexing (ISO 7854:1995)*

EN ISO 8031, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance and conductivity (ISO 8031)*

EN ISO 13688:2013, *Protective clothing — General requirements (ISO 13688:2013)*

EN ISO 13934-2, *Textiles - Tensile properties of fabrics — Part 2: Determination of maximum force using the grab method (ISO 13934-2)*

EN ISO 14877:2002, *Protective clothing for abrasive blasting operations using granular abrasives (ISO 14877:2002)*

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

3 Terms, description and symbols

For the purposes of this document, the terms, definitions and symbols given in EN 132:1998, EN 134:1998 and the following apply.

3.1 Terms

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

3.1.2
mobile compressed air supply system
supply system that can include a compressor, filters, compressed air pressure vessels, for use as a mobile source of breathing air

3.1.3
minimum flow condition
those factors appropriate to the design specified by the manufacturer which give rise to the lowest flow rate

Note 1 to entry: These factors can include the maximum length of compressed air supply tube, maximum number of couplings in the compressed air supply tube, tube internal diameter and supply pressure.

3.1.4
maximum flow condition
those factors appropriate to the design specified by the manufacturer which give rise to the highest flow rate

Note 1 to entry: These factors can include the minimum length of compressed air supply tube, tube internal diameter and supply pressure.

3.1.5
suit
garment covering the head and body of the wearer, not necessarily including feet and hands, with ventilation such that the exhaled and excess of air leaves the garment at its boundaries completely, or partly through one or more exhalation valves, to the surrounding air

3.1.6
abrasive blasting operation
method for the treatment of surfaces by directing propelled abrasives onto the surface where, during the blasting operation, the abrasive blasting operator and the blasted material are in a confined room or outdoors, the abrasive blasting operator is directly exposed to the abrasive rebounding from the blasted material, and the carrier medium and developing dusts

3.1.7
abrasives
granular materials that are directed onto the surface of the blasted material at a high speed for surface treatment

3.1.8
respiratory protective device for use in abrasive blasting operations
protective hood fitted with an impact resistant visor and a blouse covering the shoulders and the upper part of the chest where breathable air is supplied to the wearer from a source of air not carried by the wearer

3.1.9
abrasive blasting ensemble
combination of protective clothing, protecting against the risks arising in abrasive blasting operations, and suitable RPD

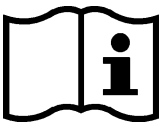
3.2 Description

This RPD enables the wearer to be provided with breathable air in accordance with EN 12021 supplied at a continuous air flow to a facepiece via a breathing hose. The RPD may incorporate an adjustable continuous flow valve which can be carried by the wearer. A compressed air supply tube connects the wearer to a supply of compressed air. Exhaled air flows into the ambient atmosphere.

NOTE Conformance to EN 12021 can be ensured by a breathable air supply system or an additional device such as a compressed air filter system.

3.3 Symbols

3.3.1



See information supplied by the RPD manufacturer

4 Classification

RPD shall be classified according to the maximum inward leakage given in Table 1 and the strength requirements shown below.

Class A RPD shall meet the lower strength requirements of this document.

Class B RPD shall meet the higher strength requirements of this document, and shall be tested for flammability of the compressed air supply tube.

Table 1 — Classification

Class	Maximum Inward Leakage %
1A and 1B	10,00
2A and 2B	2,00
3A and 3B	0,50
4A and 4B	0,05

Class 4A RPD shall incorporate either a full face mask in accordance with EN 136 or a hood/helmet/suit.

Class 4B RPD shall incorporate a full face mask in accordance with EN 136 or suitable for use in abrasive blasting operations.

RPD for use in abrasive blasting operations shall only conform to Class 4B.

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) have been conducted.

NOTE Further information is given in EN 60812 [2].

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

5.2 Nominal values and tolerances

Unless otherwise specified, the values stated in this document are expressed as nominal values. Except for temperature limits, 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 and 5.10.

Testing shall be performed in accordance with 6.3.

5.4 Design

The diameter of pressurized parts with a pressure greater than 0,5 bar downstream of the shut-off valve(s) shall not exceed 32 mm.

Check in accordance with 6.2.

5.5 Materials

5.5.1 All materials used in the construction shall have adequate resistance to deterioration by heat and adequate mechanical strength.

After any pre-conditioning in accordance with 6.7, testing shall be performed in accordance with 6.3.

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

Check in accordance with 6.2.

5.5.2 If the manufacturer claims that the RPD may be used in potentially explosive atmospheres, exposed parts, i.e. those which can be subjected to impact during use of the RPD shall not be made of aluminium, magnesium, titanium or their alloys.

The manufacturer shall supply a declaration that this is addressed in the risk assessment.

Check in accordance with 6.2.

5.5.3 Materials that can 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 6.2.

5.5.4 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 6.2 and test in accordance with 6.3.

5.6 Practical performance

The complete device shall undergo practical performance tests under realistic conditions. These general tests serve the purpose of checking the device for imperfections that cannot be determined by the tests described elsewhere in this document.

If during any activity, by any test subject, the test subject fails to finalise the selected activity due to the device being not fit for the purpose for which it has been designed, the device shall be deemed to have failed.

Testing shall be performed in accordance with 6.3.

5.7 Connections

5.7.1 General

Components of the RPD shall be readily separated for cleaning, examining and testing. All demountable connections shall be readily connected and secured, where possible by hand. Any means of sealing used shall be retained in position when the joints and couplings are disconnected during normal use and maintenance.

Check in accordance with 6.2 and test in accordance with 6.3.

5.7.2 Couplings

The RPD shall be constructed so that any twisting of the hoses and tubes does not affect the fit or performance of the device, or cause the hoses or tubes to become disconnected. At least one swivelling coupling shall be fitted to the compressed air supply tube adjacent to the wearer. The design of the couplings shall be such as to prevent unintentional interruption of the air supply.

Check in accordance with 6.2 and test in accordance with 6.3.

5.7.3 Strength of breathing hose connections

The connection of the breathing hose at the facepiece and at the waist belt shall withstand a force of 50 N for Class A RPD and 250 N for Class B RPD.

Testing shall be performed in accordance with 6.4.

5.7.4 Connection between RPD and mask

The connection between the breathing device and the mask shall be achieved by a permanent, special or thread type connector. If a thread connector is used, either it shall conform to EN 148-1, or if any other thread type connector is used, it shall not be possible to connect it with threads conforming to EN 148-1, EN 148-2 or EN 148-3.

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

Check in accordance with 6.2.

5.7.5 Connection between RPD and hood, helmet or suit

The connection between the RPD and the hood/helmet/suit shall be achieved by a permanent, special, or thread type connector.

Threads defined in EN 148-1, EN 148-2 and EN 148-3 shall not be used for the hood, helmet or suit connector. If any screw thread is used it shall not be possible to connect it to the threads defined in EN 148-1, EN 148-2 and EN 148-3.

Check in accordance with 6.2.

5.7.6 Unacceptable connections

It shall not be possible to connect the compressed air supply tube directly to the breathing hose or facepiece.

Check in accordance with 6.2.

5.8 Body harness or belt

A body harness or belt shall be provided to which the compressed air supply tube, the medium pressure connecting tube (if fitted), and the breathing hose (if fitted) shall be attached. Buckles shall not slip and the body harness or belt shall not be damaged.

Class A RPD shall be subjected to 250 N and Class B RPD shall be subjected to 1 000 N.

Check in accordance with 6.2 and test in accordance with 6.3 and 6.6.

5.9 Pre-conditioning

At least two samples shall be pre-conditioned in accordance with 6.7.1, and optionally 6.7.2, and after returning to room temperature, all performance requirements of this document shall be met.