Andningsskydd – Tryckluftsapparat med kontinuerligt flöde – Fordringar, provning, märkning

Respiratory protective devices – Continuous flow compressed air line breathing apparatus – Requirements, testing, marking

Denna standard ersätter SS-EN 139, utgåva 1, SS-EN 270, utgåva 1, SS-EN 271, utgåva 1, SS-EN 1835, utgåva 1 och SS-EN 12419, utgåva 1.


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

This European Standard was approved by CEN on 15 March 2005.

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.

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Foreword

This European Standard (EN 14594:2005) 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of an identical text or by endorsement, at the latest by October 2005, and conflicting national standards shall be withdrawn at the latest by October 2005.

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 89/686/EEC.

For relationship with EU Directive, see informative Annex ZA, which is an integral part of this European 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and 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 continuous flow compressed air line breathing apparatus for use with a full face mask, half mask, or incorporating a hood, helmet or suit, and apparatus used in abrasive blasting operations, as a respiratory protective device. Escape and diving apparatus are not covered by this European Standard.

Laboratory and practical performance tests are included for the assessment of conformance to the requirements.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. 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, Respiratory protective devices — Full face masks — Requirements, testing, marking
EN 140, 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: Thread connection M45 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 379, Personal eye-protection — Automatic welding filters
EN 397:1995, Industrial safety helmets
EN 14594:2005 (E)

EN 12021, Respiratory protective devices — Compressed air for breathing apparatus

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


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

EN 13274-4, 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 inhalation air

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


3 Terms, definitions and pictograms

For the purposes of this European Standard, the terms, definitions and pictograms given in EN 132:1998 and EN 134:1998 and the following apply.

3.1 continuous flow compressed air line breathing apparatus for use with a face mask, half mask, suit, hood or helmet

apparatus which is not self-contained, for use with a facepiece, in which the wearer is supplied with breathable air from a source of compressed air at a maximum pressure of 10 bar

3.2 facepiece

facepiece conforming to EN 136, EN 140, or a hood/helmet/suit as appropriate

3.3 mobile compressed air supply system

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

3.4 minimum flow condition

those factors appropriate to the design specified by the manufacturer which give rise to the lowest flow rate
NOTE 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.

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

NOTE These factors can include the minimum length of compressed air supply tube, tube internal diameter and supply pressure.

3.6 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

3.7 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

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

3.9 breathing apparatus 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

3.10 abrasive blasting combination
combination of protective clothing, protecting against the risks arising in abrasive blasting operations, and suitable respiratory protective equipment

4 Description
This apparatus 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 apparatus may incorporate an adjustable continuous flow valve which may be carried by the wearer. A compressed air supply tube connects the wearer to a supply of compressed air.

The excess and 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.

5 Classification
Devices shall be classified according to the maximum inward leakage given in Table 1 and the strength requirements shown below.
Class A devices shall meet the lower strength requirements of this European Standard.

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

<table>
<thead>
<tr>
<th>Class</th>
<th>Maximum Inward Leakage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A and 1B</td>
<td>10,00</td>
</tr>
<tr>
<td>2A and 2B</td>
<td>2,00</td>
</tr>
<tr>
<td>3A and 3B</td>
<td>0,50</td>
</tr>
<tr>
<td>4A and 4B</td>
<td>0,05</td>
</tr>
</tbody>
</table>

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

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

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

6 Requirements

6.1 General

Unless otherwise specified, the values stated in this European Standard are expressed as nominal values. Except for temperature limits, values which are not stated as maxima or minima shall be subject to a tolerance of ±5%. Unless otherwise specified, the ambient temperature for testing shall be between 16 °C and 32 °C and the temperature limits shall be subject to an accuracy of ±1 °C. Wherever a test clause is referenced, all subclauses of the test clause shall apply, unless otherwise stated.

6.2 Ergonomics

The requirements of this European Standard are intended to take account of the interaction between the wearer, the respiratory protective device, and where possible the working environment in which the respiratory protective device is likely to be used. The device shall satisfy 6.3, 6.9 and 6.10.

Testing shall be done accordance with 7.3.

6.3 Materials

6.3.1 All materials used in the construction shall have adequate resistance to deterioration by heat and adequate mechanical strength. Testing shall be done in accordance with 7.3, after any pre-conditioning according to 7.7, and any safety data sheet, if applicable, and declaration of the manufacturer related to materials used in the construction of the device.

Testing shall be done accordance with 7.2.

6.3.2 With the exception of devices for abrasive blasting operations, exposed parts, i.e. those which may be subjected to impact during use of the apparatus shall not be made of aluminium, magnesium, titanium or their alloys.
Testing shall be done in accordance with 7.2.

6.3.3 Materials that may come into direct contact with the wearer’s skin or that may 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.

Testing shall be done in accordance with 7.2.

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

Testing shall be done in accordance with 7.2 and 7.3.

6.4 Cleaning and disinfecting

All materials shall be visibly unimpaired after cleaning and disinfection by the agents and procedures specified by the manufacturer.

Testing shall be done in accordance with 7.2.

6.5 Practical performance

The apparatus shall be such that it can be worn without avoidable discomfort, the wearers shall show no undue signs of strain attributable to wearing the apparatus, and the apparatus shall impede the wearer as little as possible when in a crouched position or when working in a restricted space.

The complete apparatus shall undergo practical performance tests under realistic conditions. These general tests serve the purpose of checking the apparatus for imperfections that can not be determined by the tests described elsewhere in this European Standard.

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

Testing shall be done in accordance with 7.3.

6.6 Connections

6.6.1 General

Components of the apparatus 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.

Testing shall be done in accordance with 7.2 and 7.3.

6.6.2 Couplings

The apparatus shall be constructed so that any twisting of the hoses and tubes does not affect the fit or performance of the apparatus, 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.

Testing shall be done in accordance with 7.2 and 7.3.