

Specification for

Respiratory protective devices: self-contained open-circuit compressed air breathing apparatus

The European Standard EN 137:1993 has the status of a
British Standard

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National foreword

This British Standard has been prepared under the direction of the Personal Safety Equipment Standards Policy Committee and is the English language version of EN 137 *“Respiratory protective devices — Self-contained open-circuit compressed air breathing apparatus — Requirements, testing, marking”*, published by the European Committee for Standardization (CEN). It supersedes BS 7004:1988 which is withdrawn.

EN 137 was produced as a result of international discussions in which the United Kingdom took an active part.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 18, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Descriptors: Accident prevention, personal protective equipment, respiratory protective equipment, compressed air, specifications, tests, marking

English version

Respiratory protective devices — Self-contained open-circuit compressed air breathing apparatus — Requirements, testing, marking

Appareils de protection respiratoire —
Appareils de protection respiratoire autonomes
à circuit ouvert, à air comprimé — Exigences,
essais, marquage

Atemschutzgeräte — Behältergeräte mit
Druckluft (Preßluftatmer) — Anforderungen,
Prüfung, Kennzeichnung

This European Standard was approved by CEN on 1993-01-18. 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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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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

Foreword

This European Standard was prepared by the Technical Committee CEN/TC 79 “Respiratory protective devices”, of which the secretariat is held by DIN.

This European Standard has been prepared under a mandate given to CEN by the Commission of the European Communities and the European Free Trade Association, and supports essential requirements of the EC Directive(s).

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 July 1993, and conflicting national standards shall be withdrawn at the latest by July 1993.

The Standard was approved and in accordance with the CEN/CENELEC Internal Regulations, 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, 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 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 refers to self-contained open-circuit compressed air breathing apparatus used as respiratory protective devices, except escape apparatus and diving apparatus. It specifies the minimum requirements for self-contained open-circuit compressed air breathing apparatus.

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

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.

EN 132, *Respiratory protective devices; Definitions.*

EN 134, *Respiratory protective devices; Nomenclature of components.*

EN 136, *Respiratory protective devices; Full face masks; Requirements, testing, marking.*

EN 136-10, *Respiratory protective devices; Full face masks for special use; Requirements, testing, marking.*

EN 142, *Respiratory protective devices; Mouthpiece assemblies; Requirements, testing, marking.*

EN 148-1, *Respiratory protective devices; Threads for facepieces; Standard thread connection.*

EN 148-2, *Respiratory protective devices; Threads for facepieces; Centre thread connection.*

EN 148-3, *Respiratory protective devices; Threads for facepieces; Thread connection M 45 × 3.*

3 Definitions and description

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

A self-contained open-circuit compressed air breathing apparatus is an apparatus which has a portable supply of compressed air and is independent of the ambient atmosphere.

Abbreviation: compressed air breathing apparatus: CABA.

Compressed air breathing apparatus are designed and constructed to enable the wearer to breathe air on demand from a high pressure air cylinder (or cylinders) either via a pressure reducer and a lung governed demand valve or a lung governed demand valve connected to the facepiece. The exhaled air passes without recirculation from the facepiece via the exhalation valve to the ambient atmosphere.

4 Classification

Compressed air breathing apparatus are classified according to the following effective air volumes at a pressure of 1 bar absolute and a temperature of 20 °C:

- at least 500 l
- at least 600 l
- at least 800 l
- at least 1 200 l
- at least 1 600 l
- at least 2 000 l

5 Requirements

5.1 Design

The apparatus shall be of simple and reliable construction and as compact as possible. The design of the apparatus shall be such as to allow its reliable inspection.

The apparatus shall be sufficiently robust to withstand the rough usage it is likely to receive in service.

The apparatus shall be designed so that there are no protruding parts likely to be caught on projections in narrow passages.

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

The apparatus shall be designed so that the wearer can remove it and, while still wearing the facepiece, continue to breathe from the apparatus.

The apparatus shall be designed to ensure its full function in any orientation.

The main valve(s) of air cylinder(s) shall be arranged so that the wearer can operate it (them) while wearing the apparatus.

If apparatus (of the same class) are designed for use with different sizes of cylinders changing of cylinders shall be possible without the use of special tools.

Testing in accordance with **6.1** and **6.2**.

The apparatus shall continue to function satisfactorily after being submerged in water to a maximum depth of 1 m.

Testing in accordance with **6.1**.

WARNING. The apparatus is not designed for use under water.

5.2 Materials

All materials used shall have adequate mechanical strength, durability and resistance to deterioration. The materials used shall be anti-static as far as it is practicable.

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 alloys containing such proportions of these metals as will, on impact, give rise to frictional sparks capable of igniting flammable gas mixtures.

Any cylinder making use of such materials shall be adequately protected. If national regulations allow the use of such cylinders, then, when tested for impact and scraping no metal shall be exposed.

Material that may come into contact with the wearer's skin shall not be known to be likely to cause irritation or any other adverse effect to health.

Testing in accordance with **6.1** and **6.2**.

5.3 Cleaning and disinfecting

The materials used shall withstand the cleaning and disinfecting agents and procedure recommended by the manufacturer.

Testing in accordance with **6.1**.

5.4 Mass

The mass of the apparatus as ready for use with facepiece and fully charged compressed air cylinder(s) shall not exceed 18 kg.

Testing in accordance with **6.1**.

5.5 Connections (couplings)

The design and construction of the apparatus shall permit its components to be readily separated for cleaning, inspecting and testing. Demountable connections to achieve this shall be readily connected and secured, preferably by hand.

Any means for sealing used shall be retained in position when the connection(s) is (are) disconnected during normal maintenance.

Testing in accordance with **6.1** and **6.2**.

5.6 Facepiece connector

The connection between the breathing apparatus and the facepiece may be achieved by a permanent, special or thread type connector.

A thread connector shall comply with the requirements of one of the following standards.

- EN 148-1 for breathing apparatus without positive pressure
- EN 148-2 for closed-circuit breathing apparatus
- EN 148-3 for breathing apparatus with positive pressure.

If any other thread type connector is used it shall not be possible to connect it to the above mentioned threads.

The standard thread according to EN 148-1 shall not be used for apparatus with positive pressure, closed-circuit apparatus and diving apparatus.

The thread according to EN 148-2 shall not be used for open-circuit devices and diving apparatus.

The thread according to EN 148-3 shall not be used for apparatus without positive pressure, closed-circuit apparatus and diving apparatus.

Testing in accordance with **6.1**.

If a thread connector in accordance with EN 148-3 is used then the requirements of Annex A should be met, when tested in accordance with Annex A.

5.7 Body harness

The body harness shall be designed to allow the user to don and doff the apparatus quickly and easily without assistance and shall be adjustable. All adjusting devices shall be so constructed that once adjusted they will not slip inadvertently.

The body harness shall be constructed such that when tested in practical performance tests the apparatus shall be worn without avoidable discomfort, the wearer shall show no undue sign of strain attributable to wearing the apparatus, and that the apparatus shall impede the wearer as little as possible when in a crouched position or when working in a confined space.

Testing in accordance with **6.1** and **6.2**.

The material of the straps and of the buckles shall be considered to be flame resistant if it does not burn or if it does not continue to burn after 5 s after removal from the test flame.