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Ships and marine technology — Breathing apparatus for ships —

Part 3: Self-contained breathing apparatus (safety equipment) required by the IMO IBC and IGC Codes

Navires et technologie maritime — Appareils respiratoires pour les navires —

Partie 3: Appareils respiratoires autonomes (équipement de sécurité) exigés d'après les Codes IBC et IGC de l'OMI

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 23269-3 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 1, *Lifesaving and fire protection*.

ISO 23269 consists of the following parts, under the general title *Ships and marine technology — Breathing apparatus for ships*:

— *Part 1: Emergency escape breathing devices (EEBD) for shipboard use*

— *Part 2: Self-contained breathing apparatus for shipboard firefighters*

— *Part 3: Self-contained breathing apparatus (safety equipment) required by the IMO IBC and IGC Codes*

— *Part 4: Self-contained breathing apparatus for emergency escape required by the IMO IBC and IGC Codes*

Introduction

The IMO IBC Code (for bulk chemicals) and the IMO IGC Code (for gas carriers) developed by the International Maritime Organization require that self-contained breathing apparatus (safety equipment) be carried on board chemical tankers and gas carrier ships. However, these Codes do not technically specify the details of such apparatus; such a specification is necessary to provide a sufficient safety level for users.

Ships and marine technology — Breathing apparatus for ships —

Part 3: Self-contained breathing apparatus (safety equipment) required by the IMO IBC and IGC Codes

1 Scope

This part of ISO 23269 provides performance specifications of the self-contained air-breathing apparatus (SCBA) (not using stored oxygen) required by the IMO IBC Code (for bulk chemicals) and the IMO IGC Code (for gas carriers) developed by the International Maritime Organization.

The breathing apparatus manufactured in accordance with this part of ISO 23269 constitutes an element of the set of safety equipment which permits personnel to enter a gas-filled compartment and perform work there. The breathing apparatus is not intended for use in fighting fires or suitable for entry into flames.

2 Normative references

The following referenced documents are indispensable for the application 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.

IMO IBC Code, *International code for the construction and equipment of ships carrying dangerous chemicals in bulk*

IMO IGC Code, *International code for the construction and equipment of ships carrying liquefied gases in bulk*

ISO 15537, *Principles for selecting and using test persons for testing anthropometric aspects of industrial products and designs*

ISO 23269-2:—[1)], *Ships and marine technology — Breathing apparatus for ships — Part 2: Self-contained breathing apparatus for shipboard firefighters*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 23269-2 apply.

4 General design requirements

The apparatus shall comply with all of the requirements of Clause 4 of ISO 23269-2:—.

1) To be published.

5 Environmental tests

The apparatus shall comply with all of the requirements of Clause 5 of ISO 23269-2:—.

6 Basic performance tests and requirements

6.1 General

The apparatus shall comply with all of the requirements of Clause 6 of ISO 23269-2:—, except:

a) 6.9.2 on flammability;

b) 6.9.3 on resistance to radiant heat.

In addition, the apparatus shall be subjected to the tests specified in 6.2 to 6.4.

6.2 Chemical permeation resistance test

6.2.1 The breathing apparatus shall be tested using the principles set forth in ISO 15537. Factors such as the intended user population, critical dimensions of the breathing apparatus, protective clothing likely to be worn with the breathing apparatus, and critical tasks the wearer might perform shall be determined, and shall be described in the test report.

6.2.2 A solution of water and non-toxic, coloured dye shall be prepared and placed in a spray bottle. The coloured water shall provide sufficient contrast to indicate penetration of the facepiece of the breathing apparatus by visual inspection of the interior.

6.2.3 The test subjects shall individually don a breathing apparatus along with the protective clothing and other related safety equipment. With the test subjects standing upright, the coloured water shall be sprayed on the top and the sides of the breathing apparatus. After spraying the water, there shall be no permeation of water through the facepiece of the breathing device.

6.3 Chemical resistance test of the eyepiece and transparent materials

Apply the following solvents, one at a time using a suitable applicator, to the eyepiece or any transparent part:

a) trichloroethylene;

b) benzene;

c) solvent naphtha;

d) methanol;

e) kerosene.

One droplet of each chemical shall be applied to the test specimen, so that the droplet does not rinse. Exposure time shall be until the droplet evaporates or a maximum of 15 min, whichever occurs first. After exposure, the test specimen shall be assessed by visual inspection. No dissolution or deterioration to the extent that the test specimen becomes unusable should be observed, e.g. no holes, leaks, fogging, or hazing are formed.

6.4 Chemical resistance test of facepiece

Immerse a facepiece in the test liquids specified in Table 1 [temperature of the liquids (22 ± 2) °C] for 1 h and hang in air at a temperature of (22 ± 2) °C and relative humidity 95 % for 24 h. There shall be no visible corrosion or cracking to make the facepiece unusable.

Table 1 — Test liquids for chemical resistance test

Values in per cent

Test liquids	Concentration by mass
Sulfuric acid solution	1
Nitric acid solution	1
Sodium hydroxide	1

7 Practical performance test

The apparatus shall be tested in accordance with 7.7.3 of ISO 23269-2:—.

8 Instructions for use

Each apparatus shall be provided with instructions, including diagrams, addressing donning, doffing, operation, and maintenance of the apparatus. The instructions shall be in the language or languages required by the competent authority. The instructions shall be provided in a format suitable for inclusion in the ship's training manual.

9 Marking

Each apparatus shall be marked with the:

a) model name of the apparatus;

b) abbreviation “SCBA”;

c) month and year of manufacture;

d) serial number;

e) manufacturer or trade mark;

f) number and year of publication of this part of ISO 23269, i.e. ISO 23269-3:2011;

g) expiration date of approval (if any);

h) next date of servicing or retest (if any).

Bibliography

[1] EN 136, *Respiratory protective devices — Full face masks — Requirements, testing, marking*

[2] EN 137, *Respiratory protective devices — Self-contained open circuit compressed air breathing apparatus with full face mask — Requirements, testing, marking*