DRAFT INTERNATIONAL STANDARD

ISO/DIS 17420-1

ISO/TC **94**/SC **15** Secretariat: **DIN**

Voting begins on: **2019-09-04**

Voting terminates on: **2019-11-27**

Respiratory protective devices — Performance requirements —

Part 1: General

Appareils de protection respiratoire — Exigences de performances —

Partie 1: Généralités

ICS: 13.340.30

This document is circulated as received from the committee secretariat.

Reference number
ISO/DIS 17420-1:2019(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 94, *Personal safety - Personal protective equipment*, Subcommittee SC 15, *Respiratory protective devices*.

A list of all parts in the ISO 17420 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

To apply the standards properly the following has to be considered:

— ISO 17420-1 specifies the general requirements for supplied breathable gas RPD and filtering RPD and cannot be used as a standard for "certification" alone. Therefore, compliance with the requirements and tests of ISO 17420-2 or ISO 17420-4 is required in addition.

— Should supplied breathable gas RPD and filtering RPD also be used for special applications, the requirements of part 5 to 9 have to be met in addition to the requirements of part 1 and part 2 or part 4.

The structure of the standards is as follows:

Part 1 specifies the general requirements for RPD.

Part 2 and part 4 specify requirements for filtering RPD or supplied breathable gas RPD and give information if any of the general requirements in Part 1 needs an addition.

EXAMPLE for ISO 17420-4 5.8.1 General

ISO 17420-1:201x, 5.8.1 applies with the following in addition:

Part 5 to part 9 specify requirements for supplied breathable gas RPD or filtering RPD — Special application and some of the requirements will supersede requirements specified in part 2 or part 4.

EXAMPLE for ISO 17420-6 7.2.1 Contact with hot and cold surfaces generated by the RPD

This clause supersedes ISO 17420-4:201x, 6.7.

Respiratory protective devices — Performance requirements —

Part 1: General

IMPORTANT — For more information see also the introduction in the other parts of the ISO 17420 series.

1 Scope

This document specifies general requirements for the performance and testing of respiratory protective devices (RPD) in accordance with their classification and for use in the workplace to protect the wearer from hazardous atmospheres and/or environments.

The requirements are based on human factors and are for complete respiratory systems.

Requirements for marking and information supplied by the RPD manufacturer are also included.

Special application such as fire services, marine, mining, abrasive blasting, welding and escape as well as RN (Radiological, Nuclear), RN Escape, CBRN (Chemical, Biological, Radiological, Nuclear) and CBRN Escape RPD are addressed in separate parts of ISO 17420.

This document does not apply to respiratory devices for:

— underwater diving application;

— military application;

— use in aircraft and spacecraft;

— medical life support applications;

— resuscitators.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 16900-1:2014, *Respiratory protective devices — Methods of test and test equipment — Part 1: Determination of inward leakage*

ISO 16900-6, *Respiratory protective devices — Methods of test and test equipment — Part 6: Mechanical resistance/strength of components and connections*

ISO 16900-7:2015, *Respiratory protective devices — Methods of test and test equipment — Part 7: Practical performance test methods*

ISO 16900-10, *Respiratory protective devices — Methods of test and test equipment — Part 10: Resistance to ignition, flame, radiant heat and heat*

ISO 16900-11, *Respiratory protective devices — Methods of test and test equipment — Part 11: Determination of field of vision*

ISO 16972, *Respiratory protective devices — Terms, definitions, graphical symbols and units of measurement*

ISO 16975-3, *Respiratory protective devices — Selection, use and maintenance — Part 3: Fit-testing procedures*

ISO 17420-2:201x, *Respiratory protective devices — Performance requirements — Part 2: Requirements for filtering RPD*

ISO 17420-4:201x, *Respiratory protective devices — Performance requirements — Part 4: Requirements for supplied breathable gas RPD*

ISO 18526-1, *Eye and face protection — Test methods — Part 1: Geometrical optical properties*

3 Terms and definitions

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

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

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

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

3.1 Abbreviated terms

FMEA	Failure Mode and Effects Analysis
RPD	Respiratory protective devices
RI	Respiratory Interface

4 Classification overview

4.1 General

The detailed classification and examples are described in ISO/TS 16973 and a condensed overview for RPD is given in Table 1.

All filtering RPD are classified based on their performances and their characteristics of the RI.

All supplied breathable gas RPD are classified based on their performance and the characteristic of the RI as well as their breathable gas capacity.

Table 1 — Basic classification of filtering RPD and supplied breathable gas RPD

Classification		Classes (range)
Protection class		PC6 (highest) PC5 PC4 PC3 PC2 PC1 (lowest)
Work rate class		W4 (highest) W3 W2 W1 (lowest)
RI class	Area of coverage (barrier lines)	e (more than head, up to complete body) d (head) c (face) b (mouth and nose) a (mouth only)
	Type	T (tight fitting) L (loose fitting)
Filter performance	Particle filter class	F5 (highest) F4 F3 F2 F1 (lowest)
	Gas filter type and class	Several types based on test gas(es) with up to 4 classes, with class 1 being the lowest (see Table 3)
Supplied breathable gas capacity class		SXXXX (where XXXX equals the amount of breathable gas available for respiration in litres) SY (where Y is the indication for airline devices)

5 General requirements for RPD

5.1 General

The requirements in this document shall be fulfilled by all RPD or their components, if applicable.

For reasons of safety, all testing which requires the use of test subjects shall only be carried out after all other tests have been satisfactorily completed.

Allocation of RI size(s) to the appropriate head form(s)/size(s) according to ISO 16900-5 used for testing shall be stated by the manufacturer. The allocated head form sizes shall be used for all testing and their numbers shall be marked on the RI using the symbol 3.3.6 in ISO 17420-2:201x, or the symbol 3.3.4 in ISO 17420-4:201x and an explanation of the marking shall be given in the information supplied by the manufacturer.