AS/NZS ISO 16900.1:2021
ISO 16900-1:2019

Australian/New Zealand Standard™

Respiratory protective devices — Methods of test and test equipment

Method 1: Determination of inward leakage

AS/NZS ISO 16900.1:2021

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee SF-010, Occupational Respiratory Protection. It was approved on behalf of the Council of Standards Australia on 01 June 2021 and by the New Zealand Standards Approval Board on 02 June 2021.

This Standard was published on 18 June 2021.

The following are represented on Committee SF-010:

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This Standard was issued in draft form for comment as DR AS/NZS ISO 16900.1:2021.

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ISBN 978 1 76113 405 0

AS/NZS ISO 16900.1:2021
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Method 1: Determination of inward leakage

First published as AS/NZS ISO 16900.1:2021.

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee SF-010, Occupational Respiratory Protection.

The objective of this document is to specify the test methods for determining inward leakage of respiratory interfaces (RI) and total inward leakage of complete respiratory protective devices (RPD) using specified test agents and incorporating specified body movements, at specified metabolic work rates.

This document is identical with, and has been reproduced from, ISO 16900-1:2019, *Respiratory protective devices — Methods of test and test equipment — Part 1: Determination of inward leakage.*

As this document has been reproduced from an International Standard, a full point substitutes for a comma when referring to a decimal marker.

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The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 15, *Respiratory protective devices*

This second edition cancels and replaces the first edition (ISO 16900-1:2014), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the criteria for selection of test panels has been changed from the principal components analysis (PCA) method to the bivariate grid method. References to the PCA method in other clauses have been modified as necessary;

— a new clause has been added to address measurement of inward leakage in the ocular zone;

— a figure has been added to illustrate the pulsed sampling system;

— the conditions for use of a condensation particle counter have been modified;

— Annex D has been re-written to reflect changes to the criteria for selection of test panels.

NOTE The list above is not intended as a complete list of all changes.

A list of all parts in the ISO 16900 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

This document is intended as a supplement to the respiratory protective devices (RPD) performance standards. Test methods are specified for complete devices or parts of devices. If deviations from the test method given in this document are necessary, these deviations will be specified in the performance standards.

Australian/New Zealand Standard

Respiratory protective devices — Methods of test and test equipment

Method 1: Determination of inward leakage

1 Scope

This document specifies the test methods for determining inward leakage of respiratory interfaces (RI) and total inward leakage of complete respiratory protective devices (RPD) using specified test agents and incorporating specified body movements, at specified metabolic work rates.

These tests are conducted in laboratories using specific test agents under specified conditions and therefore do not indicate the performance of the device in actual use.

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.

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

ISO 16900-5, *Respiratory protective devices — Methods of test and test equipment — Part 5: Breathing machine, metabolic simulator, RPD headforms and torso, tools and verification tools*

ISO 17420-3, *Respiratory protective devices — Performance requirements — Part 3: Thread connection*

ISO 21748, *Guidance for the use of repeatability, reproducibility and trueness estimates in measurement uncertainty evaluation*

ISO/TS 16976-2:2015, *Respiratory protective devices — Human factors — Part 2: Anthropometrics*

3 Terms and definitions

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

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

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

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

3.1
assisted filtering RPD
filtering RPD in which air is moved through the filter(s) by means of a blower in addition to the breathing of the wearer

3.2
porous device
RPD incorporating materials, excluding filters, that can be penetrated by gases and vapours during an inward leakage test, leading to an increase of the inward leakage

3.3
unassisted filtering RPD
filtering RPD in which air is drawn through the filter(s) solely by the breathing of the wearer