SLOVENSKI STANDARD
SIST EN 13274-4:2020

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Oprema za varovanje dihal - Metode preskušanja - 4. del: Preskus s plamenom

Respiratory protective devices - Methods of test - Part 4: Flame test

Atemschutzgeräte - Prüfverfahren - Teil 4: Flammenprüfungen

Appareils de protection respiratoire - Méthodes d'essai - Partie 4: Essais à la flamme

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ICS:

13.220.40	Sposobnost vžiga in obnašanje materialov in proizvodov pri gorenju	Ignitability and burning behaviour of materials and products
13.340.30	Varovalne dihalne naprave	Respiratory protective devices

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EUROPEAN STANDARD

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English Version

Respiratory protective devices - Methods of test - Part 4: Flame test

Appareils de protection respiratoire - Méthodes d'essai - Partie 4 : Essais à la flamme

Atemschutzgeräte - Prüfverfahren - Teil 4: Flammenprüfungen

This European Standard was approved by CEN on 8 June 2020.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 13274-4:2020) 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of an identical text or by endorsement, at the latest by April 2021, and conflicting national standards shall be withdrawn at the latest by April 2021.

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

This document supersedes EN 13274-4:2001.

The following main technical changes have been made compared to EN 13274-4:2001:

a) Clause 5 amended regarding the estimation of uncertainty;

b) test rig more specified;

c) procedure added to test the visor at an angle of 45 degrees.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom

Introduction

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

1 Scope

This document specifies methods for flame tests to be applied to respiratory protective devices.

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.

EN ISO 16972, *Respiratory protective devices - Vocabulary and graphical symbols (ISO 16972)*

EN ISO 6941, *Textile fabrics - Burning behaviour - Measurement of flame spread properties of vertically oriented specimens (ISO 6941)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 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 https://www.iso.org/obp

4 Pre-requisites

In order to implement this document, at least the following parameters need to be specified in the relevant device standard:

— RPD and/or components to be tested;

— test method, 1, 2, or 3;

— number of test samples;

— climatic conditioning;

— any deviations from the test procedure chosen;

— pass/fail criteria.

5 Nominal values and tolerances

Unless otherwise specified, the values stated in this document 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 conditions for testing shall be between 16°C and 32°C and (50 ± 30) % relative humidity. Any temperature limits specified shall be subject to an accuracy of ± 1 °C.

For each of the required measurements performed in accordance with this document, a corresponding estimate of the uncertainty of measurement shall have been evaluated [1]. This estimate of uncertainty shall be applied and stated when reporting test results, in order to enable the user of the test report to assess the reliability of the result.

6 Six burner static test: Method 1

6.1 Principle

The test sample is exposed to a flame from an array of six burners for (5 ± 0,5) s at (950 ± 50) °C.

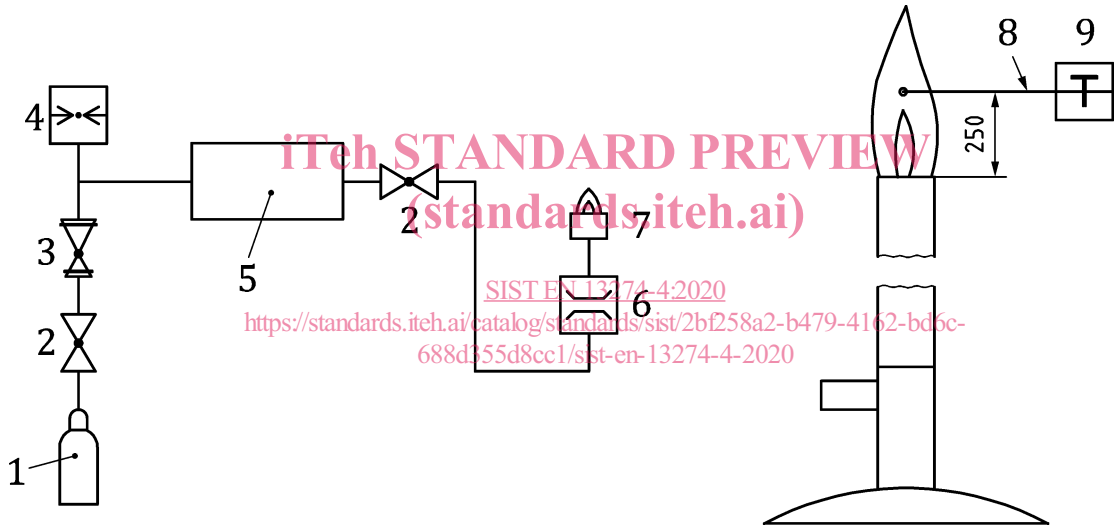
6.2 Test rig

The test rig consists mainly of head form, a propane cylinder with flow control device, flow meter, pressure gauge, flashback arrester and six propane burners which are adjustable in height. Figure 1 shows a schematic diagram of the apparatus. Figure 2 shows the top view of the arrangements of the six burners and the positioning of the head form relative to the burners. The head form may be any suitable head form to which the respiratory interface can be securely mounted and which is resistant to the flames

The purity of the propane shall be a minimum of 95 %.

NOTE A “TEKLU” burner has been found to be suitable.

Dimensions in millimetres



Key

1	propane cylinder	6	flow meter
2	valve	7	burner
3	pressure reducer	8	thermocouple (Ø 1,5)
4	pressure gauge	9	temperature measuring device
5	flashback arrester		

Figure 1 — Schematic diagram of apparatus for six burner static test

6.3 Procedure

Mount the respiratory interface such that the central vertical plane of the visor is parallel to the axis of the burners, see Figure 2. Ensure that the free end of the head harness straps do not hang down from the respiratory interface. This can be achieved by positioning the free ends between the head harness and the head form. The neck strap if present shall be secured at the back of the head form. The inlet of the inhalation connector shall be plugged.

Before lighting the burners, position the test sample above the array of six burners and individually adjust the height of each burner such that the distance between the burner tip and test sample is 250 mm. Figure 2 shows the adjustment of the burner tips for one example.

With the test sample removed from above the burners, fully open the propane control valve on each of the six burners. Initially, close the air control valve on each of the six burners. Ignite the burners and adjust the propane cylinder output regulator to a pressure, such that a flow meter in the main propane supply line indicates a total flow to all six burners of (21 ± 0,5) litres/min, propane.

NOTE A typical pressure range has been found to be 0,3 to 1,25 bar.

Adjust the flame temperature at a distance of 250 mm above one of the burner tips in the centre of the flame to a temperature of (950 ± 50) °C, using a mineral insulated thermocouple probe of 1,5 mm diameter (see Figure 1). The flame temperature at a distance of 250 mm above the burner shall be within the limits specified. In order to achieve the correct temperature, it may be necessary to adjust the air control valve on each burner to an optimum and to shield the whole test rig from the effect of external air flows.

Expose the test sample to the flames for (5 ± 0,5) s at the orientation shown in Figure 2.

Repeat the test with another test sample of the respiratory interface with the head form rotated so that vertical plane of the visor is angled at (45 ± 5) degrees to the left from the axis of the burners shown in Figure 3. It will be necessary to re-adjust the vertical position of the burners to maintain the distance of 250 mm to the respiratory interface.

Finally, repeat the test with a third test sample of the respiratory interface with the head form rotated so that vertical plane of the visor is angled at (45 ± 5) degrees to the right from the axis of the burners shown in Figure 4. It will again be necessary to re-adjust the vertical position of the burners to maintain the distance of 250 mm to the respiratory interface.

Observe and report whether or not the test sample continues to burn or presents any additional hazard to the wearer.