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

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

Atenschutzgeräte - Prüfverfahren - Teil 4: Flammenprüfungen

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

Ta slovenski standard je istoveten z: prEN 13274-4

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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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Will supersede EN 13274-4:2001

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

Atenschutzgeräte - Prüfverfahren - Teil 4:
Flammenprüfungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 79.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (prEN 13274-4:2018) has been prepared by Technical Committee CEN/TC 79 “Respiratory protection devices”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede 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.

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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.

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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.

prEN ISO 16972:2018, *Respiratory protective devices — Definitions of terms and pictograms (ISO/DIS 16972:2018)*

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 prEN ISO 16972:2018 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>

4 Pre-requisites

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

- Components to be tested.
- Test method, 1, 2, or 3.
- Number of specimens.
- Climatic conditioning.
- Mounting and orientation of specimens.
- 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 $\pm 5\%$. Unless otherwise specified, the ambient conditions for testing shall be between 16°C and 32°C and $(50 \pm 30)\%$ relative humidity. Any temperature limits specified shall be subject to an accuracy of $\pm 1^{\circ}\text{C}$.

For each of the required measurements performed in accordance with this standard, a corresponding estimate of the uncertainty of measurement should be evaluated [1]. This estimate of uncertainty

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should 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

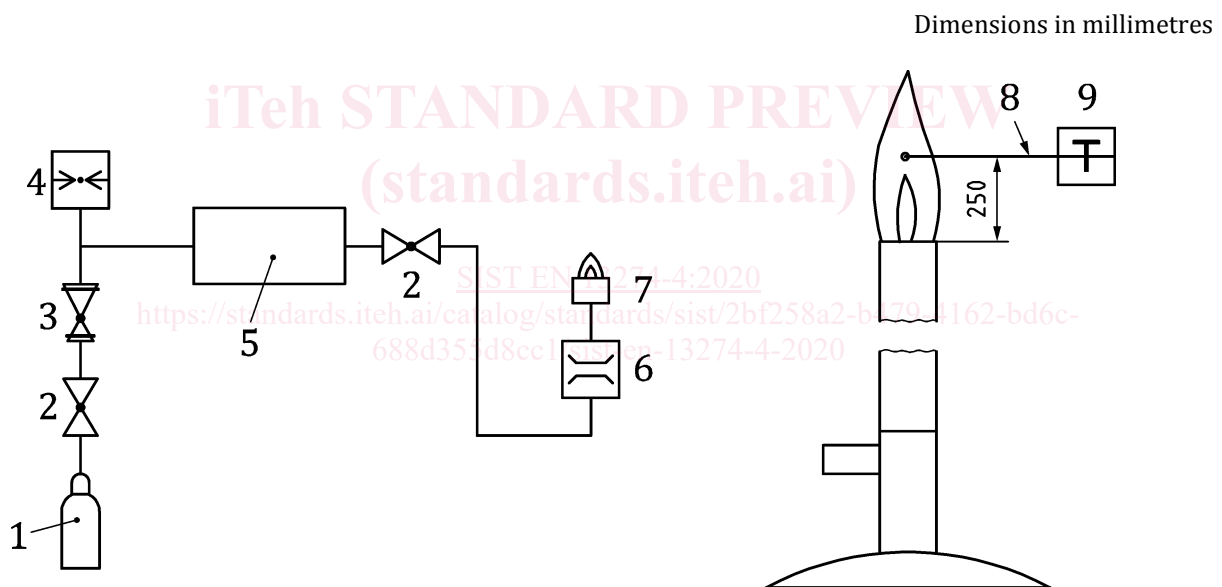
The specimen is exposed to a flame from an array of six burners for $(5 \pm 0,5)$ s at (950 ± 50) °C.

6.2 Test rig

The test rig consists mainly of head form, a propane cylinder with flow control device, flow meter, pressure gauge, flash back 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.



Key

- | | |
|--------------------|--------------------------------------|
| 1 propane cylinder | 6 flow meter |
| 2 valve | 7 burner |
| 3 pressure reducer | 8 thermocouple ($\varnothing 1,5$) |
| 4 pressure gauge | 9 temperature measuring device |
| 5 flame 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 angled at (45 ± 5) degrees from the axis of the burners. 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 test head. The neck strap if present shall be secured at the back of the test head. The inlet of the inhalation connector shall be plugged.

Before lighting the burners, position the specimen above the array of six burners and individually adjust the height of each burner such that the distance between the burner tip and specimen is 250 mm. Figure 2 shows the adjustment of the burner tips for one example of specimen. Figure 3 and Figure 4 show the two required orientations of the respiratory interface.

With the specimen 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 $(21 \pm 0,5)$ l/min, propane.

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

Adjust the flame temperature at a height of 250 mm above the burner tips in the centre of the flame, above one burner, to a temperature of (950 ± 50) °C, using a mineral insulated thermocouple probe with a diameter of 1,5 mm (see Figure 1). The flame temperature at a height of 250 mm above all burners 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 specimen to the flames for $(5 \pm 0,5)$ s at the orientation shown in Figure 3. Repeat the test with another specimen of the respiratory interface with the head form rotated so that the symmetrical side of the respiratory interface is exposed to the flames, Figure 4. Observe and report whether or not the specimen continues to burn or presents any additional hazard to the wearer.

Dimensions in millimetres

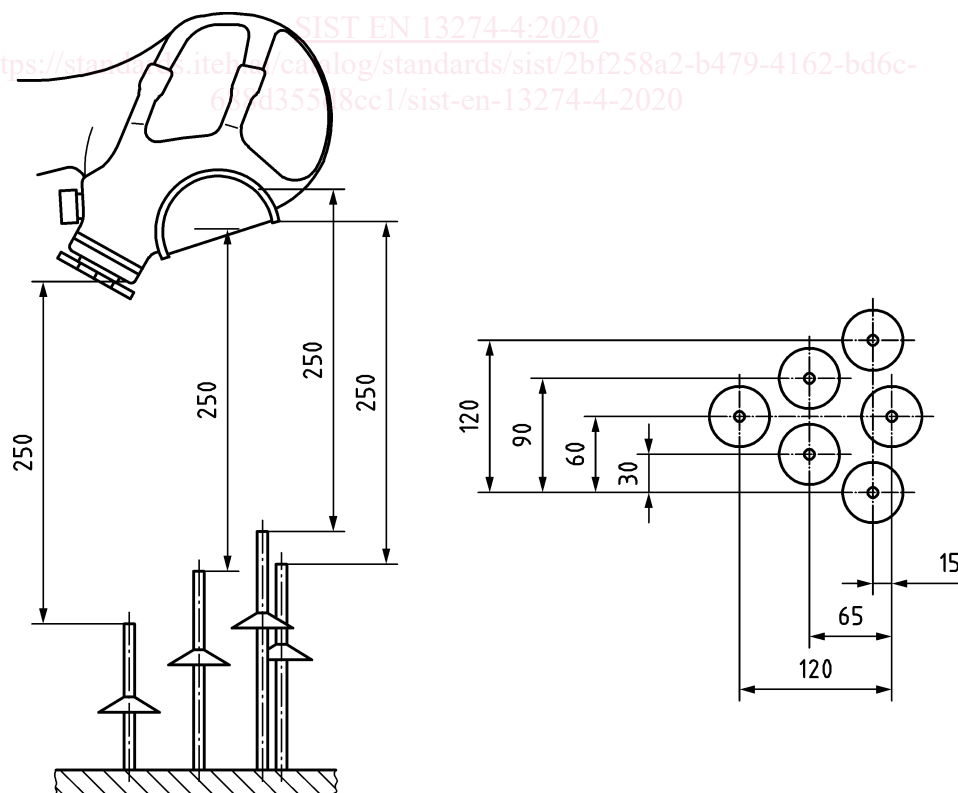


Figure 2 — Typical schematic diagram of arrangement of six burners in six burner static test for a respiratory interface mounted on the test head in 45 degree position, side view

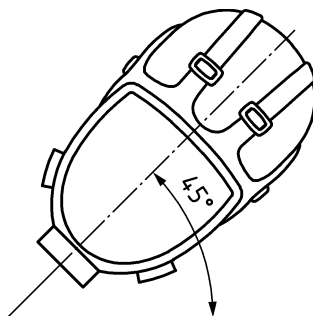


Figure 3 — Typical arrangement of mounted respiratory interface in the 45 degree left position, front view

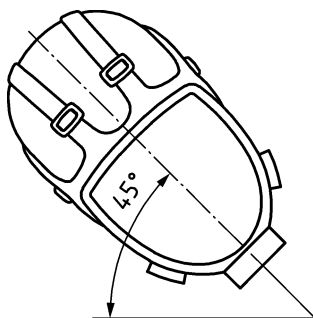


Figure 4 — Typical arrangement of mounted respiratory interface in the 45 degree right position, front view

7 Single burner static test: Method 2

7.1 Principle

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The specimen is exposed to a flame at a temperature of $(800 \pm 50)^\circ\text{C}$ for $(12 \pm 0,5)$ s, such that the centre of the flame impinges on the edge of the specimen under test.

7.2 Test rig

The test rig consists mainly of a propane cylinder with flow control device, pressure gauge, flashback arrester, specimen support and burner (see Figure 5). The burner shall either be in accordance with 6.2 or with EN ISO 6941. The purity of the propane shall be a minimum of 95 %.