SLOVENSKI STANDARD
oSIST prEN ISO 9090:2018

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Tesnost opreme za plamensko varjenje in sorodne postopke (ISO/DIS 9090:2018)

Gas tightness of equipment for gas welding and allied processes (ISO/DIS 9090:2018)

Gasdichtheit von Geräten für Gasschweißen und verwandte Verfahren (ISO/DIS 9090:2018)

Étanchéité aux gaz des appareils pour soudage aux gaz et techniques connexes (ISO/DIS 9090:2018)

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Gas tightness of equipment for gas welding and allied processes

Étanchéité aux gaz des appareils pour soudage aux gaz et techniques connexes

ICS: 25.160.30

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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).

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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 44, *Welding and allied processes*, Subcommittee SC 8, *Equipment for gas welding, cutting and allied processes*

This second edition cancels and replaces the first edition (ISO 9090:1989), which has been technically revised with the following changes:

a) Clarification of the Scope;

b) Update of normative references;

c) Standard editorially revised;

d) Addition of a leakage requirement for unconnected female elements of a quick-action coupling;

e) The term 'hose' has been replaced by 'hose assembly' and the value for the leakage has been added;

f) All types of blowpipes have been covered;

g) Hydrogen is not allowed anymore for leakage test, Table A.1 has been updated accordingly.

Requests for official interpretations of any aspect of this document should be directed to the Secretariat of ISO/TC 44/SC 8 via your national standards body. A complete listing of these bodies can be found at www.iso.org.

Gas tightness of equipment for gas welding and allied processes

1 Scope

This document specifies the maximum external leakage rates which are acceptable for equipment used for welding, cutting and allied processes and provides the procedures of measurement.

It applies to individual components which are used in the gas supply to a blowpipe from the connecting point of the hose (outlet of the cylinder valve or connecting point to a gas supply plant). It does not apply to gas supply plant.

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 2503, *Gas welding equipment — Pressure regulators and pressure regulators with flow-metering devices for gas cylinders used in welding, cutting and allied processes up to 300 bar (30 MPa)*

ISO 3821, *Gas welding equipment — Rubber hoses for welding, cutting and allied processes*

ISO 15296, *Gas welding equipment — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15296 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
external gas leakage
undesired escape of gas to the atmosphere

4 Expression of leakage

The maximum permissible external leakage rates, which are specified in this document, are total leakage rates for a complete component including inlet connections.

These rates shall be given in cubic centimetres per hour[1)] of the gas for which the equipment was designed, corrected to standard conditions[2)] measured at room temperature.

NOTE Connections that are necessary only for the test are excluded.

1) $1\ cm^3/h = 0{,}28 \times 10^{-9}\ m^3/s$.

2) Standards conditions : 23 °C, 1,013 bar (0,1013 MPa).

5 Gas to be used for the tests

5.1 General

If the tests are carried out with a gas other than the gas for which the equipment is designed, appropriate corrections shall be made as specified in Annex A.

5.2 Type tests

Devices to be used with helium and/or hydrogen shall be tested with helium.

Devices to be used with other gases shall be tested with dry oil free air or nitrogen.

5.3 Routine tests

Routine tests can be conducted with dry oil free air or nitrogen.

6 Test pressure

6.1 Regulators

Regulators shall be tested at pressure p_1 and p_2 as defined in ISO 2503.

6.2 Other equipment

6.2.1 Type tests

Other devices shall be tested at the following pressure:

a) maximum working pressure as given by the manufacturer;

b) 10 % of the maximum working pressure or 0,5 bar whichever is lower.

6.2.2 Routine test

All devices shall be tested at one of the two pressures specified in 6.2.1 which gave the most unfavourable results during the type test.

7 Maximum permissible external leakage rates

7.1 Regulators

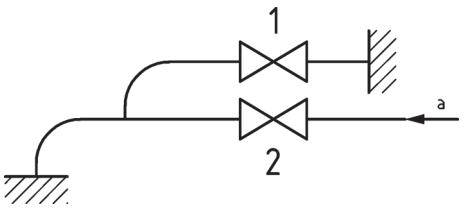
Regulator shall not have a total leakage rate greater than 10 cm^3/h.

7.2 Blowpipes

With the gas hose connected to one of the inlet connections, blowpipes shall be submitted to the following tests:

a) close off the heating gas outlet of the nozzle (for Torch Mixing Type, and Nozzle Mixing Type Blowpipes) or close off the fuel gas and combustion – supporting gas outlets of the nozzle individually (for Out Mixing Type Blowpipes) and close off the other inlet connection and half open both valves as defined in Figure 1.

Permissible leakage rate: 8 cm^3/h



Key

1 valve 1

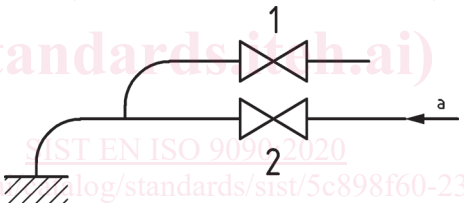
2 valve 2

a Test gas.

Figure 1 — Blowpipes — first test

b) Close off the heating gas outlet of the nozzle (for Torch Mixing Type, and Nozzle Mixing Type Blowpipes) or close off the fuel gas and combustion- supporting gas outlets of the nozzle individually (for Out Mixing Type Blowpipes) and open the other inlet connection and half open valve 2 and close valve 1 as defined in Figure 2.

Permissible leakage rate: 4 cm^3/h.



Key

1 valve 1

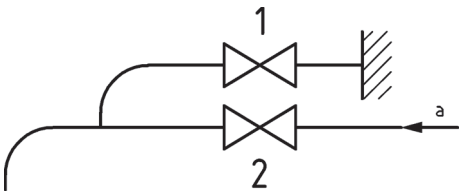
2 valve 2

a Test gas.

Figure 2 — Blowpipes — second test

c) Close off the other inlet connection and open the heating gas outlet of the nozzle (for Torch Mixing Type, and Nozzle Mixing Type Blowpipes) or open the fuel gas and combustion- supporting gas outlets of the nozzle individually (for Out Mixing Type Blowpipes) and close valve 1 and close valve 2 as defined in Figure 3.

Permissible leakage rate: 4 cm^3/h.



Key

1 valve 1

2 valve 2

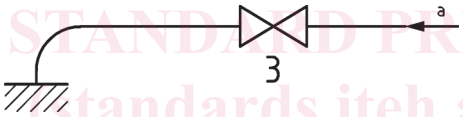
a Test gas.

NOTE This test procedure enables total leakage and leakage through each valve to be tested.

Figure 3 — Blowpipes — third test

d) Close off the cutting oxygen orifice of the nozzle and half open valve 3 as defined in Figure 4.

Permissible leakage rate: 8 cm^3/h



Key

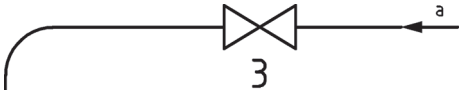
3 valve 3

a Test gas.

Figure 4 — Blowpipes — first test (Cutting oxygen)

e) Open the cutting oxygen orifice of the nozzle and close valve 3 as defined in Figure 5.

Permissible leakage rate: 4 cm^3/h



Key

3 valve 3

a Test gas.

Figure 5 — Blowpipes — second test (Cutting oxygen)

7.3 Safety devices

Safety devices shall not have a total leakage rate greater than 8 cm^3/h.

7.4 Quick action couplings

When connected, quick action coupling shall not have a total leakage rate greater than 10 cm^3/h.

Unconnected female elements shall not have a total leakage rate greater than 10 cm^3/h.