SLOVENSKI STANDARD
SIST EN ISO 5172:2006

01-oktober-2006

Nadomešča:
SIST EN 874:1996
SIST EN ISO 5172:1999

Oprema za plamensko varjenje - Gorilniki za plamensko varjenje, rezanje in segrevanje - Specifikacije in preskusi (ISO 5172:2006)

Gas welding equipment - Blowpipes for gas welding, heating and cutting - Specifications and tests (ISO 5172:2006)

Gasschweißgeräte - Brenner für Schweißen, Wärmen und Schneiden - Anforderungen und Prüfungen (ISO 5172:2006)

Matériel de soudage aux gaz - Chalumeaux pour soudage aux gaz, chauffage et coupage - Spécifications et essais (ISO 5172:2006)

Ta slovenski standard je istoveten z: **EN ISO 5172:2006**

ICS:

25.160.30	Varilna oprema	Welding equipment

SIST EN ISO 5172:2006 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 5172

April 2006

ICS 25.160.30

Supersedes EN 874:1995, EN ISO 5172:1996

English Version

Gas welding equipment - Blowpipes for gas welding, heating and cutting - Specifications and tests (ISO 5172:2006)

Matériel de soudage aux gaz - Chalumeaux pour soudage aux gaz, chauffage et coupage - Spécifications et essais (ISO 5172:2006)

Gasschweißgeräte - Brenner für Schweißen, Wärmen und Schneiden - Anforderungen und Prüfungen (ISO 5172:2006)

This European Standard was approved by CEN on 7 March 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN ISO 5172:2006: E

Foreword

This document (EN ISO 5172:2006) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding", 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 October 2006, and conflicting national standards shall be withdrawn at the latest by October 2006.

This document supersedes EN 874:1995 and EN ISO 5172:1996.

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

Endorsement notice

The text of ISO 5172:2006 has been approved by CEN as EN ISO 5172:2006 without any modifications.

INTERNATIONAL STANDARD

ISO 5172

Third edition
2006-04-01

Gas welding equipment — Blowpipes for gas welding, heating and cutting — Specifications and tests

Matériel de soudage aux gaz — Chalumeaux pour soudage aux gaz, chauffage et coupage — Spécifications et essais

Reference number
ISO 5172:2006(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 5172 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 8, *Equipment for gas welding, cutting and allied processes*.

This third edition of ISO 5172 cancels and replaces ISO 5172:1995, ISO 5172:1995/Amd.1:1995 and ISO 5186:1995, of which it constitutes a technical revision.

Introduction

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

Gas welding equipment — Blowpipes for gas welding, heating and cutting — Specifications and tests

1 Scope

This International Standard specifies specifications and tests for blowpipes for gas welding, heating and cutting of metals. It applies to manual blowpipes for welding and heating with a nominal thermal power up to 32 000 kcal/h, and manual and machine cutting blowpipes with a cutting range up to 300 mm.

This International Standard does not apply to air-aspirated blowpipes which are covered in ISO 9012.

NOTE 1 Blowpipes with greater nominal thermal power or cutting range can also be tested in accordance with this International Standard if the test requirements are suitable.

NOTE 2 For the most common fuel gases, the corresponding flow rates are given in Table A.1.

NOTE 3 Examples of blowpipes are shown in Annex B, which also gives the terminology concerning these blowpipes.

In addition to terms used in two of the three official ISO languages (English and French), this annex gives the equivalent terms in German; these are published under the responsibility of the member body for Germany (DIN) and are given for information only. Only the terms and definitions given in the official languages can be considered as ISO terms.

2 Normative references

The following referenced documents are indispensable for the application 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 554, *Standard atmospheres for conditioning and/or testing — Specifications*

ISO 5175, *Equipment used in gas welding, cutting and allied processes — Safety devices for fuel gases and oxygen or compressed air — General specifications, requirements and tests*

ISO 9539, *Materials for equipment used in gas welding, cutting and allied processes*

ISO 15296, *Gas welding equipment — Vocabulary — Terms used for gas welding equipment*

3 Terms and definitions

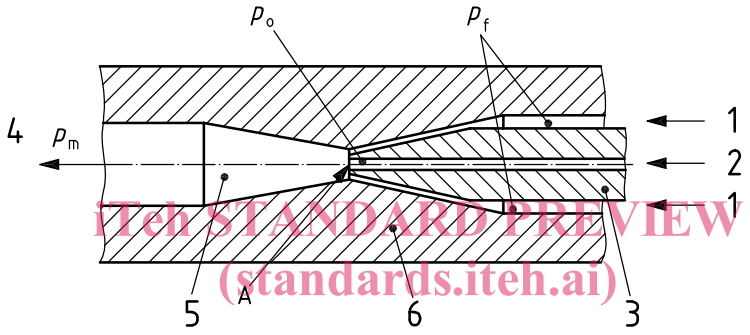
For the purposes of this document, the terms and definitions given in ISO 15296 and the following apply.

3.1 Mixing system

3.1.1
low-pressure blowpipe
blowpipe, in which the fuel gas pressure, measured immediately before the mixing chamber, is lower than the pressure of the gas mixture, measured between the mixing chamber and the welding nozzle

$$p_f < p_m$$

NOTE 1 Fuel gas and oxygen/compressed air are mixed by the action of oxygen/compressed air which, being discharged from the orifice of the injector generates suction at point “A” of the mixing system, thus entraining the fuel gas. See examples of injector-mixer, fixed or adjustable, in Figure 1 and Figure 2.

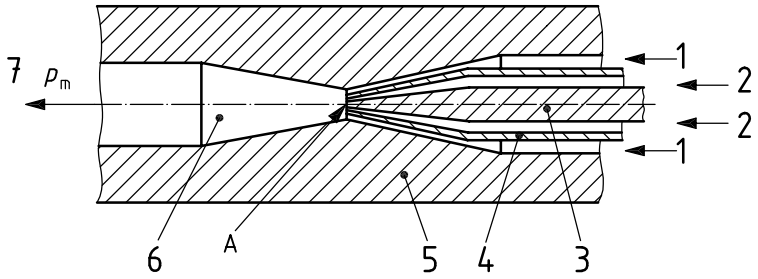


Key

1 fuel gas
2 oxygen/compressed air
3 pressure nozzle
4 mixture
5 mixing chamber
6 mixing nozzle
A point A

p_f pressure of fuel gas
p_o pressure of oxygen (or compressed air)
p_m pressure of mixture
$p_f < p_m$ low pressure
$p_f > p_m$ high pressure
$p_o > p_m$

Figure 1 — Injector-mixer for low-pressure and high-pressure blowpipes



Key

1 fuel gas
2 oxygen/compressed air
3 needle
4 pressure nozzle
5 mixing nozzle
6 mixing chamber
7 mixture
A point A

NOTE The control of the flow of oxygen/compressed air is effected by means of a needle valve inside the pressure nozzle.

Figure 2 — Mixer with adjustable injector

NOTE 2 The pressure in the fuel gas channel is below the atmospheric pressure during discharge of oxygen/compressed air when the fuel gas valve between valve and mixing chamber is closed. If the fuel gas valve is open during discharge of oxygen/compressed air and the fuel gas hose connection is exposed to the atmosphere, air will be entrained (suction test, see instruction for use).

3.1.2
high-pressure injector blowpipe
blowpipe in which the pressure of both the fuel gas and the oxygen/compressed air, measured immediately before the point of mixing, is higher than the pressure of the mixture, measured between the point of mixing and welding nozzle

$$p_m < p_f$$

$$p_f < p_0$$

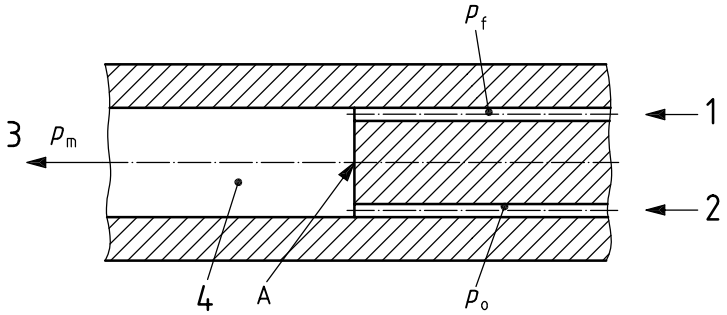
NOTE Fuel gas and oxygen/compressed air are mixed when both gases meet at pressures greater than that of the resulting mixture but with the oxygen/compressed air pressure higher than the fuel gas pressure. When the valve in the fuel gas channel is closed while oxygen/compressed air is discharged, the pressure in this channel is higher than the atmospheric pressure. If the fuel gas valve is open and the fuel gas hose connection is exposed to the atmosphere, oxygen/compressed air will be discharged (fuel gas valve open), see Figure 1.

3.1.3
equal-pressure blowpipe
blowpipe, where the pressures of fuel gas and oxygen/compressed air are identical, measured immediately before the point of mixing “A”, but are higher than the pressure of the mixture, measured between the point of mixing and welding nozzle

$$p_m < p_f$$

$$p_f = p_0$$

NOTE See Figure 3.



Key

1 fuel gas
2 oxygen/compressed air
3 mixture
4 mixing chamber
A point A

p_f pressure of fuel gas
p_o pressure of oxygen (or compressed air)
p_m pressure of mixture

Figure 3 — Mixer for equal-pressure blowpipes

3.2 Blowpipes classified according to the possibility of varying the gas flow rate

3.2.1
blowpipe with a single flow rate
blowpipe which, due to design, gives a single nominal gas flow rate which can only be varied within narrow limits

3.2.2
blowpipe with multiple flow rates
blowpipe giving a range of flow rates corresponding to a series of nozzles

3.2.2.1
blowpipe with multiple gas flow rates adjusted by means of the injector
blowpipe with multiple gas flow rates which are varied by means of a device for adjustment of the injector cross-section (blowpipe with variable injector)

3.2.2.2
blowpipe with multiple gas flow rates, adjusted by the pressure
blowpipe with multiple gas flow rates, which are varied by adjusting the pressures (blowpipe with fixed mixer), e.g. welding blowpipe attachments and manual cutting blowpipes

NOTE See Figure 1.

3.2.2.3
blowpipe with multiple gas flow rates adjusted by changing the welding, heating or cutting attachments (combination blowpipes)
blowpipe with multiple gas flow rates which are varied by changing the welding or cutting attachment with injector, e.g. welding, heating and cutting attachments

NOTE See Figure 1.

3.2.2.4
blowpipe with multiple gas flow rates adjusted by means of gas control valves
blowpipe with multiple gas flow rates, which are varied by means of the adjustment valves

3.3 Cutting and heating blowpipes classified according to the mixing position

3.3.1
blowpipe with preliminary mixer
blowpipe in which the mixture of heating oxygen and fuel gas is ensured by the mixer before the welding, heating or cutting nozzle

3.3.2
blowpipe with nozzle mixing
blowpipe in which the heating oxygen and fuel gas are mixed in the cutting or heating nozzle (nozzle mixing)

3.4 Operational incidents

3.4.1
backfire
momentary return of the flame into the blowpipe

NOTE This return of the flame generates a popping sound, the flame being either extinguished or re-ignited at the nozzle.

3.4.2
sustained backfire
return of the flame into the blowpipe with continued burning within the mixer

NOTE This is accompanied by an initial popping sound followed by a hissing sound caused by continued burning within the blowpipe.

3.4.3
flashback
return of the flame into the blowpipe and possibly extending into the hoses and the upstream equipment

3.4.4
gas backflow
flowing back of gas from one blowpipe passage at higher pressure into the other gas passage at lower pressure and possibly into the hose

NOTE This can have the effect that oxygen (or compressed air) and fuel can form a mixture capable of being ignited in the blowpipe passages and possibly in the hoses.

3.5 Flame specifications (reference values)

3.5.1
nominal thermal power
thermal power obtained by the product of the nominal fuel gas flow and the lower heat of combustion of the fuel gas at 15 °C and 101,3 kPa

3.5.2
neutral flame
⟨for acetylene only⟩ acetylene flame obtained with a mixing ratio of approximately 1 part acetylene to 1,1 parts oxygen by volume under standard conditions

NOTE It is a flame which is neither reducing (carburising) nor oxidising.