



SLOVENSKI STANDARD

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Nadomešča:
SIST EN 559:1997

Oprema za plamensko varjenje - Gumene cevi za varjenje, rezanje in sorodne postopke

Gas welding equipment - Rubber hoses for welding, cutting and allied processes

Gasschweißgeräte - Gummischläuche für Schweißen, Schneiden und verwandte Prozesse

Matériel de soudage aux gaz - Tuyaux souples en caoutchouc pour le soudage, le coupage et les techniques connexes [SIST EN 559:2003](#)

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ICS:

25.160.30	Varilna oprema	Welding equipment
83.140.40	Gumene cevi	Hoses

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EUROPEAN STANDARD
NORME EUROPÉENNE
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English version

Gas welding equipment - Rubber hoses for welding, cutting and allied processes

Matériel de soudage aux gaz - Tuyaux souples en caoutchouc pour le soudage, le coupage et les techniques connexes

Gasschweißgeräte - Gummischläuche für Schweißen, Schneiden und verwandte Prozesse

This European Standard was approved by CEN on 28 February 2003.

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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 Management Centre has the same status as the official versions.

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

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Foreword

This document (EN 559:2003) has been prepared by Technical Committee CEN/TC 121, "Welding", the secretariat of which is held by DS.

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of an identical text or by endorsement, at the latest by October 2003, and conflicting national standards shall be withdrawn at the latest by October 2003.

This document supersedes EN 559:1994.

Annexes A, B, C and D are normative.

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

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1 Scope

This European Standard specifies requirements for rubber hoses, including twin hoses and fluxed fuel gas hoses for welding, cutting and allied processes. The term "allied processes" means, in particular, heating, brazing and metallization.

This standard specifies requirements for rubber hoses for normal duty up to 2 MPa (20 bar) and light duty [limited to hoses for maximum operating pressure up to 1 MPa (10 bar) and with nominal bore less than or equal to 6,3 mm].

This standard pertains to hoses operated at temperatures - 20 °C to + 60 °C.

Thermoplastic hoses specified in EN 1327 are excluded from this standard.

Different colours and markings are specified for identification of the gas.

NOTE If hoses for liquefied petrol gases are used without regulators the use of light duty rubber hoses is not allowed.

This standard applies to hoses used in:

- gas welding and cutting;
- arc welding under the protection of an inert or active gas;
- processes allied to welding and cutting;

and assembled according to EN 1256.

Hose connections for the manufacture of hose lines see EN 560.

This standard does not apply to hoses used for high pressure acetylene [more than 0,15 MPa (1,5 bar)].

EN 559:2003 (E)**2 Normative references**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 1256, *Gas welding equipment — Specification for hose assemblies for equipment for welding, cutting and allied processes.*

EN 1327, *Gas welding equipment — Thermoplastic hoses for welding and allied processes.*

EN ISO 1307:1995, *Rubber and plastics hoses for general-purpose industrial applications - Bore diameters and tolerances, and tolerances on length (ISO 1307:1992).*

EN ISO 1402, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing (ISO 1402: 1994).*

EN ISO 1746, *Rubber or plastics hoses and tubing - Bending tests (ISO 1746:1998, including technical corrigendum 1:1999).*

EN ISO 4080, *Rubber and plastic hoses and hose assemblies — Determination of permeability to gas (ISO 4080: 1991).*

EN ISO 4671, *Rubber and plastics hose and hose assemblies — Methods of measurement of dimensions (ISO 4671:1999).*

EN ISO 4672:1999, *Rubber and plastics hoses — Sub-ambient temperature flexibility tests (ISO 4672:1997).*

EN ISO 8330:2000, *Rubber and plastics hoses and hose assemblies - Vocabulary (ISO 8330:1998).*

EN 27326:1993, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions (ISO 7326:1991).*

EN 28033:1993, *Rubber and plastics hose — Determination of adhesion between components (ISO 8033:1991).*

EN ISO 11114-3, *Transportable gas cylinders — Compatibility of cylinder and valve materials with gas contents — Part 3: Autogenous ignition test in oxygen atmosphere (ISO 11114-3:1997).*

ISO 37, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties.*

ISO 188, *Rubber, vulcanized or thermoplastic — Accelerated ageing or heat-resistance tests.*

ISO 471, *Rubber — Temperatures, humidities and times for conditioning and testing.*

ISO 1817, *Rubber, vulcanized — Determination of the effect of liquids.*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN ISO 8330:2000 and the following apply.

3.1**twin hoses**

two normal rubber hoses joined together longitudinally

3.2**all fuel gas hoses**

hoses which can be used for all the fuel gases given in Table 4 except fluxed fuel gas

3.3

fluxed fuel gas hoses

fuel gas hose for use with liquid flux dispenser fitted in the fuel gas supply line

4 Abbreviated terms

For the purposes of this European Standard, the following abbreviated terms apply.

LPG Liquefied petroleum gases

MPS Methylacetylene-propadiene-mixtures

5 Application

Hoses shall only be used for the relevant type of gas for which the colour code is specified (see Table 4).

6 Hose designation

The hoses covered by this standard are designated using the following information:

- nominal bore, see Table 1;
- light or normal duty (pressure rating), see Table 3;
- colour and marking (gas service), see Table 4.

- EXAMPLE 1 6,3 mm, light duty, blue
- EXAMPLE 2 10 mm, normal duty, red.
- EXAMPLE 3 6,3 mm, light duty, red-FLUX.

7 Materials

7.1 Construction

7.1.1 General

The hose shall consist of:

- a rubber lining of a minimum thickness of 1,5 mm;
- reinforcement applied by any suitable technique;
- a rubber cover of a minimum thickness of 1,0 mm.

7.1.2 Fluxed fuel gas hose

The fluxed fuel gas hose shall consist of:

- a rubber lining with an additional inner plastic layer to give a minimum total thickness of 1,5 mm. The inner plastic layer shall be a maximum thickness of 0,5 mm;
- reinforcement applied by any suitable technique;

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— a rubber cover of a minimum thickness of 1,0 mm.

7.1.3 Twin hose

Each hose used for twin hose construction shall be as detailed in 7.1.1 or 7.1.2. The two hoses shall be joined longitudinally during the extrusion and/or vulcanisation process. They shall be capable of being separated free of damage to enable end fittings to be fitted (see 9.2.7).

7.2 Manufacture

The lining and cover shall be of uniform thickness and free from holes, porosity and other defects.

8 Dimensions and tolerances

8.1 Internal diameter

The internal diameter of the hoses shall be in accordance with the dimensions and tolerances shown in Table 1.

Table 1 — Nominal bore, tolerances and concentricity

Nominal bore	Internal diameter mm	Tolerance mm	Concentricity max. mm	
4	4	± 0,40	1	
5	5			
6,3	6,3			
8	8	± 0,50		
10	10			
12,5	12,5	± 0,60		
16	16			
20	20			
25	25	± 1,0		1,25
32	32			
40	40	± 1,25	1,50	
50	50			

NOTE 1 The tolerances and internal diameters (excluding nominal bore of 20 mm) do not comply with Table 1 of EN ISO 1307:1995.

NOTE 2 For intermediate dimensions, numbers should be chosen from the R20 series of preferred numbers with tolerances as for the next larger internal diameter shown in Table 1.

8.2 Concentricity (total indicator reading)

The concentricity of the hose, measured in accordance with EN ISO 4671, shall be in accordance with the values given in Table 1.

8.3 Cut lengths and tolerances

The tolerances for cut lengths shall be in accordance with EN ISO 1307.

9 Requirements and tests

NOTE The list of tests with the corresponding number of samples are detailed in annex D.

9.1 Basic requirements

9.1.1 Tensile strength and elongation at break

Measurements shall be made on test specimens cut from the hoses. The materials used in the lining and cover shall, when tested in accordance with ISO 37, have a tensile strength and elongation at break not less than the values given in Table 2.

Table 2 — Tensile strength and elongation at break

Rating	Tensile strength N/mm ²	Elongation at break %
rubber lining	5	200
cover	7	250
inner plastic layer	5	120

9.1.2 Accelerating ageing

Measurements shall be made on test specimens cut from the hoses. After ageing for seven days at a temperature of 70 °C as described in ISO 188, (air oven) the tensile strength and elongation at break respectively of the lining and cover shall not decrease from the original values obtained by more than 25 % for the tensile strength and 50 % for elongation at break.

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9.1.3 Adhesion

When tested in accordance with EN 28033:1993 using the type 2 or type 4 test piece, the minimum adhesion between adjacent components shall be 1,5 kN/m. For fluxed fuel gas hoses see 9.2.4. For fluxed fuel gas hoses the inner plastic lining should be removed prior to the test.

9.1.4 Hydrostatic requirements

The hose, when tested in accordance with EN ISO 1402, shall meet the requirements of Table 3.

Table 3 — Hydrostatic requirements

Rating	Light duty (Nominal bore ≤ 6,3mm)	Normal duty (all sizes)
maximum operating pressure	1 MPa (10 bar)	2 MPa (20 bar)
proof pressure	2 MPa (20 bar)	4 MPa (40 bar)
minimum burst pressure	3 MPa (30 bar)	6 MPa (60 bar)
change in length at maximum operating pressure	± 5 %	
change in diameter at maximum operating pressure	± 10 %	