SLOVENSKI STANDARD
SIST EN ISO 14113:1999

01-december-1999

Oprema za plamensko varjenje ï Cevi iz gume in umetnih mas za tlake in utekoļ injene pline do najviġjega tlaka 450 bar (ISO 14113:1997)

Gas welding equipment - Rubber and plastic hoses assembled for compressed or liquefied gases up to a maximum design pressure of 450 bar (ISO 14113:1997)

Gasschweißgeräte - Gummi- und Kunststoffschlauchleitungen für Druck- oder Flüssiggase bis zu einem maximalen Betriebsdruck von 450 bar (ISO 14113:1997)

Matériel de soudage aux gaz - Flexibles en caoutchouc et matiere plastique pour les gaz comprimés ou liquéfiés jusqu'a une pression nominale maximale de 450 bar (ISO 14113:1997)

Ta slovenski standard je istoveten z: **EN ISO 14113:1997**

ICS:

25.160.30	Varilna oprema	Welding equipment
83.140.40	Gumene cevi	Hoses

SIST EN ISO 14113:1999 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 14113

August 1997

ICS 23.040.70

Descriptors: welding equipment, gas welding, gas cutting, compressed gas, liquefied gas, hoses, rubber hoses, plastic tubes, joining, pipe fittings, dimensions, dimensional tolerances, physical properties, pressure tests, leak tests, marking

English version

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This European Standard was approved by CEN on 1997-07-11. 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.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Contents

Foreword

The text of EN ISO 14113:1997 has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DS, in collaboration with Technical Committee ISO/TC 44 "Welding and allied processes".

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of an identical text or by endorsement, at the latest by February 1998, and conflicting national standards shall be withdrawn at the latest by February 1998.

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies requirements for rubber and plastics hoses and hose assemblies for use with compressed or liquefied gases up to a maximum design pressure of 450 bar (45 MPa), within the ambient temperature range −20 °C to +60 °C.

This standard does not cover rubber hoses for welding, cutting and allied processes for use up to a maximum design pressure of 20 bar (2 MPa), or not exceeding 1,5 bar (0,15 MPa) in the case of acetylene, which are covered by EN 559.

This standard does not cover thermoplastic hoses for welding, cutting and allied processes for use up to a maximum design pressure of 20 bar (2 MPa), or not exceeding 1,5 bar (0,15 MPa) in the case of acetylene, which are covered by EN 1327.

This standard is applicable to high pressure hose assemblies to connect, without pressure regulators, the industrial gas cylinders or bundles to manifolds. It does not apply to refrigerated liquefied gases, or to LPG (Liquified Petroleum Gases).

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 revision 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.

EN 559
Gas welding equipment – Rubber hoses for welding, cutting and allied processes

EN 961 : 1995
Gas welding equipment – Manifold regulators used in welding, cutting and allied processes up to 200 bar

EN 1327
Gas welding equipment – Thermoplastic hoses for welding and allied processes

EN 21746
Rubber or plastics hoses and tubing – Bending tests (ISO 1746 : 1983)

EN 24671
Rubber and plastics hose and hose assemblies – Methods of measurement of dimensions (ISO 4671 : 1984)

EN 24672
Rubber and plastics hoses – Sub-ambient temperature flexibility tests (ISO 4672 : 1988)

EN 27326
Rubber and plastics hoses – Assessment of ozone resistance under static conditions (ISO 7326 : 1991)

EN 28033
Rubber and plastics hose – Determination of adhesion between components (ISO 8033 : 1991)

EN 29539
Materials for equipment used in welding, cutting and allied processes (ISO 9539 : 1988)

ISO 471
Rubber – Temperatures, humidities and times for conditioning and testing of test pieces

ISO 1307 : 1992
Rubber and plastics hoses for general-purpose industrial applications – Bore diameters and tolerances and tolerances on length

ISO 1402
Rubber and plastics hoses and hose assemblies – Hydrostatic testing

ISO 1817
Rubber, vulcanized – Determination of the effect of liquids

ISO 4080
Rubber and plastics hoses and hose assemblies – Determination of permeability to gas

ISO 7751
Rubber and plastics hoses and hose assemblies – Ratios of proof and burst pressure to design working pressure

ISO/DIS 11114-3
Compatibility of cylinder and valve materials with gas contents – Part 3: Test methods

3 Definitions

For the purposes of this standard, the following definitions apply:

3.1 Design pressure: Maximum pressure to which the hose may be subjected in service.

3.2 Proof pressure: Pressure in excess of design pressure which causes no permanent deformation, damage or malfunction.

3.3 Burst pressure: Pressure which causes failure of, and consequential fluid loss through the component envelope.

3.4 Autogenous ignition temperature: Temperature at which autogenous ignition of a sample occurs at a given oxygen pressure in the absence of a source of ignition other than the applied temperature.

3.5 Maximum rated pressure: See 3.1 design pressure.

4 Construction

4.1 Hose

The hose should consist of either:

- a rubber or plastics lining; and
- reinforcement consisting of one or more layers; and
- an outer protective cover of permeable material or perforated rubber or plastics;

or:

- a rubber or plastics lining; and
- reinforcement consisting of one or more layers of stainless steel wire braid and/or other corrosion and abrasion resistant material which is also designed to act as an outer protective cover.

4.2 Hose assemblies

Hose assemblies consisting of a hose tail inserted into the end of a hose and secured by a suitable hose clamp.

4.3 Assembled hose

Consists of a length of hose fitted at each end with a hose assembly.

NOTE 1: For design pressures in excess of 40 bar (4 MPa), assembled hoses should be provided with a suitable restraining cable or device, properly fitted to an anchor point to restrain the hose in the event of a hose assembly failure.

NOTE 2: Heat sinks when used as part of the assembled hose for oxygen service, may be detachable.

4.4 Hose connections

Materials for hose connections shall conform to EN 29539.

5 Dimensions and tolerances

5.1 Bore sizes

The bore of the hoses shall be in accordance with the nominal bore sizes and permitted ranges given in table 1, except that the effective maximum bore of hoses for acetylene shall not exceed 25 mm.

NOTE: In some countries local regulations can restrict bores of acetylene hoses to less than 25 mm.

5.2 Concentricity

The concentricity of the hose, measured according to EN 24671, shall be in accordance with the values given in table 1.

Table 1: Nominal bore size, permitted range and concentricity

dimensions in millimetres

Nominal bore size	Permitted range	Concentricity
3,2	3,0 to 3,6	±0,6
4	3,8 to 4,4	
5	4,5 to 5,4	
6,3	6,1 to 6,9	
8	7,7 to 8,5	
10	9,3 to 10,1	
11	10,8 to 11,6	
12,5	12,3 to 13,5	
13	12,8 to 14,0	
16	15,4 to 16,7	±0,7
19	18,6 to 19,8	
20	19,6 to 20,8	
22	21,8 to 23,0	
25	25,0 to 26,4	
31,5	31,3 to 33,0	
32	31,7 to 33,4	
38	37,7 to 39,3	±0,8
50	49,7 to 51,4	
51	50,4 to 52,0	

5.3 Cut lengths and tolerances

The tolerances for cut lengths of hoses shall be in accordance with 4.2 of ISO 1307 : 1992 (±1 % or ±3 mm, whichever is the greater).

5.4 Lengths of assembled hoses

The tolerances for lengths of hose assemblies shall be +2 % of the length as specified by the purchaser or +6 mm whichever is the greater.

6 Physical properties of lining and cover

6.1 General

The lining material shall be compatible with the gas or gases with which the hose is specified for use, under normal operating conditions.

6.2 Non-ignition requirement for oxygen hose lining

The autogenous ignition temperature of the lining shall be not less than 400 °C measured in oxygen at a minimum pressure of 130 bar (13 MPa) or the design pressure whichever is the greater, by the method according to ISO/DIS 11114-3.

NOTE: Suitable grades of fluorinated polymers and co-polymers eg polytetrafluoroethylene and polytetrafluoroethylene/perfluorinated vinyl ethers normally meet this requirement, but some oil-treated grades may not.

6.3 Resistance to acetone and dimethyl formamide (acetylene hose only)

A sample of the lining when immersed in the test solvent at standard laboratory temperature as defined in ISO 471 for 70 h shall not increase in mass by more than 8 % when calculated by the method in ISO 1817.

6.4 Non-ignition requirement for oxygen hose assemblies

Hose assemblies for oxygen shall comply with the requirements and test method specified in 7.5 of EN 961 : 1995, using the hose assembly as the test sample, except that three samples shall be tested, and the oxygen test pressure shall be the design pressure for the hose assembly. Samples of assemblies of each nominal bore size, and the shortest and longest hose assembly in each bore size shall be tested elongated and curved in a single loop with an inner circle diameter equal to 50 times nominal bore. All tests shall be carried out without a connecting pipe between the quick opening valve and the test sample.

7 Performance requirements – Type approval tests

7.1 Hydrostatic requirements

7.1.1 General

The hose and hose assembly shall meet the requirements of ISO 1402 using the ratios of proof and burst pressure to design pressure specified for gaseous media in ISO 7751. Hose fittings shall remain attached to the hose up to the burst pressure.

7.1.2 Acetylene hose

Hoses for high pressure acetylene shall have a minimum burst pressure of 1000 bar (100 MPa).

Hose assemblies for high pressure acetylene shall resist an acetylene decomposition at an initial pressure of 26 bar (25 bar gauge) according to the test method in Annex A.

7.2 Adhesion (rubber hose only)

When tested in accordance with EN 28033 using the type 2 or type 4 test piece the minimum adhesion between adjacent components shall be 2,5 kN/m.

7.3 Flexibility

When tested in accordance with EN 21746 at standard laboratory temperature as defined in ISO 471 using a diameter of curvature of 50 times the nominal bore size, the coefficient of deformation (K) shall be not less than 0,8, and there shall be no kink in the curved portion of the hose.

7.4 Low temperature flexibility

When tested in accordance with EN 24672, method B, at −25 °C using a diameter of curvature of 50 times the nominal bore size, the hose shall not fail or show signs of leaks when subjected to the proof pressure.

7.5 Ozone resistance (for hoses with an outer protective cover of rubber or plastic)

When tested in accordance with EN 27326, method 1, the cover of rubber shall show no evidence of cracking under two-times magnification. For plastic covers, the Xenon arc lamp test shall be used in accordance with EN 1327.