

SLOVENSKI STANDARD

SIST EN 1800:1999

01-september-1999

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Transportable gas cylinders - Acetylene cylinders - Basic requirements and definitions

Ortsbewegliche Gasflaschen - Acetylen- Flaschen - Grundanforderungen und Definitionen

Bouteilles a gaz transportables - Bouteilles d'acetylene - Prescriptions fondamentales et definitions

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ICS:

23.020.30 V|æ } ^ Á [• [á ^ Ê | ä • \ ^ Pressure vessels, gas cylinders
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EUROPEAN STANDARD
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Descriptors: gas cylinders, acetylene, definitions, specifications, agreements, procedures, tests, porosity, pressure, utilization

English version

Transportable gas cylinders - Acetylene cylinders - Basic requirements and definitions

Bouteilles à gaz transportables - Bouteilles d'acétylène -
Prescriptions fondamentales et définitions

Ortsbewegliche Gasflaschen - Acetylen-Flaschen -
Grundanforderungen und Definitionen

This European Standard was approved by CEN on 16 October 1998.

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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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AGENCIJA ZA VEŠTAČENJE I
KONTROLU KVALITETA I
KONFORMNOSTI
IZ OBLASTI
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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 23 "Transportable gas cylinders", the secretariat of which is held by BSI.

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 June 1999, and conflicting national standards shall be withdrawn at the latest by June 1999.

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.

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1 Scope

This European Standard specifies the basic requirements for acetylene cylinders with a maximum nominal water capacity of 150 l, including:

- the procedure for type testing;
- the procedure for production/batch testing;
- the methods for determining the maximum permissible settled pressure;
- the method for determining the porosity of the porous mass.

It does not include details of design for the cylinder shell.

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.

EN 849 : 1996	Transportable gas cylinders - Cylinder valves Specification and type testing https://standards.iteh.ai/catalog/standards/sist/fb69575e-3d13-4f47-9d2c-59b32e0abbd2/sist-en-1800-1999
EN 962 : 1996	Transportable gas cylinders - Valve protection caps and valve guards for industrial and medical gas cylinders - Design, construction and tests
EN 1089-1 : 1996	Transportable gas cylinders - Gas cylinder identification (excluding LPG) Part 1: Stampmarking
EN 1089-2	Transportable gas cylinders- Cylinder identification (excluding LPG) Part 2: Precautionary labels
EN 1089-3	Transportable gas cylinders - Cylinder identification Part 3: Colour coding
prEN 1964 -1 : 1995	Transportable gas cylinders - Specification for the design and construction of refillable transportable seamless steel gas cylinders of capacity from 0,5 litre up to and including 150 litres Part 1: Seamless steel with a maximum R_m value of 1100 N/mm ² .
prEN 1975 : 1995	Transportable gas cylinders - Specification for the design and construction of refillable transportable seamless aluminium alloy gas cylinders of capacity from 0,5 litre up to 150 litre
prEN 12755 : 1997	Transportable gas cylinders - Filling conditions for acetylene bundles

3 Definitions

For the purposes of this European Standard the following definitions apply:

3.1 acetylene cylinder

Cylinder containing a porous mass with or without solvent for the storage of acetylene.

NOTE. For solvent free acetylene cylinders see clause 6.

3.2 tare weight

See EN 1089-1:1996

3.2.1 For acetylene cylinders with solvent the tare weight is expressed by indicating two weights (in kilogrammes) TARE A and TARE S,

TARE A is the sum of the empty weight of the cylinder shell, the weight of the porous mass, the specified weight of solvent content, the weight of the valve and the weight of all other parts which are permanently attached (e.g. by clamping or nut bolt fixing) to the cylinder when it is going to be filled,

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TARE S is TARE A plus the weight of acetylene required to saturate the solvent at atmospheric pressure at 15 °C.

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3.2.2 For solvent free acetylene cylinders the tare weight is expressed by indicating TARE F, where TARE F is TARE A minus the weight of solvent.

3.2.3 If the tare weight as defined in 3.2.1 or 3.2.2 includes permanently attached parts other than the valve (normally the fixed guard), the total weight of these parts is indicated by stampmarking in front of the letters "TARE" (e.g. 2,3 TARE 75,1/75,6 KG).

3.3 total weight

For cylinders with solvent, total weight is TARE A plus the weight of the maximum acetylene content.

For solvent free cylinders, total weight is TARE F plus the weight of maximum acetylene content.

3.4 water capacity

The capacity of the empty shell (excluding porous mass) when filled with water.

3.5 maximum acetylene content

The specified maximum weight of acetylene in the cylinder (in kilogrammes). When a solvent is used it includes the weight of saturation gas.

3.6 porous mass

Single or multi-component material introduced or formed in the cylinder in order to fill it and which due to its porosity allows the absorption of the solvent/acetylene gas solution.

NOTE: The porous mass may be either;

- Monolithic, consisting of a solid product obtained by reacting materials or by materials connected together with a binder,
- or
- Non-monolithic, consisting of granular, fibrous or similar materials without addition of a binder.

3.7 porosity

The ratio, expressed as a percentage, of the volume of solvent which can be filled into the massed cylinder, to the water capacity of the cylinder shell without porous mass (see annex B).

3.8 solvent

Liquid which is absorbed by the porous mass and is capable of dissolving and releasing the acetylene.

3.9 acetylene solvent ratio

The ratio of the maximum acetylene content to the specified weight of solvent content.

3.10 working pressure

The maximum settled pressure in bar (gauge) at a uniform temperature of 15 °C in a cylinder containing the maximum acetylene content and the specified weight of solvent content.

3.11 manufacturer

The company which fills the cylinder shell with porous mass and which generally prepares it for charging with acetylene.

4 Basic requirements

4.1 Cylinder shell

4.1.1 The acetylene cylinder shell shall conform with the requirements of the appropriate European Standard for design and construction of the cylinders, ie:

- for seamless steel, prEN 1964-1:1995;
- for seamless aluminium alloy, prEN 1975:1995.

NOTE 1: Other standards for the design and construction of cylinders are in preparation and appropriate standards should be complied with when published.

NOTE 2: This requirement does not exclude continued use and remassing of cylinder shells complying with national requirements.

4.1.2 The minimum test pressure for the cylinder shell shall be 60 bar (gauge).

4.2 Porous mass

4.2.1 The porous mass in the cylinder shall be of such quality that it enables the completed cylinder to pass the safety tests included in annex A.

For safety reasons the porous mass shall be able to prevent or inhibit a dangerous decomposition of the acetylene.

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4.2.2 There shall be no hazardous reaction between the shell, the porous mass, the acetylene, the solvent and any parts in contact with them, at any time.

4.2.3 To ensure the quality of the porous mass and the solvent, production/batch test procedures for the preparation of porous mass shall be established by the manufacturer in accordance with Annex D.

4.3 Solvent

The specified weight of solvent content shall be such that the cylinder can meet the requirements of the tests included in annex A.

4.4 Settled pressure

When the cylinder has been charged to the maximum acetylene content and the pressure has reached equilibrium at a uniform temperature of 15 °C, the pressure in the cylinder shall not exceed the working pressure for the type of cylinder (calculated in accordance with annex C).

4.5 Cylinder identification

The identification shall comply with the requirements of EN 1089-1:1996, EN 1089-2 and EN 1089-3.

4.6 Accessories

Valves for use with acetylene cylinders shall conform with the requirements of EN 849:1996. Valve guards and caps for use with acetylene cylinders shall conform with the requirements of EN 962:1996.

NOTE: Other accessories should conform with the requirements of appropriate European Standards, when available.

5 Approval procedures

Representative cylinders, selected according to 5.4 by or on behalf of the approving organization shall withstand successfully the type tests as required in 5.3 prior to type approval being granted to the request made by the manufacturer of the porous mass (see 5.2).

5.1 Cylinders for tests shall be selected as follows:

- a) for cylinders with a nominal water capacity greater than 60 l and up to 150 l, tests shall be on a cylinder of capacity considered to be representative of the size under consideration;
- b) for cylinders with a nominal water capacity up to and including 60 l, tests shall be on the smallest and the largest cylinders of every range proposed by the manufacturer;
- c) for cylinders with a nominal water capacity below 20 l, no test is required on cylinders having an acetylene content of not more than 90 % of the equivalent proportional content used in approved cylinders of 20 l or greater water capacity. However in such a case the maximum acetylene content shall not exceed 0,180 kg/l.

For cylinders having a higher acetylene content, tests shall be carried out on cylinders of a nominal water capacity representative of the size under consideration.

5.2 Requests for approval

5.2.1 A request for the approval of acetylene cylinders may cover a range of different volumes provided that:

- the construction is similar (welded or seamless);
- the nominal outside diameter of the cylinder falls within the range of either:
 - a) up to and inclusive of 270 mm or;
 - b) greater than 270 mm.
- the acetylene solvent ratios are the same;
- the maximum acetylene content per litre water capacity is the same;
- the cylinders contain the same porous mass from the same factory and, the same solvent;

- the cylinder shells are made from the same type of material (steel or aluminium etc.).

5.2.2 Each request for approval shall include the following information:

- a) a schedule of the different types of acetylene cylinder (as defined in 5.1) which form the subject of the request for approval and which includes, for each size of cylinder, the following information:
 - nominal water capacity in litres;
 - solvent to be used;
 - specified weight of solvent content in kg;
 - maximum weight of acetylene content in kg;
 - test pressure of the cylinder in bar (gauge);
 - the working pressure at 15 °C;
 - name of manufacturer or place of production of porous mass;
 - identification of porous mass (trade name) to be stamped;
 - rejection criteria (e.g. maximum top clearance between mass and shell);
- b) a description of the porous mass as it exists in the cylinder, which gives sufficient information concerning production process and quality control procedure to verify compliance with annex D;
- c) a report on the porosity determinations carried out by or on behalf of the manufacturer on the test cylinders provided, according to the method given in annex B, and a statement of the maximum and minimum limits of porosity within which the porous mass will be manufactured.

5.2.3 The request for approval shall be accompanied by a declaration from the manufacturer stating that in the event of approval, the production of the porous mass will be in accordance with the information given in the request for approval in 5.2.2.

5.3 Cylinder type tests

Cylinders with porous mass shall successfully withstand the type test specified in annex A.

5.4 Submission of cylinders for type tests

5.4.1 The manufacturer shall submit the required number of representative cylinders including spares for type test.

These cylinders shall be complete with all fittings and porous mass, but without solvent or acetylene unless otherwise specified by the approving organization.

The process of filling of the porous mass shall be audited by or on behalf of the approving organization.