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AMENDMENT 1
2017-03

**Gas cylinders — Cylinder valves —
Specification and type testing**

**AMENDMENT 1: Pressure drums and
tubes**

*Bouteilles à gaz — Robinets de bouteilles — Spécifications et essais de
type*

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AMENDEMENT 1: Fûts à pression et tubes
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Amendment 1 to ISO 10297:2014 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 2, *Cylinder fittings*.

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Gas cylinders — Cylinder valves — Specification and type testing

AMENDMENT 1: Pressure drums and tubes

Clause 1

After list item c) add following list item d):

d) valves for pressure drums and tubes;

Replace Note 1 with the following:

NOTE 1 Where there is no risk of ambiguity, cylinder valves, main valves, VIPR and valves for pressure drums and tubes are addressed with the collective term “valves” within this document.

Replace second list item with the following:

— quick-release cylinder valves (e.g. for fire-extinguishing, explosion protection and rescue applications), self-closing cylinder valves or ball valves.

Replace Note 2 with the following:

NOTE 2 Requirements for valves for cryogenic vessels are specified in ISO 21011 and at a regional level, e.g. in EN 1626. Requirements for LPG valves are specified in ISO 14245 or ISO 15995. Requirements for quick-release cylinder valves are specified in ISO 17871. Requirements for self-closing cylinder valves are specified in ISO 17879. Requirements for valves for portable fire extinguishers at a regional level are specified e.g. in EN 3 series.

3.10

Replace 3.10 with the following:

3.10

minimum closing torque

T_c

torque necessary to be applied to a *valve operating device* (3.3) of a newly manufactured valve to obtain *internal leak tightness* (3.5) at *valve test pressure* (3.8) and room temperature

Note 1 to entry The minimum closing torque is expressed in Nm.

5.2

Add the following paragraph after the first paragraph:

Copper alloys in contact with oxygen or other oxidizing gases or gas mixtures shall have a maximum aluminium content of no more than 2,5 %.

5.3, first paragraph

Replace the first paragraph with the following:

For valves using a yoke connection such as pin-index (post-type medical) valves in medical gas service (see Figure 8) the external dimensions of the valve shall be in accordance with the requirements of the relevant outlet connection standard.

5.5.2, *third paragraph*

Replace the third paragraph with the following:

Distortion due to impact is permissible. After being impacted, for safety reasons the closed valve shall first be pressurized hydraulically to p_{vt} before undergoing a leak tightness test at p_{vt} with the outlet unplugged.

The total leakage (comprising that from the valve internal sealing system plus that from the threaded joint between the valve and the cylinder/test fixture) shall not exceed 100 cm³/h. Any leakage shall not result from cracking of the valve body. In addition the test sample shall remain capable of being opened for emergency venting purposes by hand or by using a simple tool or actuating connector (e.g. a valve key) provided the opening torque, if relevant, does not exceed T_f , see Table 1.

5.6.1

Replace paragraph with the following:

The valve operating mechanism shall meet the requirements of 5.6.2 to 5.6.5.

6.1.2

Replace list item k) with the following:

- k) integration or removal of optional components like residual pressure device and non-return valve or functions like pressure reduction function (repetition of any tests to be decided case by case depending on the change). Removal of a pressure relief device will not require any tests to be repeated. Integration of a pressure relief device will require repetition of hydraulic burst pressure test and impact test (if required) only;

Add new list item l):

- l) changes of the o-ring and/or washer material of a valve parallel inlet connection (repetition of impact test).

6.6.1, *second paragraph*

Replace the second paragraph with the following:

For liquefied gases, p_{vbt} is given by Formula (3):

$$p_{vbt} = 1,5 \times p_{vt} \quad (3)$$

6.7.2, *second paragraph*

Replace the second paragraph with the following:

For valves for helium, hydrogen or their mixtures, the test gas for the tightness tests after the endurance test shall be helium, hydrogen or an inert mixture of these gases.

6.8

Replace Test 1 and Test 6 in Table 3 by:

Test	Test and relevant subclause	Condition of test sample	Test temperature °C	Test pressure bar	Test sample number	Number of tests per sample	Total number of tests
1	Hydraulic burst pressure, 6.9	As received	Room temperature ^a	p_{vbt}	1	1	1
6	Internal leak tightness, 6.12.2.3	From test 5	-40_{-5}^0	p_{vt}	7 to 11 ^b	1 or 2 ^e	5 or 10 ^{b,e}

6.9

Replace complete subclause with the following:

Valves for acetylene shall be tested according to B.1.

For VIPR, this test does not cover the low pressure chamber.

NOTE The pressure test for the low pressure chamber of VIPR is given in ISO 22435 or ISO 10524-3, respectively.

The burst pressure test shall be carried out with the valve seat in open position (valve outlet/filling connection(s) plugged and for VIPR the pressure regulator valve closed or held in the closed position). Valves equipped with actuators shall be opened according to the manufacturer's specification.

Water or another suitable liquid shall be used as test medium.

The hydraulic pressure shall be applied via the valve inlet connection and be raised continuously and gradually until at least p_{vbt} is reached. The pressure shall be maintained for at least 2 min.

6.13

Replace the 8th paragraph with the following:

The test equipment shall meet the requirements given in Annex F except if the test is carried out manually. The manufacturer may specify a speed within the range given in F.2.1.

Replace the 9th paragraph with the following:

There shall be a pause between 3 s to 12 s at each open and fully closed position. The manufacturer may specify a pause within this allowed range. Under exceptional circumstances due to temperature rise this pause may be extended by agreement between the manufacturer and test laboratory.

Replace the 10th paragraph with the following:

For all subsequent tests, maximum allowed $T_{e,end}$ according to Table 1 shall not be exceeded.

Delete the 11th paragraph.

Annex A

Replace the first paragraph with the following:

The test sample shall be tested in the closed condition (closed to $T_{e,start}$ in accordance with Table 1). The test sample shall be fitted into a steel gas cylinder neck equipped with the corresponding screw thread, or a similar test fixture made of steel (see Figure A.1). The valving procedure shall meet ISO 13341, other industry standards or be carried out according to manufacturers published installation procedures. It has to be verified that the threaded joint between the valve and the cylinder/test fixture does not leak before impact testing.

Delete the 9th paragraph.

B.1

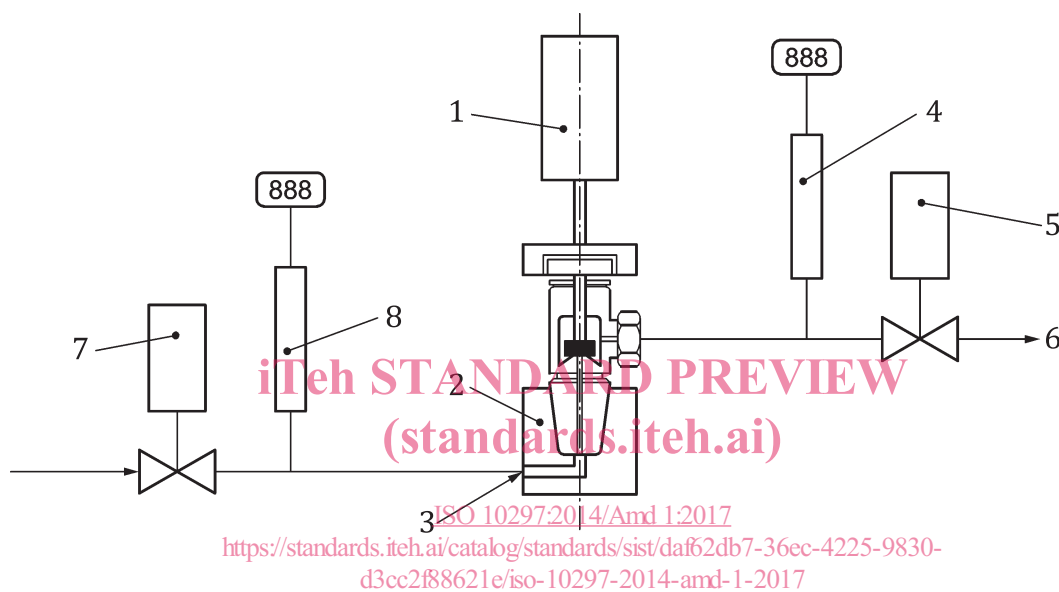
Replace the first sentence with the following:

The test shall be carried out on three test samples according to 6.9 using a minimum test pressure of 909 bar.

F.1, figure

Delete “a” and “b” from the figure and the key.

Replace Figure F.1 with the following:



Key

- 1 DC motor with torque transmitter
- 2 test sample with adapter
- 3 input test medium
- 4 high pressure transducer with display
- 5 venting valve
- 6 outlet
- 7 valve
- 8 inlet high pressure transducer with display for monitoring of p_{vt}

Figure F.1 — Typical arrangement of a computer controlled test machine

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