

# ISO 10297:2024-04 (E)

## Gas cylinders - Cylinder valves - Specification and type testing

---

### Contents

Page

Foreword.....	v
Introduction.....	vii
<b>1 Scope.....</b>	<b>1</b>
<b>2 Normative references.....</b>	<b>2</b>
<b>3 Terms and definitions.....</b>	<b>2</b>
<b>4 Valve description.....</b>	<b>9</b>
<b>5 Valve design requirements.....</b>	<b>16</b>
5.1 General.....	16
5.2 Materials.....	16
5.3 Valve connections.....	17
5.4 Mechanical strength.....	18
5.4.1 Resistance to hydraulic pressure.....	18
5.4.2 Resistance to mechanical impact.....	18
5.4.3 Resistance to valve spindle impact for pin-index valves.....	19
5.5 Valve operating mechanism.....	19
5.5.1 Opening and closing of the valve.....	19
5.5.2 Endurance.....	19
5.5.3 Resistance to excessive torques.....	20
5.5.4 Acetylene specific requirements.....	22
5.6 Valve operating device.....	22
5.6.1 Closing direction.....	22
5.6.2 Handwheel diameter.....	23
5.6.3 Exposure to flame.....	23
5.7 Leakage.....	23
5.8 Resistance to ignition.....	24
5.9 Flow capacity.....	24
<b>6 Type testing.....</b>	<b>25</b>
6.1 General.....	25
6.2 Test schedule.....	25
6.3 Documentation.....	28
6.4 Test samples.....	28
6.5 Test report.....	29
6.6 Test temperatures.....	29
6.7 Test pressures.....	29
6.7.1 Valve hydraulic test pressure.....	29
6.7.2 Valve test pressure.....	29
6.8 Test gases.....	30
6.8.1 Gas quality.....	30
6.8.2 Leak tightness tests.....	31
6.8.3 Endurance tests.....	31
6.8.4 Acetylene decomposition test.....	31
6.8.5 Oxygen pressure surge test.....	31
6.9 Hydraulic pressure test.....	31
6.10 Flame impingement test.....	32
6.11 Excessive torque tests.....	32
6.11.1 Handwheel operated valves.....	32
6.11.2 Key and toggle operated valves.....	32

6.11.3	VIPR type C with the flow selector acting as the primary valve operating mechanism and VIPR type B.....	32
6.12	Leak tightness tests .....	33
6.12.1	General.....	33
6.12.2	Internal leak tightness test.....	33
6.12.3	External leak tightness test.....	34
6.13	Endurance test.....	35
6.14	Endurance test of VIPR types B and C.....	36
6.15	Endurance test of the filling connection non-return valve.....	37
6.15.1	Filling connection non-return valve downstream of the valve operating mechanism.....	37
6.15.2	Filling connection non-return valve upstream of the valve operating mechanism.....	37
6.15.3	Test apparatus.....	38
6.16	Visual examination.....	38
6.17	Valve spindle impact test for pin-index valves.....	39
6.18	Pressure relief valve tightness test.....	39
<b>7</b>	<b>Marking.....</b>	<b>39</b>
<b>Annex A</b>	<b>(normative) Impact test.....</b>	<b>41</b>
<b>Annex B</b>	<b>(normative) Tests for acetylene valves.....</b>	<b>43</b>
<b>Annex C</b>	<b>(normative) Oxygen pressure surge test.....</b>	<b>45</b>
<b>Annex D</b>	<b>(informative) Example of a vacuum test.....</b>	<b>52</b>
<b>Annex E</b>	<b>(normative) Endurance test machine.....</b>	<b>53</b>
<b>Annex F</b>	<b>(normative) Required tests for validation of changes and/or material variants within a valve design.....</b>	<b>55</b>
<b>Bibliography</b>	<b>.....</b>	<b>58</b>