

**Valves for natural gas transportation in pipelines -
Performance requirements and tests**

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English Version

Valves for natural gas transportation in pipelines - Performance requirements and tests

Robinetterie pour le transport de gaz naturel par des pipelines - Exigences de performance et essais

Armaturen für den Transport von Erdgas in Fernleitungen - Anforderungen an die Gebrauchstauglichkeit und deren Prüfung

This European Standard was approved by CEN on 18 April 2013.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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Contents	Page
Foreword.....	3
Introduction.....	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	7
4 Functional requirements	8
5 Requirements and tests	9
6 Inspection	23
7 Quality	23
8 Type tests	23
9 Functional and other qualification tests	23
10 Marking	24
Annex A (normative) Type test on general design and production of pipeline valves	25
Annex B (normative) Strength test on torque/thrust	30
Annex C (normative) Functional test on clean gas (on option)	31
Annex D (normative) Functional test for abrasion resistance to dirty service of ball valves (on option)	32
Annex E (normative) Wall thickness measurement	34
Annex F (informative) Additional requirements	35
Annex G (informative) Summary of tests on product and type tests	36
Bibliography	41

Foreword

This document (EN 14141:2013) has been prepared by Technical Committee CEN/TC 69 "Industrial Valves", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by December 2013, and conflicting national standards shall be withdrawn at the latest by December 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14141:2003.

The main changes compared to the previous edition are listed below:

- the scope was adjusted and revised;
- Clause 5 was specified and revised;
- Clause 10 was added;
- Annexes B, F and G were added;
- entire document was editorially revised and adjusted.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

CEN/TC 69/WG 9 has been responsible for the development of a European performance standard of valves for use in pipelines for transportation of natural gas in accordance with EN 1594.

The significant properties of valves designed for a special application are defined by performance requirements accompanied by the description of tests to be carried out:

- by the manufacturer on the product during the manufacture; and
- by an independent accepted body on test samples for certification purposes;

to give proof that the valve meets the performance requirements of this European Standard.

A type test is included in this European Standard to satisfy the requirements of EN 1594.

1 Scope

This European Standard applies to all valves (plug, ball, gate and check valves) used in onshore transmission pipelines for transport of natural gas in accordance with EN 1594, but with a differing temperature range according to the following three classes in accordance with EN 682:

- 1) - 10 °C to 60 °C;
- 2) - 20 °C to 60 °C;
- 3) the range stated by the purchaser for special design.

This European Standard comprises all valves which are components of the pipeline.

This European Standard specifies valves for pipelines with a maximum operating pressure (MOP) over 16 bar.

Control valves and safety valves are excluded from the scope of this European Standard.

This European Standard specifies requirements and appropriate verification tests carried out during production and for certification purposes to verify that the valves conform to the requirements. A summary of the product and type tests is given in Annex G.

This European Standard makes reference to EN 13942. All the requirements of EN 13942 should be met unless otherwise stated. Paragraphs marked with a dot [•] indicate requirements which are identical to EN 13942.

Additional national requirements and tests in accordance with individual national legal regulations not yet harmonised may be necessary and are to be advised in the purchase order.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 19, *Industrial valves - Marking of metallic valves*

EN 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

EN 558, *Industrial valves — Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems — PN and Class designated valves*

EN 571-1, *Non destructive testing - Penetrant testing - Part 1: General principles*

EN 682, *Elastomeric Seals - Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids*

EN 736-1:1995, *Valves - Terminology - Part 1: Definition of types of valves*

EN 736-2:1997, *Valves - Terminology - Part 2: Definition of components of valves*

EN 736-3:2008, *Valves - Terminology - Part 3: Definition of terms*

EN 1369:2012, *Founding - Magnetic particle testing*

EN 1371-1:2011, *Founding - Liquid penetrant testing- Part 1: Sand, gravity die and low pressure die castings*

- EN 1435:1997, *Non-destructive examination of welds — Radiographic examination of welded joints*
- EN 1503-1, *Valves - Materials for bodies, bonnets and covers - Part 1: Steels specified in European Standards*
- EN 1503-2, *Valves - Materials for bodies, bonnets and covers - Part 2: Steels other than those specified in European Standards*
- EN 1515-1, *Flanges and their joints - Bolting - Part 1: Selection of bolting*
- EN 1515-2, *Flanges and their joints - Bolting - Part 2: Classification of bolt materials for steel flanges, PN designated*
- EN 1594, *Gas supply systems - Pipelines for maximum operating pressure over 16 bar - Functional requirements*
- EN 10204:2004, *Metallic products - Types of inspection documents*
- EN 10228-1:1999, *Non-destructive testing of steel forgings - Part 1: Magnetic particle inspection*
- EN 10228-2:1998, *Non-destructive testing of steel forgings - Part 2: Penetrant testing*
- EN 10228-3:1998, *Non-destructive testing of steel forgings - Part 3: Ultrasonic testing of ferritic or martensitic steel forgings*
- EN 10228-4, *Non-destructive testing of steel forgings - Part 4: Ultrasonic testing of austenitic and austenitic-ferritic stainless steel forgings*
- EN 12266-1:2012, *Industrial valves - Testing of metallic valves - Part 1: Pressure tests, test procedures and acceptance criteria - Mandatory requirements*
- EN 12516-1, *Industrial valves - Shell design strength - Part 1: Tabulation method for steel valve shells*
- EN 12516-2, *Industrial valves - Shell design strength - Part 2: Calculation method for steel valve shells*
- EN 12516-3, *Valves - Shell design strength - Part 3: Experimental method*
- EN 12517-1:2006, *Non-destructive testing of welds - Part 1: Evaluation of welded joints in steel, nickel, titanium and their alloys by radiography - Acceptance levels*
- EN 12627:1999, *Industrial valves - Butt welding ends for steel valves*
- EN 12681, *Founding - Radiographic examination*
- EN 12982, *Industrial valves - End-to-end and centre-to-end dimensions for butt welding end valves*
- EN 13942:2009, *Petroleum and natural gas industries - Pipeline transportation systems - Pipeline valves (ISO 14313:2007 modified)*
- EN ISO 148-1, *Metallic materials - Charpy pendulum impact test - Part 1: Test method (ISO 148-1)*
- EN ISO 5210, *Industrial valves - Multi-turn valve actuator attachments (ISO 5210)*
- EN ISO 5211, *Industrial valves - Part-turn actuator attachments (ISO 5211)*
- EN ISO 9712:2012, *Non-destructive testing - Qualification and certification of NDT personnel (ISO 9712:2012)*

EN ISO 10497, *Testing of valves - Fire type-testing requirements (ISO 10497)*

EN ISO 11666:2010, *Non-destructive testing of welds - Ultrasonic testing - Acceptance levels (ISO 11666:2010)*

EN ISO 17637, *Non-destructive testing of welds - Visual testing of fusion-welded joints (ISO 17637)*

EN ISO 17638, *Non-destructive testing of welds - Magnetic particle testing (ISO 17638)*

EN ISO 17640:2010, *Non-destructive testing of welds - Ultrasonic testing - Techniques, testing levels, and assessment (ISO 17640:2010)*

EN ISO 23277:2009, *Non-destructive testing of welds - Penetrant testing of welds - Acceptance levels (ISO 23277:2006)*

EN ISO 23278:2009, *Non-destructive testing of welds — Magnetic particle testing of welds — Acceptance levels (ISO 23278:2006)*

MSS-SP-55-2006¹⁾, *Quality standard for steel castings for valves, flanges and fittings and other piping components (visual method for evaluation of surface irregularities)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 736-1:1995, EN 736-2:1997, EN 736-3:2008 and EN 13942:2009 and the following apply.

3.1

full opening valve [•]

valve with an unobstructed opening capable of allowing a sphere or other internal devices of the same nominal size as the valve to pass

3.2

maximum pressure differential [•] (MPD)

maximum difference between the upstream and downstream pressure across the obturator at which the obturator may be operated

3.3

reduced-opening valve [•]

valve with the opening through the obturator smaller than at the end connection(s)

3.4

seating surfaces [•]

contact surfaces of the obturator and seat which ensure valve sealing

3.5

stem [•]

part that connects the obturator to the operator and which may consist of one or more components

Note 1 to entry: This definition applies also for shafts.

3.6

test report

¹⁾ Developed and approved by the Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. 127 Park Street, NE, Vienna, Virginia 22180.