



SLOVENSKI STANDARD

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Cisterne za prevoz nevarnega blaga - Oprema cisterne za prevoz tekočih kemikalij in utekočinjenih plinov - Izpustni ventili in ventili za vstop plina pri praznjenju

Tanks for the transport of dangerous goods - Tank equipment for the transport of liquid chemicals and liquefied gases - Product discharge and air inlet valves

Tanks für die Beförderung gefährlicher Güter - Ausrüstung für Tanks für die Beförderung von flüssigen Chemieprodukten und Flüssiggasen - Produktabsper- und Gaswechselventile

Citernes de transport de matières dangereuses - Équipements de la citerne pour le transport de produits chimiques liquides et de gaz liquéfié - Vannes de mise en pression de la citerne ou de déchargement du produit

Ta slovenski standard je istoveten z: EN 14432:2023

ICS:

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EUROPEAN STANDARD

EN 14432

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

Tanks for the transport of dangerous goods - Tank equipment for the transport of liquid chemicals and liquefied gases - Product discharge and air inlet valves

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This European Standard was approved by CEN on 21 May 2023.

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

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	5
4 Design and materials	6
4.1 General.....	6
4.2 Design.....	6
4.3 Materials.....	6
5 Welding	7
5.1 Qualification.....	7
5.2 Welded joints.....	7
6 Test media	7
6.1 Hydraulic tests.....	7
6.2 Pneumatic tests.....	7
7 Type tests	7
7.1 General.....	7
7.2 Valve casing hydraulic pressure test.....	7
7.3 Valve assembly pressure test.....	8
7.4 Valve assembly pneumatic tightness test.....	8
7.5 Cyclic test.....	8
8 Production tests	8
8.1 General.....	8
8.2 Function test.....	8
8.3 Valve casing pressure test.....	8
8.4 Valve assembly pneumatic tightness test.....	9
9 Marking	9
10 Supply requirements	9
10.1 Order information.....	9
10.2 Installation and operation.....	9
Annex A (normative) Verification of valve design type	10
Annex B (informative) Dry Disconnect Couplings	11
Bibliography	12

European foreword

This document (EN 14432:2023) has been prepared by Technical Committee CEN/TC 296 “Tanks for transport of dangerous goods”, 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 January 2024, and conflicting national standards shall be withdrawn at the latest by January 2024.

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

This document supersedes EN 14432:2014.

This document has been submitted for reference in:

- the RID; and
- the technical annexes of the ADR.

NOTE These regulations take precedence over any clause of this document. It is emphasized that RID/ADR are being revised regularly at intervals of two years which may lead to temporary non-compliances of the clauses of this document with the regulations.

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

- a) the Scope has been revised;
- b) Normative references have been updated; <https://standards.iteh.ai/catalog/standards/sist/02555102-e109-405d-8d13-14432-2023>
- c) the definition and source for 3.4 has been changed; [14432-2023](https://standards.iteh.ai/catalog/standards/sist/02555102-e109-405d-8d13-14432-2023)
- d) former Clause 4 “functions” has been removed;
- e) revision of Clause 4 “Design and materials”;
- f) a new Clause 5 “Welding” has been introduced;
- g) a new Annex B “dry disconnect couplings” has been introduced.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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

EN 14432:2023 (E)**1 Scope**

This document specifies the requirements for valves useable on tanks with a minimum working pressure greater than 50 kPa for the transport of dangerous goods by road and rail for the following functions:

Tanks for transport of liquid products:

- secondary closure of bottom discharge lines;
- primary closure on top of the tank (liquid, air, other connections);
- aeration valve on top of the tank;
- and other valves as specified in Annex F of EN 14564:2019 according to the scope of this document.

Tanks for gases:

- secondary closure of bottom discharge lines;
- secondary closure on top of the tank for poisonous gases: liquid phase and gas phase;
- and other valves as specified in Annex F of EN 14564:2019.

This includes the following types of closures:

- valves (e.g. spindle operated valves, plug and ball valves, butterfly valves and gate valves);
- dry disconnect couplings.

Primary closures of the gas phase at the foot of a tank for liquefied gas are covered by the requirements of foot valves in EN 14433.

NOTE The standard is also applicable to liquefied gases including LPG, however, for a dedicated LPG standard see EN 13175 [3]

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

EN 10204, *Metallic products - Types of inspection documents*

EN 12266-1:2012, *Industrial valves - Testing of metallic valves - Part 1: Pressure tests, test procedures and acceptance criteria - Mandatory requirements*

EN 12266-2:2012, *Industrial valves - Testing of metallic valves - Part 2: Tests, test procedures and acceptance criteria - Supplementary 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 12516-3:2002, *Valves - Shell design strength - Part 3: Experimental method*

EN 13445-3, *Unfired pressure vessels - Part 3: Design*

EN ISO 14732, *Welding personnel - Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials (ISO 14732)*

EN ISO 3834-1, *Quality requirements for fusion welding of metallic materials - Part 1: Criteria for the selection of the appropriate level of quality requirements (ISO 3834-1)*

EN ISO 3834-3, *Quality requirements for fusion welding of metallic materials - Part 3: Standard quality requirements (ISO 3834-3)*

EN ISO 9606 (all parts), *Approval testing of welders - Fusion welding - Part 4: Nickel and nickel alloys (ISO 9606 (all parts))*

EN ISO 15613, *Specification and qualification of welding procedures for metallic materials - Qualification based on pre-production welding test (ISO 15613)*

EN ISO 15614 (all parts), *Specification and qualification of welding procedures for metallic materials - Welding procedure test (ISO 15614 (all parts))*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <https://www.electropedia.org/>

3.1

maximum working pressure

MWP

maximum pressure up to which the valve can be operated, not more than the test pressure divided by 1,3

[SOURCE: ADR/RID chapter 6.8]

3.2

maximum allowable working pressure

MAWP

maximum pressure up to which the valve can be operated, not more than the test pressure divided by 1,3 (liquefied gases) respectively 1,5 (liquids)

[SOURCE: ADR/RID chapter 6.7]

3.3

test pressure

pressure used for the pressure tests

EN 14432:2023 (E)**3.4
nominal size
DN**

alphanumeric designation of size for components of a pipework system, which is used for reference purposes. It comprises the letters DN followed by a dimensionless whole number which is indirectly related to the physical size, in millimetres, of the bore or outside diameter of the end connections

Note 1 to entry: The number following the letters DN does not represent a measurable value and should not be used for calculation purposes except where specified in the relevant standard.

Note 2 to entry: In those standards which use the DN designation system, any relationship between DN and component dimensions should be given, e.g. DN/OD or DN/ID.

[SOURCE: EN ISO 6708:1995]

4 Design and materials**4.1 General**

The manufacturer shall specify, in drawings and other documents, the design and the materials of the valve. Where non-standard flange attachments are used, the valve specification shall include information regarding mating details of the tank flange.

4.2 Design

4.2.1 The valve shall be a stop valve as specified in EN 736-1 or dry disconnect couplings (for examples see Annex B). The operating mechanism shall be protected from inadvertent operation in transit either by a latching device or by locating within an enclosure.

NOTE This can be added at the valve, tank or vehicle. This requirement does not apply to dry break couplings automatically closed during transport.

4.2.2 As a minimum the position and/or direction of closure of the operating mechanism shall be marked.

This may be added at the valve, tank or vehicle. The marking may be omitted if the opening direction is intuitional or not applicable (e.g. in case of hand levers of ball valves and dry couplings). In this case this shall be stated in the manual or type approval of the valve.

4.2.3 Regarding the design of flanges and body wall thickness, the requirements given in EN 12516-1, EN 12516-2, EN 12516-3, or EN 13445-3 apply.

4.3 Materials

4.3.1 The manufacturer shall provide, with the equipment, the material specification for those parts that may come into contact with the product.

4.3.2 The material elongation at fracture of the pressure-loaded components of the valve shall be a minimum of 12 %.

4.3.3 The materials for the valve casing shall be permanently marked with the material designation corresponding to European pressure vessel material standards or with an equivalent national standard designation.

4.3.4 Proof of the quality characteristics for the valve body shall be provided by means of an inspection certificate 3.1 in accordance with EN 10204 for metallic materials (with additional consideration of EN 764-4 and -5) or an equivalent document.

5 Welding

5.1 Qualification

5.1.1 Manufacturers of welded service equipment shall have a manufacturing system for welding which respects the principles of EN ISO 3834-1 and EN ISO 3834-3 as a minimum.

5.1.2 Welding procedures shall be qualified according to EN ISO 15613 and EN ISO 15614 (all parts) (level 1 or level 2 for EN ISO 15614-1).

5.1.3 Welders shall be qualified according to EN ISO 9606 (all parts) and operators of welding equipment shall be qualified according to EN ISO 14732.

5.2 Welded joints

Recommended weld shapes are given in EN 1708-1.

6 Test media

6.1 Hydraulic tests

Hydraulic tests shall be carried out using a fluid in accordance with EN 12266-2:2012, A.1.5.

6.2 Pneumatic tests

Pneumatic tests shall be carried out using a gas in accordance with EN 12266-2:2012, A.1.5.

7 Type tests

7.1 General

Each valve used for testing shall conform to the drawings and dimensions specified and specification provided by the manufacturer. Each design of valve as verified in Annex A shall be subjected to a type test. Type testing according to 7.2 to 7.5 shall be carried out under ambient conditions. If the valve is required to operate outside the temperature range -40 °C to $+50\text{ °C}$, the design shall be taken into account either by the type testing or a validated calculation method. For the calculation of the test pressure, EN 12516-3:2002, 6.3 and 6.4 apply.

The tests shall be carried out with the casing/valve attached to a flange equivalent to that for which its use is intended.

7.2 Valve casing hydraulic pressure test

The valve casing shall be hydraulically tested, using a test medium conforming to 6.1, at a pressure equal to 2,25 times the MWP, or 400 kPa, whichever is the greater. The test pressure shall be maintained for a minimum of 5 min on the valve casing without permanent deformation occurring.

EN 14432:2023 (E)**7.3 Valve assembly pressure test**

The valve assembly shall be hydraulically or pneumatically tested, using a test medium conforming to 6.1 or 6.2 at a pressure equal to 1,5 times the MWP (MAWP) or 400 kPa, whichever is the greater. The test pressure shall be maintained for a minimum of 10 min on the valve assembly. The leakage shall not exceed Rate A as specified in EN 12266-1:2012, Table A.5. Each assembly pressure test shall be carried out:

- a) with the valve in the closed position and the outlet open to test for leakage from the seats;
- b) with the valve in the open position and the outlet closed off to test for leakage from seals or body joints.

7.4 Valve assembly pneumatic tightness test

The valve assembly shall be pneumatically tested, using a test medium conforming to 6.2, at pressures equal to 20 kPa and 1,0 times the MWP (MAWP). The assembly shall be totally immersed in a water bath, or, where total immersion of the valve assembly is not possible, a suitable leak detection fluid shall be applied. The test pressure shall be maintained for a minimum of 10 min on the assembly during which test period leakage shall not exceed Rate A as defined in EN 12266-1:2012, Table A.5. Each pneumatic tightness test shall be carried out:

- a) with the valve in the closed position and the outlet open to test for leakage from the seats;
- b) with the valve in the open position and the outlet closed off to test for leakage from seals or body joints.

7.5 Cyclic test

The valve assembly shall be subjected to a mechanical cycle test to a minimum of 1 000 full cycles ("open" to "closed" or "connected" and "disconnected") without pressure and 10 full cycles ("open" to "closed" or "connected" and "disconnected") at MWP (MAWP) or maximum actuation pressure at ambient temperature being applied. After completion of the cyclic test, the valve shall be tested in accordance with 7.4 and the leakage shall not exceed Rate A as specified in EN 12266-1:2012, Table A.5.

8 Production tests**8.1 General**

Each valve produced shall conform to the drawings and other documents in which the design and the materials were specified by the manufacturer. The production tests according to 8.2 to 8.4 shall be carried out under ambient conditions.

8.2 Function test

Each valve shall be opened and closed once.

8.3 Valve casing pressure test

Each valve casing shall be hydraulically or pneumatically tested, using a test medium conforming to 6.1 or 6.2, at a pressure equal to 1,5 times the MWP (MAWP), or 400 kPa, whichever is the greater. The test pressure shall be maintained as given in EN 12266-1 on the casing and the leakage shall not exceed Rate A as specified in EN 12266-1:2012, Table A.5.