
Specifikacija za načrtovanje in proizvodnjo na mestu postavitve grajenih navpičnih, valjastih, varjenih, jeklenih nadzemnih posod z ravnim dnom za shranjevanje tekočin pri temperaturi okolja ali višji temperaturi

Specification for the design and manufacture of site built, vertical, cylindrical, flat-bottomed, above ground, welded, steel tanks for the storage of liquids at ambient temperature and above

Auslegung und Herstellung standortgefertigter, oberirdischer, stehender, zylindrischer, geschweißter Flachboden-Stahltanks für die Lagerung von Flüssigkeiten bei Umgebungstemperatur und höheren Temperaturen

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Spécification pour la conception et la fabrication de réservoirs en acier, soudés, aériens, à fond plat, cylindriques, verticaux, construits sur site destinés au stockage des liquides à la température ambiante ou supérieure

Ta slovenski standard je istoveten z: EN 14015:2004

ICS:

23.020.10	Nepremične posode in rezervoarji	Stationary containers and tanks
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SIST EN 14015:2005

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EUROPEAN STANDARD

EN 14015

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2004

ICS 23.020.10

English version

Specification for the design and manufacture of site built,
vertical, cylindrical, flat-bottomed, above ground, welded, steel
tanks for the storage of liquids at ambient temperature and
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bei Umgebungstemperatur und höheren Temperaturen

This European Standard was approved by CEN on 2 February 2004.

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

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Foreword

This document (EN 14015:2004) has been prepared by Technical Committee CEN/TC 265 "Site built metallic tanks for the storage of liquids", 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of an identical text or by endorsement, at the latest by May 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

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

This European Standard reflects the current practice within the oil, petrochemical, chemical, food and general bulk liquid storage industry, both European and world-wide. The practice is based on the theory of design stresses or allowable stresses.

There is a parallel pre-standard, ENV 1993-4-2 Tanks. It is based on the Limit State Theory (LST), which is being used more and more by the structure steel and reinforced concrete industry.

Experience in designing steel storage tanks to LST is limited and there is little information on which to base the values for load factors, load combinations and serviceability. When sufficient experience has been gained in designing tanks to, and credible values become available for load factors, etc., it is envisaged that there may be a gradual move towards the use of LST for the design of tanks covered by this European Standard.

EN 14015:2004 (E)**1 Scope**

1.1 This document specifies the requirements for the materials, design, fabrication, erection, testing and inspection of site built, vertical, cylindrical, flat bottomed, above ground, welded, steel tanks for the storage of liquids at ambient temperatures and above, and the technical agreements that need to be reached (see Annex A).

This document does not apply to tanks where the product is refrigerated to maintain it as a liquid at atmospheric pressure (see prEN 14620).

This document is concerned with the structural integrity of the basic tank structure and does not provide requirements for considering process design, operational issues, safety and firefighting facilities, in-service inspection, maintenance or repair. These aspects are covered in detail in other Codes of Practice (see Annex B).

1.2 This document applies to closed-top tanks, with and without internal floating covers (see Annex C) and open-top tanks, with and without floating roofs (see Annexes D and E). It does not apply to 'lift-type' gas holders.

1.3 This document applies to storage tanks with the following characteristics:

- a) design pressure less than 500 mbar¹⁾ and design internal negative pressure not lower than 20 mbar (see 5.1 for pressure limitations);
- b) design metal temperature not lower than -40 °C and not higher than +300 °C (see 5.2.2);
- c) maximum design liquid level not higher than the top of the cylindrical shell.

1.4 The limits of application of this document terminate at the following locations.

- face of the first flange in a bolted flange connection;
- first threaded joint on the pipe or coupling outside of the tank shell, roof or bottom;
- first circumferential joint in a pipe not having a flange connection.

1.5 This document is applicable to steel tanks with a maximum design strength $\leq 260 \text{ N/mm}^2$.

1.6 In addition to the definitive requirements, this document also requires the items detailed in Annex A to be documented. For compliance with this document, both the definitive requirements and those required in Clause 4 have to be satisfied.

¹⁾ All pressures are in mbar gauge unless otherwise stated.

2 Normative references

The following referenced documents are indispensable for the application 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 287-1: 2004, *Qualification test of welders - Fusion welding - Part 1: Steels*

EN 288-2, *Specification and approval of welding procedures for metallic materials — Part 2: Welding procedure specification for arc welding*

EN 444, *Non-destructive testing- General principles for radiographic examination of metallic material by X- and gamma- rays*

EN 462-1, *Non-destructive testing – Image quality of radiographs – Part 1: Image quality indicators (wire type). Determination of image quality value*

EN 462-2, *Non-destructive testing – Image quality of radiographs – Part 2: Image quality indicators (step/hole type). Determination of image quality value*

EN 473, *Non destructive testing - Qualification and certification of NDT personnel - General principles*

EN 485 (all parts), *Aluminium and aluminium alloys — Sheet, strip and plate*

EN 499, *Welding consumables — Covered electrodes for manual metal arc welding of non alloy and fine grain steels — Classification*

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

[SIST EN 14015:2005](#)

EN 754 (all parts), *Aluminium and aluminium alloys — Cold drawn rod/bar and tube*

[http://www.standards.iteh.ai/6c940d24c718/sist-en-14015-2005](#)

EN 755 (all parts), *Aluminium and aluminium alloys — Extruded rod/bar, tube and profiles*

EN 970, *Non-destructive examination of fusion welds - Visual examination*

EN 1092-1, *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 1290, *Non-destructive examination of welds - Magnetic partical examination of welds*

EN 1418, *Welding personnel - Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding of metallic materials*

EN 1435, *Non-destructive examination of welds — Radiographic examination of welded joints*

EN 1593, *Non-destructive testing — Leak testing — Bubble emission techniques*

EN 1600, *Welding consumables — Covered electrodes for manual metal arc welding of stainless and heat resisting steels — Classification*

EN 1714, *Non-destructive examination of welded joints - Ultrasonic examination of welded joints*

prEN 1759-1: 2000, *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, Class designated - Part 1: Steel flanges, NPS ½ to 24*

EN 1991-1-3:2003, *Eurocode 1 - Actions on structures - Part 1-3: General actions - Snow loads*