

TÖÖKOJAS VALMISTATUD TERASEST MAHUTID. OSA 3:
HOONETE KÜTMISEKS JA JAHUTAMISEKS MÕELDUD
HORISONTAALSED SILINDRILISED ÜHEKORDSETE JA
KAHEKORDSETE SEINTEGA MAHUTID PÕLEVATE JA
MITTEPÕLEVATE VETT SAASTAVATE VEDELIKE
MAA-ALUSEKS LADUSTAMISEKS

Workshop fabricated steel tanks - Part 3: Horizontal
cylindrical single skin and double skin tanks for the
underground storage of flammable and nonflammable
water polluting liquids for heating and cooling of
buildings

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 12285-3:2019 sisaldab Euroopa standardi EN 12285-3:2019 ingliskeelset teksti.	This Estonian standard EVS-EN 12285-3:2019 consists of the English text of the European standard EN 12285-3:2019.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 03.04.2019.	Date of Availability of the European standard is 03.04.2019.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 13.300, 23.020.10

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

**Workshop fabricated steel tanks - Part 3: Horizontal
cylindrical single skin and double skin tanks for the
underground storage of flammable and nonflammable
water polluting liquids for heating and cooling of buildings**

Réservoirs en acier fabriqués en atelier - Partie 3 :
Réservoirs horizontaux cylindriques à simple et double
paroi pour le stockage enterré de liquides
inflammables et non inflammables polluant l'eau pour
le chauffage et le refroidissement des bâtiments

Werksgefertigte Tanks aus Stahl - Teil 3: Liegende
zylindrische ein- und doppelwandige Tanks zur
unterirdischen Lagerung von brennbaren und
nichtbrennbaren wassergefährdenden Flüssigkeiten,
die für das Heizen und Kühlen von Gebäuden
vorgesehen sind

This European Standard was approved by CEN on 14 May 2018.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey 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.....	4
1 Scope.....	5
2 Normative references.....	5
3 Terms, definitions, symbols and abbreviations.....	6
3.1 Terms and definitions.....	6
3.2 Symbols and abbreviations.....	8
4 Product characteristics.....	9
4.1 General.....	9
4.2 Manufacturing.....	9
4.2.1 Qualification of the company and welding qualification of the personnel.....	9
4.2.2 Types of joints.....	9
4.2.3 Shell plate arrangement.....	11
4.2.4 Consumables.....	12
4.2.5 Interstitial space.....	12
4.3 Load bearing capacity.....	12
4.4 Additional requirements.....	12
4.4.1 Manways and inspection covers.....	12
4.4.2 Structural bolts.....	14
4.4.3 Tank fittings, pipes and nozzles.....	14
4.4.4 Lifting lugs.....	14
4.5 Mechanical resistance and stability.....	14
4.5.1 Materials for shell, dished ends and manways.....	14
4.5.2 Wall thickness.....	14
4.5.3 Stiffening resistance.....	16
4.5.4 Design of Stiffening Rings.....	17
4.6 Internal pressure.....	18
4.7 Electrostatic behaviour (for fuel networks).....	18
4.8 Tightness (gas and liquid).....	18
4.9 Release of dangerous substances.....	18
4.10 Durability.....	18
4.11 Crushing resistance.....	19
5 Testing, assessment and sampling methods.....	19
5.1 Mechanical resistance and stability.....	19
5.1.1 Materials for shell, dished ends and manways.....	19
5.1.2 Wall thickness.....	19
5.1.3 Welding.....	19
5.1.4 Stiffening resistance.....	19
5.1.5 Strength test.....	19
5.2 Load-bearing capacity.....	19
5.3 Electrostatic behaviour (for fuel networks).....	20
5.4 Tightness (gas and liquid).....	20
5.5 Crushing resistance.....	20
5.6 Testing of additional requirements.....	20
5.6.1 Manways and inspection covers.....	20

5.6.2	Structural bolts.....	20
5.6.3	Tank fittings, pipes and nozzles	20
5.6.4	Lifting lugs.....	20
5.7	Durability.....	20
6	Assessment and verification of constancy of performance (AVCP).....	21
6.1	General	21
6.2	Type testing	21
6.2.1	General	21
6.2.2	Test samples, testing and compliance criteria.....	22
6.2.3	Test reports	23
6.3	Factory production control (FPC).....	23
6.3.1	General	23
6.3.2	Requirements.....	24
6.3.3	Product specific requirements	26
6.3.4	Procedure for modifications.....	27
6.3.5	One-off products, pre-production products (e.g. prototypes) and products produced in very low quantity.....	27
7	Classification and designation	28
8	Marking and labelling	28
8.1	Marking of the tank.....	28
8.2	Documentation	28
9	Environmental aspects.....	28
Annex A (informative)	Environmental aspects.....	29
Bibliography		31

European foreword

This document (EN 12285-3:2019) has been prepared by Technical Committee CEN/TC 265 “Metallic tanks for the storage of liquids”, the secretariat of which is held by BSI.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by month October 2019, and conflicting national standards shall be withdrawn at the latest by January 2021.

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, together with EN 12285-1:2018, supersedes EN 12285-1:2003.

Compared to EN 12285-1:2003, this document has been restructured as follows:

- Old Clause 3 Terms and definitions has been combined with old Clause 4 Symbols and abbreviations.
- Old Clause 5 Designation and purchaser's specification has been combined with new Clause 7 Classification and designation.
- Old Clause 6 Materials, Clause 7 Design, Clause 8 Fabrication and Clause 10 Handling and installation have been replaced by new Clause 4 Product characteristics.
- Old Clause 9 Testing has now become Clause 5 Testing, assessment and sampling methods.
- Old Clause 11 Marking of the tank and manufacturer's statement has now been combined with new Clause 8 Marking, labelling and packaging.

In addition, EN 12285-3:2019 includes a new clause as follows:

- Clause 6 Assessment and verification of constancy of performance (AVCP)

Annex A provides guidance on environmental aspects. For liquid-material combinations to be chosen, further information is given in EN 12285-1:2018, Annex B.

This European Standard *Workshop fabricated steel tanks* consists of 3 parts:

- *Part 1: Horizontal cylindrical single skin and double skin tanks for the underground storage of flammable and nonflammable water polluting liquids other than for heating and cooling of buildings*
- *Part 2: Horizontal cylindrical single skin and double skin tanks for the aboveground storage of flammable and non-flammable water polluting liquids*
- *Part 3: Horizontal cylindrical single skin and double skin tanks for the underground storage of flammable and nonflammable water polluting liquids for heating and cooling of buildings*

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this document: 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies the product characteristics and test/assessment methods for workshop fabricated cylindrical, horizontal steel tanks, single (type S) and double skin (type D) intended to be used for the underground storage of water polluting liquids (both flammable and non-flammable), specifically used for storage and/or supply of fuel for building heating/cooling systems, and of hot or cold water not intended for human consumption at normal ambient temperature conditions ($-20\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$) within the following limits:

- from 800 mm up to 3000 mm nominal diameter and;
- up to a maximum overall length of 6 times the nominal diameter;
- for liquids with a maximum density of up to 1,1 kg/l and;
- with an operating pressure (P_o) of maximum 50 kPa (0,5 bar(g)) and minimum -5 kPa (-50 mbar(g)) and;
- for double skin tanks with a vacuum leak detection system where the kinematic viscosity does not exceed $5 \times 10^{-3}\text{ m}^2/\text{s}$.

Two tank types are distinguished:

- Type S: Single skin;
- Type D: Double skin.

Tanks designed to this document allow for an earth cover of up to 1,5 m. If there are imposed traffic loads or a greater earth cover, calculation will occur.

This document is not applicable to tanks installed in industrial processes or in petrol stations, nor to loads and special measures necessary in areas subject to risk of earthquakes and/or to flooding.

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 1090-2:2008+A1:2011, *Execution of steel structures and aluminium structures - Part 2: Technical requirements for steel structures*

EN 10025-2:2004, *Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels*

EN 10204:2004, *Metallic products - Types of inspection documents*

EN 13160-1, *Leak detection systems - Part 1: General Principles*

EN 13160-2, *Leak detection systems - Part 2: Requirements and test/assessment methods for pressure and vacuum systems*

EN 13160-3, *Leak detection systems - Part 3: Requirements and test/assessment methods for liquid systems for tanks*

EN ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel - Part 1: Bolts, screws and studs with specified property classes - Coarse thread and fine pitch thread (ISO 898-1)*

EN ISO 14731, *Welding coordination - Tasks and responsibilities (ISO 14731)*

EN ISO 15607, *Specification and qualification of welding procedures for metallic materials - General rules (ISO 15607)*

EN ISO 15609-1, *Specification and qualification of welding procedures for metallic materials - Welding procedure specification - Part 1: Arc welding (ISO 15609-1)*

EN ISO 15614-1, *Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1)*

3 Terms, definitions, symbols and abbreviations

3.1 Terms and definitions

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

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1.1

tank

workshop fabricated cylindrical containment for the storage of liquids

Note 1 to entry: Tanks are made of steel plates, equipped with dished ends and consist of one or more compartments.

3.1.2

underground tank

tank which is totally or partially imbedded in the ground

3.1.3

compartment

single fluid storage space within a tank

3.1.4

single skin tank

impermeable containment consisting of a tank of single containment

Note 1 to entry: A single skin tank also constitutes the inner skin of a double skin tank.

Note 2 to entry: See Figure 1.