

EN 12285-3:2019



NBN EN 12285-3:2019



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

Valid from 23-05-2019

Replaces NBN EN 12285-1:2003

ICS: 13.300, 23.020.10

EUROPEAN STANDARD

EN 12285-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2019

ICS 13.300; 23.020.10

Supersedes EN 12285-1:2003

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

EN 12285-3:2019 (E)**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 documentt 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 °C to $+50\text{ °C}$) 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*