

<b>STN</b>	<b>Eurokód 3</b> <b>Navrhovanie ocelových konštrukcií</b> <b>Časť 4-2: Nádrže</b> <b>Zmena A1</b>	<b>STN</b> <b>EN 1993-4-2/A1</b>  73 1405
------------	--	--

Eurocode 3. Design of steel structures. Part 4-2: Tanks

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/17

Obsahuje: EN 1993-4-2:2007/A1:2017

**125509**

---

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2017  
Podľa zákona č. 264/1999 Z. z. o technických požiadavkách na výrobky a o posudzovaní zhody a o zmene a doplnení niektorých zákonov v znení neskorších predpisov sa slovenská technická norma a časti slovenskej technickej normy môžu rozmnožovať alebo rozširovať len so súhlasom slovenského národného normalizačného orgánu.



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 1993-4-2:2007/A1**

June 2017

ICS 23.020.01; 23.020.10; 91.010.30; 91.080.13

English Version

**Eurocode 3 - Design of steel structures - Part 4-2: Tanks**

Eurocode 3 - Calcul des structures en acier - Partie 4-2 :  
Réservoirs

Eurocode 3: Bemessung und Konstruktion von  
Stahlbauten - Teil 4-2: Tankbauwerke

This amendment A1 modifies the European Standard EN 1993-4-2:2007; it was approved by CEN on 3 March 2017.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant 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 amendment 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: Avenue Marnix 17, B-1000 Brussels**

## Contents

Page

European foreword.....	3
1    Modification to the Foreword .....	4
2    Modifications to 1.1, Scope.....	4
3    Modifications to 1.2, Normative references.....	5
4    Modifications to 1.5, Terms and definitions .....	5
5    Deletion of 1.7.2, Conventions for global tank structure axis system for rectangular tanks .....	6
6    Modifications to 1.7.3 (new numbering 1.7.2), Conventions for structural element axes in both circular and rectangular tanks .....	6
7    Modifications to 1.7.4 (new numbering 1.7.3), Conventions for stress resultants for circular tanks and rectangular tanks .....	7
8    Modification to 2.2, Reliability differentiation .....	7
9    Modifications to 2.7, Modelling of the tank for determining action effects .....	9
10   Deletion of 2.10, Combinations of actions .....	9
11   Modification to 3.5.1, General .....	9
12   Modification to 3.5.2, Minimum design metal temperature .....	10
13   Modifications to 4.1.3, Effects of corrosion .....	10
14   Modification to 4.2.2.1, General .....	11
15   Deletion of 4.3, Analysis of the box structure of a rectangular tank.....	11
16   Modifications to 5.3, Resistance of the tank shell wall .....	11
17   Modification to 5.4.6.3, Design of shell man holes and shell nozzles of large size for LS1 .....	11
18   Modification to 5.4.7, Anchorage of the tank.....	11
19   Deletion of Clause 6, Design of conical hoppers.....	12
20   Modification to 7.1.2 (newly numbered as 6.1.2), Roof design.....	12
21   Modification to 7.3 (newly numbered as 6.3), Resistance of circular roofs.....	12
22   Modification to 7.4.3 (newly numbered as 6.4.3), Roof to shell junction (eaves junction) .....	12
23   Deletion of Clause 8, Design of transition junctions at the bottom of the shell and supporting ring girders .....	12
24   Deletion of Clause 9, Design of rectangular and planar-sided tanks.....	12
25   Deletion of Clause 10, Requirements on fabrication, execution and erection with relation to design.....	12
26   Modification to Clause 11 (newly numbered as Clause 7), Simplified design .....	12
27   Modification to 11.2.1 (newly numbered as 7.2.1), Unstiffened roof shell butt welded or with double lap weld .....	12
28   Modifications to 11.3.2 (newly numbered as 7.3.2), Stiffening rings .....	12
29   Modification to A.1, General .....	13

## European foreword

This document (EN 1993-4-2:2007/A1:2017) has been prepared by Technical Committee CEN/TC 250 “Structural Eurocodes”, 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 June 2018, and conflicting national standards shall be withdrawn at the latest by June 2018.

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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 1 Modification to the Foreword

*In the Foreword, in the section "National Annex for EN 1993-4-2", in the 2<sup>nd</sup> paragraph, replace the whole list with the following one:*

"

- 2.2 (1)
- 2.2 (3)
- 2.9.2.1 (1)P
- 2.9.2.1 (2)P
- 2.9.2.1 (3)P
- 2.9.2.2 (3)P
- 2.9.3 (2)
- 3.3 (3)
- 4.1.4 (3)".

## 2 Modifications to 1.1, Scope

*Replace Paragraph (1) with the following one (including the present Footnote 1)):*

"(1) Part 4-2 of Eurocode 3 provides principles and application rules for the structural design of vertical cylindrical, conical and pedestal above ground steel tanks for the storage of liquid products with the following characteristics:

- a) tanks with capacity greater than 100 m<sup>3</sup> (100 000 l);
- b) tanks that have significant fabrication or assembly on site;
- c) shop-fabricated tanks with conical bottoms, supported on skirts or columns;
- d) tanks with characteristic internal pressures above the liquid surface not more negative than –0,1 bar and not greater than 0,5 bar <sup>5)</sup>;
- e) design metal temperatures limited to the ranges:
  - 1) tanks constructed using structural steel grades,  $-50^{\circ}\text{C} < T < +300^{\circ}\text{C}$ ;
  - 2) tanks constructed using austenitic stainless steels,  $-165^{\circ}\text{C} < T < +300^{\circ}\text{C}$ ;
  - 3) tanks constructed with special steel grades that have defined yield strengths up to higher temperatures,  $-165^{\circ}\text{C} < T < \text{the maximum defined temperature for the grade}$ ;
  - 4) tanks susceptible to failure by fatigue,  $T < 150^{\circ}\text{C}$ ;
- f) in cylindrical ground-supported tanks, the maximum design liquid level not higher than the top of the cylindrical shell."

*Replace Paragraph (8) with the following one:*

"(8) This Part 4-2 does not cover:

- tanks of rectangular planform;

---

5) All pressures are in bar gauge unless otherwise specified.

- tanks with capacity below 100 m<sup>3</sup>;
- tanks exposed to fire (refer to EN 1993-1-2);
- tanks with dished ends and diameter less than 5 m;
- cylindrical tanks with an aspect ratio of height to diameter greater than 3."

### **3 Modifications to 1.2, Normative references**

*Replace "EN 1990" with "EN 1990:2002".*

*In the list of the parts of EN 1993, replace "Part 1.6:" with "Part 1.6:2007:".*

*In the list of the parts of EN 1993, replace "Part 1.10:" with "Part 1.10:2005:".*

*In the list of the parts of EN 1993, replace "Part 4.1:" with "Part 4.1:2007:".*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**