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METALLIST TÖÖSTUSTORUSTIK. OSA 3: KAVANDAMINE JA ARVUTAMINE

Metallic industrial piping - Part 3: Design and calculation

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13480-3:2017 +A2+A3+A4+A5:2022 sisaldab Euroopa standardi EN 13480-3:2017 ja selle muudatuste A2:2020, A3:2020, A1:2021, A4:2021 ja A5:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 13480-3:2017 +A2+A3+A4+A5:2022 consists of the English text of the European standard EN 13480-3:2017 and its amendments A2:2020, A3:2020, A1:2021, A4:2021 and A5:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 28.06.2017, muudatused A2 19.08.2020, A3 19.08.2020, A1 03.03.2021, A4 22.09.2021 ja A5 21.12.2022.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation. Date of Availability of the European standard is 28.06.2017, for A2 19.08.2020, A3 19.08.2020, A1 03.03.2021, A4 22.09.2021 and A5 21.12.2022.
Muudatusega A2 lisatud või muudetud teksti algus ja lõpp on tekstis ära märgitud märgenditega [A2] 〈A2〉. Muudatusega A3 lisatud või muudetud teksti algus ja lõpp on tekstis ära märgitud märgenditega [A3] 〈A3〉. Muudatusega A1 lisatud või muudetud teksti algus ja lõpp on tekstis ära märgitud märgenditega [A1] 〈A1〉. Muudatusega A4 lisatud või muudetud teksti algus ja lõpp on tekstis ära märgitud märgenditega [A4] 〈A4〉. Muudatusega A5 lisatud või muudetud teksti algus ja lõpp on tekstis ära märgitud märgenditega [A5] 〈A5〉. Standard on kättesaadav Eesti Standardikeskusest.	The start and finish of text introduced or altered by amendment A2 is indicated in the text by symbols [A2] 〈A2〉. The start and finish of text introduced or altered by amendment A3 is indicated in the text by symbols [A3] 〈A3〉. The start and finish of text introduced or altered by amendment A1 is indicated in the text by symbols [A1] 〈A1〉. The start and finish of text introduced or altered by amendment A4 is indicated in the text by symbols [A4] 〈A4〉. The start and finish of text introduced or altered by amendment A5 is indicated in the text by symbols [A5] 〈A5〉. The standard is available from the Estonian Centre for Standardisation.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13480-3 + A2 + A3 + A1 + A4 + A5

June 2017, August 2020, August 2020,
March 2021, September 2021, December 2022

ICS 23.040.01

Supersedes EN 13480-3:2012

English Version

Metallic industrial piping - Part 3: Design and calculation

Tuyauteries industrielles métalliques - Partie 3 : Conception et calcul

Industrielle metallische Rohrleitungen - Teil 3: Konstruktion und Berechnung

This European Standard was approved by CEN on 21 June 2017. Amendment A2 was approved by CEN on 12 July 2020. Amendment A3 was approved by CEN on 12 July 2020. Amendment A1 was approved by CEN on 25 January 2021. Amendment A4 was approved by CEN on 25 July 2021. Amendment A5 was approved by CEN on 28 November 2022.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

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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 December 2017, and conflicting national standards shall be withdrawn at the latest by December 2017.

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This European Standard EN 13480 for metallic industrial piping consists of eight interdependent and not dissociable Parts which are:

— *Part 1: General;*

— *Part 2: Materials;*

— *Part 3: Design and calculation;*

— *Part 4: Fabrication and installation;*

— *Part 5: Inspection and testing;*

— *Part 6: Additional requirements for buried piping;*

— *CEN/TR 13480-7, Guidance on the use of conformity assessment procedures;*

— *Part 8: Additional requirements for aluminium and aluminium alloy piping.*

Although these Parts may be obtained separately, it should be recognised that the Parts are inter-dependant. As such the manufacture of metallic industrial piping requires the application of all the relevant Parts in order for the requirements of the Standard to be satisfactorily fulfilled.

〚A1〉 This document is maintained by a working group (Maintenance Help Desk - MHD) whose scope of work is limited to corrections and interpretations related to EN 13480. 〈A1〛

The contact to submit queries can be found at http://www.unm.fr (en13480@unm.fr). A form for submitting questions can be downloaded from the link to the MHD website. After subject experts have agreed an answer, the answer will be communicated to the questioner. Corrected pages will be given specific issue number and issued by CEN according to CEN Rules. Interpretation sheets will be posted on the website of the MHD.

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This document supersedes EN 13480-3:2012. This new edition incorporates the Amendments which have been approved previously by CEN members, and the corrected pages up to Issue 5 without any further technical change. Annex Y provides details of significant technical changes between this European Standard and the previous edition.

Amendments to this new edition may be issued from time to time and then used immediately as alternatives to rules contained herein.

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A2 Amendment A2 European foreword

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This document includes the text of the amendment itself. The amended/corrected pages of EN 13480-3:2017 will be published as Issue 4 of the European Standard.

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A3 Amendment A3 European foreword

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[A1] Amendment A1 European foreword

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For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

This document includes the text of the amendment itself. The amended/corrected pages of EN 13480-3:2017 will be published as Issue 2 of the European Standard. [A1]

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A4 Amendment A4 European foreword

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This document includes the text of the amendment itself. The amended/corrected pages of EN 13480-3:2017 will be published in the new Edition 2022 of the European Standard.

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[A5] Amendment A5 European foreword

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This document includes the text of the amendment itself. The amended/corrected pages of EN 13480-3:2017 will be published in the new edition of the European Standard.

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1 Scope

This Part of this European Standard specifies the design and calculation of industrial metallic piping systems, including supports, covered by EN 13480.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[A1] EN 764-5:2014, *Pressure equipment - Part 5: Inspection documentation of metallic materials and compliance with the material specification* [A1]

[A4] EN 1090-1:2009+A1:2011, *Execution of steel structures and aluminium structures - Part 1: Requirements for conformity assessment of structural components*

EN 1090-2:2018, *Execution of steel structures and aluminium structures - Part 2: Technical requirements for steel structures* [A4]

EN 1515-2:2001, *Flanges and their joints — Bolting — Part 2: Combination of flange and bolting materials for steel flanges PN designated*

EN 1515-3:2005, *Flanges and their joints — Bolting — Part 3: Classification of bolt materials for steel flanges, Class designated*

EN 1515-4:2010, *Flanges and their joints — Bolting — Part 4: Selection of bolting for equipment subject to the Pressure Equipment Directive 97/23/EC*

[A1] *deleted text* [A1]

[A4] EN 1990:2002, *Eurocode - Basis of structural design*

EN 1991 (all parts), *Eurocode 1: Actions on structures* [A4]

EN 1993 (all parts), *Eurocode 3: Design of steel structures*

[A5] EN 1993-1-8:2005, *Eurocode 3: Design of steel structures — Part 1-8: Design of joints* [A5]

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

EN 10216-2:2013, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 2: Non-alloy and alloy steel tubes with specified elevated temperature properties*

[A3] EN 12516-2:2014, *Industrial valves — Shell design strength — Part 2: Calculation method for steel valve shells* [A3]

EN 13445-3:2014, *Unfired pressure vessels — Part 3: Design*

EN 13480-1:2017, *Metallic industrial piping — Part 1: General*

EN 13480-2:2017, *Metallic industrial piping — Part 2: Materials*

EN 13480-4:2017, *Metallic industrial piping — Part 4: Fabrication and installation*

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EN 13480-5:2017, *Metallic industrial piping — Part 5: Inspection and testing*

EN ISO 5817:2007, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections* (ISO 5817:2003, corrected version:2005, including Technical Corrigendum 1:2006)

3 Terms, definitions, symbols and units

3.1 Terms and definitions

For the purposes of this Part of this European Standard, the terms and definitions given in EN 13480-1 apply.

3.2 Symbols and units

For the purposes of this Part of this European Standard, the symbols and units given in EN 13480-1 and in Table 3.2-1 apply.

Specific symbols are defined in the relevant sub-clauses.

〈A5〉 Table 3.2–1 — General symbols and units

Symbol	Description	Unit
A	elongation at rupture	%
E	modulus of elasticity	MPa (N/mm^2)
P_{max}	maximum pressure obtained from the design by formulae or relevant procedures for a given component	MPa (N/mm^2)
PS [a]	maximum allowable pressure	bar
R, r [b]	radii	mm
R_{eH}	minimum specified value of upper yield strength at room temperature	MPa (N/mm^2)
$R_{eH\ t}$	minimum specified value of upper yield strength at calculation temperature t [c]	MPa (N/mm^2)
R_m	minimum specified value of tensile strength at room temperature	MPa (N/mm^2)
$R_{m\ t}$	minimum specified value of tensile strength at calculation temperature t [c]	MPa (N/mm^2)
$R_{p0,2}$	minimum specified value of 0,2 % proof strength at room temperature	MPa (N/mm^2)
$R_{p0,2\ t}$	minimum specified value of 0,2 % proof strength at calculation temperature t [c]	MPa (N/mm^2)
$R_{p1,0}$	minimum specified value of 1,0 % proof strength at room temperature	MPa (N/mm^2)
$R_{p1,0\ t}$	minimum specified value of 1,0 % proof strength at calculation temperature t [c]	MPa (N/mm^2)

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