SLOVENSKI STANDARD
SIST EN 13480-3:2018/A5:2023

01-november-2023

Kovinski industrijski cevovodi - 3. del: Konstruiranje in izračun - Dopolnilo A5

Metallic industrial piping - Part 3: Design and calculation

Metallische industrielle Rohrleitungen - Teil 3: Konstruktion und Berechnung

Tuyauteries industrielles métalliques - Partie 3: Conception et calcul

Ta slovenski standard je istoveten z: **EN 13480-3:2017/A5:2022**

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ICS:

23.040.10	Železne in jeklene cevi	Iron and steel pipes
77.140.75	Jeklene cevi in cevni profili za posebne namene	Steel pipes and tubes for specific use

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13480-3:2017/A5

December 2022

ICS 23.040.01

English Version

Metallic industrial piping - Part 3: Design and calculation

Tuyauteries industrielles métalliques - Partie 3: Conception et calcul

Metallische industrielle Rohrleitungen - Teil 3: Konstruktion und Berechnung

This amendment A5 modifies the European Standard 2429052; it was approved by CEN on 28 November 2022.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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SIST EN 13480-3:2018/A5:2023

Contents

Page

iTeh Standards
(https://standards.iteh.ai)
Document Preview
https://standards.iteh.ai/catalog/standards/sist/3be3dd1e-b9b5-4c05-8e85-3bf347ac9ffe/sist-en-13480-3-2018-a5-2023

SIST EN 13480-3:2018/A5:2023

European foreword

This document (EN 13480-3:2017/A5:2022) has been prepared by Technical Committee CEN/TC 267 “Industrial piping and pipelines”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by June 2023 and conflicting national standards shall be withdrawn at the latest by June 2023.

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 has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of EN 13480-3:2017.

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.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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Document Preview
SIST EN 13480-3:2018/A5:2023
https://standards.iteh.ai/catalog/standards/sist/3be3dd1c-b9b5-4c03-8c85-3bf347ac9ffe/sist-en-13480-3-2018-a5-2023

SIST EN 13480-3:2018/A5:2023

1 Modification to Clause 2, "Normative references"

Add the following normative reference:

"EN 1993-1-8:2005, *Eurocode 3: Design of steel structures — Part 1-8: Design of joints*".

2 Modification to 3.2, "Symbols and units"

Table 3.2-1 shall read as follows:

"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)
S_1	mean value of the stress which leads to a 1 % creep elongation in 100 000 h	MPa (N/mm^2)
S_2	mean value of the stress which leads to a 1 % creep elongation in 200 000 h	MPa (N/mm^2)
$S_{R\ T\ t}$	Mean value of creep rupture strength according to the material standards, for material temperature t, and lifetime T (in hours) under consideration whereby the scatter band does not deviate by more than ± 20 % from the mean value.	MPa (N/mm^2)
T	time	h
t	temperature	°C

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Document Preview
SIST EN 13480-3:2018/A5:2023
https://standards.iteh.ai/catalog/standards/sist/3be3dd1c-b9b5-4c03-8c85-3bf347ac9ffe/sist-en-13480-3-2018-a5-2023

SIST EN 13480-3:2018/A5:2023

Symbol	Description	Unit
TS	maximum allowable temperature	°C
Z	section modulus for a pipe	mm^3
c_0	corrosion or erosion allowance (see Figure 4.3–1)	mm
c_1	absolute value of the negative tolerance taken from the material standard (see Figure 4.3–1)	mm
c_2	thinning allowance for possible thinning during manufacturing process (see Figure 4.3–1)	mm
e_a	analysis thickness of a component used for the check of the strength (see Figure 4.3–1)	mm
e_n	nominal thickness on drawings (see Figure 4.3–1)	mm
e_{ord}	ordered thickness (see Figure 4.3–1)	mm
e_r	minimum required thickness with allowances and tolerances (see Figure 4.3–1)	mm
f	design stress (see Clause 5)	MPa (N/mm^2)
f_{cr}	Design stress in the creep range	MPa (N/mm^2)
f_f	Design stress for flexibility analysis	MPa (N/mm^2)
p_c	calculation pressure (see 4.2.3.4)	MPa (N/mm^2)
p_o	operating pressure (see 4.2.3.1)	MPa (N/mm^2)
t_c	calculation temperature (see 4.2.3.5)	°C
t_o	operating temperature (see 4.2.3.2)	°C
z	joint coefficient (see 4.5)	-
ε	additional thickness resulting from the selection of the ordered thickness (see Figure 4.3–1)	mm

[a] All pressures for calculation purposes are in MPa (N/mm^2) and *PS* is in bar.

[b] The following subscripts apply:
i inside
m mean
o outside

[c] When t is greater than the room temperature.

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Document Preview
SIST EN 13480-3:2018/A5:2023
https://standards.iteh.ai/catalog/standards/sist/39e3dd1c-b2b5-4c03-8c85-3bf347ac9ffe/sist-en-13480-3-2018-a5-2023

SIST EN 13480-3:2018/A5:2023

3 Modification to 4.5, "Joint coefficient"

At the end of 4.5, the NOTE shall read as follows:

NOTE See EN 13480-5:2017, Table 8.3-1. Where the standard defining the technical conditions of delivery of a welded product gives the appropriate requirements concerning destructive and non-destructive tests (e.g. EN 10217 series), the joint coefficient for the wall thickness calculation ***can*** be taken equal to z = 1,0.

4 Modification to 6.1, "Straight pipes"

In 6.1, Formulae (6).1-1) and (6.1-2) shall read as follows:

"

— where $D_o/D_i \leq 1{,}7$:

$$e = \frac{p_c D_o}{2 f z + p_c} \qquad (6.1\text{-}1)$$

or

$$e = \frac{p_c D_i}{2 f z - p_c} \qquad (6.1\text{-}2)$$

".

5 Modification to 6.4.2, "Specific definitions"

Figure 6.4.2-2 shall be modified as follows:

"

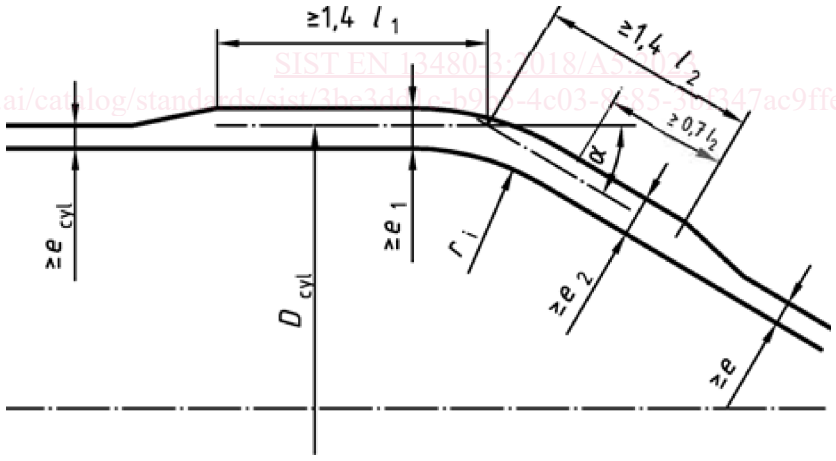

Figure 6.4.2-2 — Geometry of cone/cylinder intersection with knuckle – Large end".

6 Modification to 6.4.6.2, "Design"

The 5th paragraph of 6.4.6.2 shall read as follows:

"The required thickness e_2 of the cone adjacent to the junction is the greater of e_{con} and e_j. This thickness shall be maintained for a distance of at least $1{,}4l_2$ from the junction along the cone, see Figure 6.4.2-1.".

SIST EN 13480-3:2018/A5:2023

7 Modification to 6.4.7.2, “Design”

The 6th paragraph of 6.4.7.2 shall read as follows:

“The required thickness e_2 of the knuckle and the cone adjacent to the junction is the greater of e_{con} and e_j. This thickness shall be maintained for a distance of at least $1{,}4l_2$ from the junction and $0{,}7l_2$ from the cone/knuckle tangent line along the cone, see Figure 6.4.2-2.”.

8 Modification to 6.4.9, “Offset reducers”

The 5th sentence of 6.4.9 shall read as follows:

“The greater of these shall apply to the cone section of the reducer.”.

9 Modification to 8.3.2, “Openings in the vicinity of discontinuities”

Indent b) of 8.3.2 shall read as follows:

“

b) Openings in conical shells connected to cylindrical shells shall have the distances x_L *and* x_S shown in Figure 8.3.2-2 as follows:

— for the large end

$$x_L \geq \max\left(0{,}2\sqrt{\frac{D_{mL}\, e_{as}}{\cos\alpha}}\ ;\ 3{,}0\ e_{as}\right) \qquad (8.3.2\text{-}3)$$

— for the small end

$$x_S \geq \max\left(\sqrt{\frac{D_{mS}\, e_{as}}{\cos\alpha}}\ ;\ 3{,}0\ e_{as}\right) \qquad (8.3.2\text{-}4)$$

where

D_{mL} is the mean diameter of cylindrical shell at the large end;

D_{mS} is the mean diameter of cylindrical shell at the small end.

”.

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SIST EN 13480-3:2018/A5:2023
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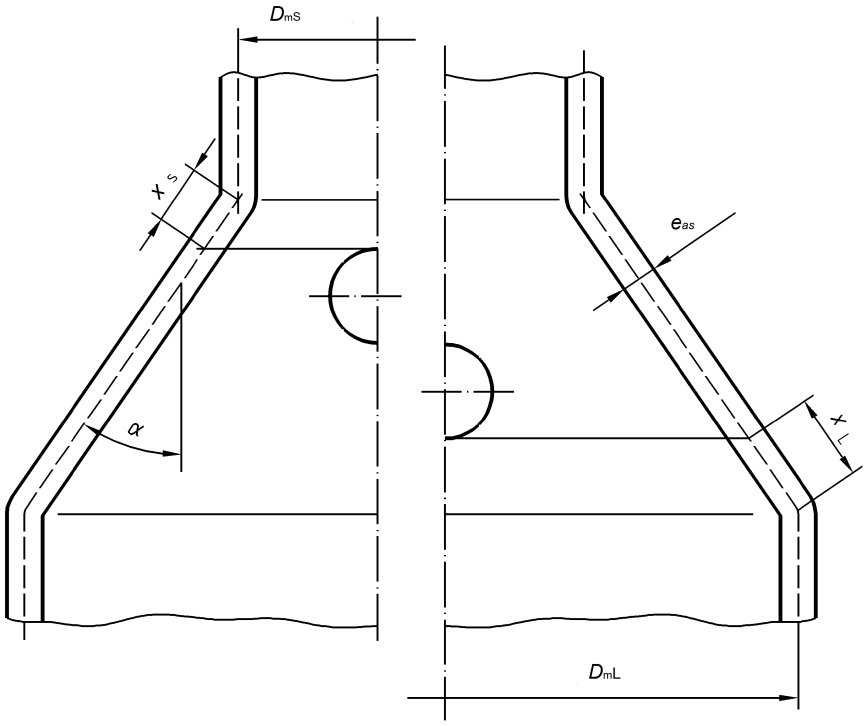

Figure 8.3.2-2 — Opening in a conical shell

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10 Modification to 8.4.3, "Reinforced openings with $d_i/D_i < 0,8$"

After Formula (8).4.3-2), the following sentence shall be added:

"d_{eqb} is the equivalent diameter of the branch at the intersection calculated according to Formulae (8).4.1-3) and (8.4.1-4) using the dimensions of the branch instead of the shell.".

SIST EN 13480-3:2018/A5:2023
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Indent c), 2nd paragraph of subclause 8.4.3, Formula (8).4.3-8) shall be deleted, new Figure 8.4.3-3 *shall be inserted, and the paragraph shall read as follows:*

"Formulae (8).4.3-3) or (8.4.3-6) and (8.4.3-7) shall apply.

The maximum length of the shell considered as contributing to reinforcement shall be evaluated in accordance with the Formula (8).4.1-2) and for the branches in accordance with Formulae (8).4.3-1) and (8.4.3-2).