



SLOVENSKI STANDARD
SIST EN 13480-2:2018/A8:2021

01-december-2021

Kovinski industrijski cevovodi - 2. del: Materiali - Dopolnilo A8

Metallic industrial piping - Part 2: Materials

Metallische industrielle Rohrleitungen - Teil 2: Werkstoffe

Tuyauteries industrielles métalliques - Partie 2: Matériaux

Ta slovenski standard je istoveten z: EN 13480-2:2017/A8:2021

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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

SIST EN 13480-2:2018/A8:2021 **en,fr,de**

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EUROPEAN STANDARD

EN 13480-2:2017/A8

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2021

ICS 23.040.01

English Version

Metallic industrial piping - Part 2: Materials

Tuyauteries industrielles métalliques - Partie 2:
Matériaux

Metallische industrielle Rohrleitungen - Teil 2:
Werkstoffe

This amendment A8 modifies the European Standard 2659471; it was approved by CEN on 16 August 2021.

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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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 13480-2:2017/A8:2021) 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of an identical text or by endorsement, at the latest by April 2022, and conflicting national standards shall be withdrawn at the latest by April 2022.

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 13480-2:2017.

This document includes the text of the amendment itself. The amended/corrected pages of EN 13480-2:2017 will be published in the new Edition 2022 of the European Standard.

Amendments EN 13480-2:2017/prA4 to EN 13480-2:2017/prA6 are withdrawn from the work program of Technical Committee CEN/TC 267 “Industrial piping and pipelines” following CEN Rules related to the time limit for activating Preliminary Work Items.

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.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 13480-2:2017/A8:2021 (E)

1 Modification to 3.1.2, temperature adjustment term T_S

Replace “ T_S ” by “ T_A ”. Definition 3.1.2 shall read as follows:

“3.1.2**temperature adjustment term** T_A

temperature relevant to the calculation of the design reference temperature T_R and dependent on the calculated tensile membrane stress at the appropriate minimum metal temperature

Note 1 to entry Values for temperature adjustment term T_A are given in Table B.2–12.

Note 2 to entry For tensile membrane stress reference is made to EN 13480-3:2017, Clause 12.”.

2 Modification to 3.1.3, design reference temperature T_R

Replace “ T_S ” by “ T_A ”. Definition 3.1.3 shall read as follows:

“3.1.3**design reference temperature** T_R

temperature used for determining the impact energy requirements and determined by adding the temperature adjustment T_A to the minimum metal temperature T_M

$$T_R = T_M + T_A$$

3 Modification to 3.2, Symbols and units

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Replace “ T_S ” by “ T_A ”. In Table 3.2-1, the line related to the “temperature adjustment term” shall read as follows:

“

T_A	temperature adjustment term	°C
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”.

4 Modification to Clause 4, Requirements for materials to be used for pressure containing parts in industrial piping

In 4.1.7, replace Table 4.1-1 with the following:

“

Table 4.1-1 — Maximum carbon, phosphorus and sulphur content for steel intended for welding or forming

Material group (according to Table A.1)	Maximum content of cast analysis as mass fraction		
	% C	% P	% S
Steels (1 to 6 and 9)	0,23 ^a	0,035	0,025
Ferritic stainless steels (7.1)	0,08	0,040	0,015
Martensitic stainless steels (7.2)	0,06	0,040	0,015
Austenitic stainless steels (8.1) (8.3)	0,08	0,045	0,015 ^b
Austenitic stainless steels (8.2)	0,10	0,035	0,015
Austenitic-ferritic stainless steels (10)	0,030	0,035	0,015

^a Maximum content of product analysis 0,25 % (mass fraction).

^b For products to be machined a controlled sulphur content of 0,015 % (mass fraction) to 0,030 % (mass fraction) is permitted by agreement provided the resistance to corrosion is satisfied for the intended purpose.

”

5 Modification to Annex A, Grouping system for steels for pressure equipment

In Annex A, replace Table A.1 with the following:

"Table A.1 — Grouping system for steels (extract from CEN ISO/TR 15608:2017)

Group	Sub-group	Type of steel
1		Steels with a specified minimum yield strength $R_{eH} \leq 460$ MPa ^a and with analysis as mass fraction in %: $C \leq 0,25$ $Si \leq 0,60$ $Mn \leq 1,70$ $Mo \leq 0,70^b$ $S \leq 0,045$ $P \leq 0,045$ $Cu \leq 0,40^b$ $Ni \leq 0,5^b$ $Cr \leq 0,3$ (0,4 for castings) ^b $Nb \leq 0,05$ $V \leq 0,12^b$ $Ti \leq 0,05$
	1.1	Steels with a specified minimum yield strength $R_{eH} \leq 275$ MPa
	1.2	Steels with a specified minimum yield strength 275 MPa < $R_{eH} \leq 360$ MPa
	1.3	Normalized fine grain steels with a specified minimum yield strength $R_{eH} > 360$ MPa
	1.4	Steels with improved atmospheric corrosion resistance whose analysis may exceed the requirements for the single elements as indicated under 1
2		Thermomechanically treated fine grain steels and cast steels with a specified minimum yield strength $R_{eH} > 360$ MPa
	2.1	Thermomechanically treated fine grain steels and cast steels with a specified minimum yield strength 360 MPa < $R_{eH} \leq 460$ MPa
	2.2	Thermomechanically treated fine grain steels and cast steels with a specified minimum yield strength $R_{eH} > 460$ MPa
3		Quenched and tempered steels and precipitation hardened steels except stainless steels with a specified minimum yield strength $R_{eH} > 360$ MPa
	3.1	Quenched and tempered steels with a specified minimum yield strength 360 MPa < $R_{eH} \leq 690$ MPa
	3.2	Quenched and tempered steels with a specified minimum yield strength $R_{eH} > 690$ MPa
	3.3	Precipitation hardened steels except stainless steels
4		Low vanadium alloyed Cr-Mo-(Ni) steels with $Mo \leq 0,7$ % and $V \leq 0,1$ %
	4.1	Steels with $Cr \leq 0,3$ % and $Ni \leq 0,7$ %
	4.2	Steels with $Cr \leq 0,7$ % and $Ni \leq 1,5$ %
5		Cr-Mo steels free of vanadium with $C \leq 0,35$ % ^c

	5.1	Steels with $0,75 \% \leq Cr \leq 1,5 \%$ and $Mo \leq 0,7 \%$
	5.2	Steels with $1,5 \% < Cr \leq 3,5 \%$ and $0,7 \% < Mo \leq 1,2 \%$
	5.3	Steels with $3,5 \% < Cr \leq 7,0 \%$ and $0,4 \% < Mo \leq 0,7 \%$
	5.4	Steels with $7,0 \% < Cr \leq 10 \%$ and $0,7 \% < Mo \leq 1,2 \%$
6		High vanadium alloyed Cr-Mo-(Ni) steels
	6.1	Steels with $0,3 \% \leq Cr \leq 0,75 \%$, $Mo \leq 0,7 \%$ and $V \leq 0,35 \%$
	6.2	Steels with $0,75 \% < Cr \leq 3,5 \%$, $0,7 \% < Mo \leq 1,2 \%$ and $V \leq 0,35 \%$
	6.3	Steels with $3,5 \% < Cr \leq 7,0 \%$, $Mo \leq 0,7 \%$ and $0,45 \% \leq V \leq 0,55 \%$
	6.4	Steels with $7,0 \% < Cr \leq 12,5 \%$, $0,7 \% < Mo \leq 1,2 \%$ and $V \leq 0,35 \%$
7		Ferritic, martensitic or precipitation hardened stainless steels with $C \leq 0,35 \%$ and $10,5 \% \leq Cr \leq 30 \%$
	7.1	Ferritic stainless steels
	7.2	Martensitic stainless steels
	7.3	Precipitation hardened stainless steels
8		Austenitic steels, $Ni \leq 35 \%$
	8.1	Austenitic stainless steels with $Cr \leq 19 \%$
	8.2	Austenitic stainless steels with $Cr > 19 \%$
	8.3	Manganese austenitic stainless steels with $4 \% < Mn \leq 12 \%$
9		Nickel alloyed steels with $Ni \leq 10 \%$
	9.1	Nickel alloyed steels with $Ni \leq 3 \%$
	9.2	Nickel alloyed steels with $3 \% < Ni \leq 8 \%$
	9.3	Nickel alloyed steels with $8 \% < Ni \leq 10 \%$
10		Austenitic ferritic stainless steels (duplex)
	10.1	Austenitic ferritic stainless steels with $Cr \leq 24 \%$ and $Ni > 4 \%$
	10.2	Austenitic ferritic stainless steels with $Cr > 24 \%$ and $Ni > 4 \%$
	10.3	Austenitic ferritic stainless steels with $Ni \leq 4 \%$
a	In accordance with the specification of the steel product standards, R_{eH} may be replaced by $R_{p0,2}$ or $R_{t0,5}$.	
b	A higher value is accepted provided that $Cr + Mo + Ni + Cu + V \leq 0,75 \%$ (mass fraction).	
c	"Free of vanadium" means not deliberately added to the material.	

EN 13480-2:2017/A8:2021 (E)

6 Modification to B.1, General

Replace “ T_S ” by “ T_A ”. In B.1, the last paragraph shall read as follows:

“All applicable combinations of the temperatures T_M (minimum metal temperature) and T_A (temperature adjustment term) shall be considered and the lowest possible T_R -value (design reference temperature) shall be used for the determination of the required material impact test temperature.

NOTE For definitions of temperature terms see 3.1.1 to 3.1.4.”.

7 Modification to B.2.2.1, General

Replace “ T_S ” by “ T_A ”. In B.2.2.1, the last paragraph shall read as follows:

“Values of the design reference temperature T_R shall be calculated from the metal temperature T_M using the values of the temperature adjustment T_A given in Table B.2-12.”.

8 Modification to B.2.2.6, Temperature adjustment

Replace “ T_S ” by “ T_A ”. Paragraph B.2.2.6 shall read as follows:

“

T_A is a temperature adjustment which can be used under the conditions given in Table B.2-12.

Table B.2-12 — Temperature adjustment T_A ^a

Condition	Ratio of pressure induced general membrane stress f and maximum allowable design stress f_d			Membrane stress ^b
	$f/f_d > 0,75$	$0,75 \geq f/f_d > 0,25$	$f/f_d \leq 0,25$	
Non welded or post-weld heat treated	0 °C	$T_A = 70 - 80 \times f/f_d$ [°C]	+ 50 °C	+ 50 °C
As welded	0 °C	0 °C	0 °C	+ 40 °C

^a Except for material group 9.1, 9.2 and 9.3, T_R shall not be lower than -110°C for ferritic and austenitic-ferritic steels

^b The membrane stress shall take account of internal and external pressure and dead weight. For walls and pipes of heat exchangers the restraint of free end displacement of the heat exchanger pipes should also be taken into account.

“