



SLOVENSKI STANDARD
SIST EN 13480-5:2012/A1:2013
01-december-2013

Kovinski industrijski cevovodi - 5. del: Pregled in preskušanje - Dopolnilo A1

Metallic industrial piping - Part 5: Inspection and testing

Metallische industrielle Rohrleitungen - Teil 5: Prüfung

Tuyauteries industrielles métalliques - Partie 5: Inspection et contrôle

Ta slovenski standard je istoveten z: EN 13480-5:2012/A1:2013

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ICS:

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|-----------|--|---|
| 77.140.75 | Jeklene cevi in cevni profili za posebne namene | Steel pipes and tubes for specific use |
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SIST EN 13480-5:2012/A1:2013 **en,fr,de**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

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Metallic industrial piping - Part 5: Inspection and testing

Tuyauteries industrielles métalliques - Partie 5: Inspection
et contrôle

Metallische industrielle Rohrleitungen - Teil 5: Prüfung

This amendment A1 modifies the European Standard EN 13480-5:2012; it was approved by CEN on 26 July 2013.

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.

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Contents

Page

| | |
|------------------------------------|----|
| Foreword..... | 4 |
| 1 Modification to Foreword..... | 5 |
| 2 Modification to Clause 2..... | 5 |
| 3 Modification to Clause 3..... | 5 |
| 4 Modification to Clause 4..... | 5 |
| 5 Modification to 5.1..... | 6 |
| 6 Modification to 5.2..... | 6 |
| 7 Modification to 5.3..... | 6 |
| 8 Modification to Clause 6..... | 6 |
| 9 Modification to 7.1..... | 7 |
| 10 Modification to 7.2.1..... | 7 |
| 11 Modification to 7.2.4..... | 7 |
| 12 Modification to 7.2.5..... | 8 |
| 13 Modification to 7.3.1..... | 8 |
| 14 Modification to 7.3.2..... | 8 |
| 15 Modification to 7.3.4..... | 8 |
| 16 Modification to 7.3.5..... | 8 |
| 17 Modification to 7.4..... | 9 |
| 18 Modification to Clause 8..... | 9 |
| 19 Modification to 9.2.1..... | 15 |
| 20 Modification to 9.2.2..... | 15 |
| 21 Modification to 9.2.3..... | 15 |
| 22 Modification to 9.3.2.1.2..... | 16 |
| 23 Modification to 9.3.2.1.4..... | 16 |
| 24 Modification to 9.3.2.1.10..... | 16 |
| 25 Modification to 9.3.2.2.1..... | 16 |
| 26 Modification to 9.3.2.2.2..... | 18 |
| 27 Modification to 9.3.3..... | 18 |
| 28 Modification to 9.3.4..... | 19 |
| 29 Modification to 9.3.5..... | 19 |
| 30 Modification to 9.4..... | 20 |
| 31 Modification to 9.4.1..... | 20 |
| 32 Modification to Clause 10..... | 21 |
| 33 Modification to Annex A..... | 22 |

| | | |
|----|------------------------------------|----|
| 34 | Modification to Clause Y.1 | 25 |
| 35 | Modification to Annex ZA | 26 |
| 36 | Modification to Bibliography | 27 |

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[SIST EN 13480-5:2012/A1:2013](https://standards.iteh.ai/catalog/standards/sist/66a8b672-1bd5-46a2-baa7-a61c881d1321/sist-en-13480-5-2012-a1-2013)

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EN 13480-5:2012/A1:2013 (E)**Foreword**

This document (EN 13480-5:2012/A1:2013) has been prepared by Technical Committee CEN/TC 267 "Industrial piping and pipelines", the secretariat of which is held by AFNOR.

This Amendment to the European Standard EN 13480-5:2012 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2014, and conflicting national standards shall be withdrawn at the latest by February 2014.

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, and supports essential requirements of EU Directive(s).

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 13480-5:2012 will be published in August 2013 as Issue 2 of the European Standard.

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

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1 Modification to Foreword

The first sentence of the 9th paragraph of the Foreword shall read as follows:

The contact to submit queries can be found at <http://www.unm.fr> (en13480@unm.fr).

2 Modification to Clause 2

Replace the existing Clause 2 with the following:

The following referenced documents are indispensable for the application 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 13480-1:2012, *Metallic industrial piping — Part 1: General*

EN 13480-2:2012, *Metallic industrial piping — Part 2: Materials*

EN 13480-3:2012, *Metallic industrial piping — Part 3: Design and calculation*

EN 13480-4:2012, *Metallic industrial piping — Part 4: Fabrication and installation*

EN 13480-6:2012, *Metallic industrial piping — Part 6: Additional requirements for buried piping*

EN 14917:2009+A1:2012, *Metal bellows expansion joints for pressure applications*

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)*

EN ISO 9712:2012, *Non-destructive testing — Qualification and certification of NDT personnel (ISO 9712:2012)*

EN ISO 17635:2010, *Non-destructive testing of welds — General rules for metallic materials (ISO 17635:2010)*

EN ISO 17640:2010, *Non-destructive testing of welds — Ultrasonic testing — Techniques, testing levels, and assessment (ISO 17640:2010)*

3 Modification to Clause 3

Replace the existing Clause 3 with the following:

For the purposes of this document, the terms and definitions given in EN 13480-1 shall apply.

4 Modification to Clause 4

Replace the existing Clause 4 with the following:

For the purposes of this Part of this European Standard, the symbols given in EN 13480-1 apply together with the following abbreviations:

EN 13480-5:2012/A1:2013 (E)

- NDT Non-destructive testing
- MT Magnetic particle testing
- PT Penetrant testing
- RT Radiographic testing
- UT Ultrasonic testing
- VT Visual testing
- PWHT Post-weld heat treatment
- PED Pressure Equipment Directive

5 Modification to 5.1

The revised sub-clause 5.1 shall read as follows:

The manufacturer shall be responsible for the fabrication and the installation, even if this work will be sub-contracted to other fabricators and/or installers.

The fabricator and/or installer shall be responsible for carrying out the inspection and testing including subcontracted NDT (if any) specified in this European Standard, for all piping.

NOTE For guidance on the use of conformity assessment procedures see CEN/TR 13480-7.

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6 Modification to 5.2

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The revised sub-clause 5.2 shall read as follows:

Industrial piping shall be classified in accordance with EN 13480-1:2012, Table 5.1-1.

NOTE Categories I to III are identical to categories I to III of the Pressure Equipment Directive.

7 Modification to 5.3

The existing sub-clause 5.3 "Testing and inspection procedures" shall be deleted.

8 Modification to Clause 6

Replace the existing Clause 6 with the following:

6 Design review

Before fabrication/installation commences, a review of the piping design and its supports shall be performed.

Where design and fabrication are carried out by separate organisations, the piping designer shall prepare a confirmation for the manufacturer that the design is in compliance with the requirements of this European Standard.

A list of the relevant drawings shall be attached to the confirmation.

Where the design of parts has already been reviewed in accordance with this European Standard, and where an appropriate confirmation is available, a further design review shall not be required.

NOTE For guidance on the use of conformity assessment procedures see CEN/TR 13480-7.

9 Modification to 7.1

The revised sub-clause 7.1 shall read as follows:

Testing and inspection shall be carried out by personnel qualified for the method used. European Standards, specifications or written procedures (if necessary) shall be available to all testing personnel and inspectors prior to the testing/inspection.

Reports on NDT specified in 7.2.4 and Clause 8 and reports on destructive testing specified in 7.2.5 shall be prepared to demonstrate that all required testing has been carried out and that the results are acceptable.

10 Modification to 7.2.1

Following the first existing paragraph, add a second paragraph as follows:

Formed parts shall be subject to appropriate testing in accordance with the fabricators/installers test programme.

11 Modification to 7.2.4

SIST EN 13480-5:2012/A1:2013

The revised sub-clause 7.2.4 shall read as follows:

Depending on material, dimensions and type of forming process testing may include:

- a) visual testing;
- b) wall thickness measurements;
- c) dimensional checks (ovality, angle of bend etc.);
- d) hardness tests;
- e) ultrasonic testing for volumetric (internal) imperfections in longitudinal and transversal direction;
- f) testing for surface imperfections (magnetic particle or penetrant testing);
- g) replicas of the surface structure in the tension zone (in case life monitoring is required for creep range applications)

on each component or batch of identical components.

Material, heat treatment conditions, heat treatment lot, degree of deformation shall be considered in the definition of the batch.

NOTE A customary interpretation of a heat treatment lot is the entire content of a furnace of a single heat treatment.

EN 13480-5:2012/A1:2013 (E)**12 Modification to 7.2.5**

The revised sub-clause 7.2.5 shall read as follows:

Testing performed to verify the heat treatment of the formed parts shall include as appropriate:

- a) tensile test at room temperature;
- b) tensile test at elevated temperature (where items are being used in the creep range);
- c) impact test;
- d) microscopic examinations (e.g. 9 % or 12 % Cr steels);
- e) other tests specified in European Standards for base materials.

The tests shall be performed on test pieces from the end of the component itself, or from test pieces placed together with the components in the heat treatment furnaces.

13 Modification to 7.3.1

The revised heading and the revised sub-clause 7.3.1 shall read as follows:

7.3.1 Review of welding documents

Prior to carrying out any welding activity, the fabricator shall verify that the welding procedures and the welding personnel are qualified for the relevant work. This shall be reviewed by the manufacturer.

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14 Modification to 7.3.2

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The revised heading of the sub-clause 7.3.2 shall read as follows:

7.3.2 Inspection before welding

The revised first sentence shall read as follows:

Prior to carrying out any welding, each joint preparation shall be visually inspected.

In the list, replace the indents “ — “ by the indents “a”, “b”, “c”, “d” and “e”.

15 Modification to 7.3.4

The first indent “a” shall read as follows:

- a) verification for compliance with drawings;

16 Modification to 7.3.5

Add a new sub-clause 7.3.5 as follows:

7.3.5 Inspection of built up pipe ends

All built up pipe ends shall be subject to 100 % non-destructive testing of internal and surface imperfections.

17 Modification to 7.4

The revised sub-clause 7.4 shall read as follows:

For post-forming and post-weld heat treatment (PWHT), where applicable, it shall be verified by a review of the heat treatment reports that the heat treatment carried out complies with the heat treatment procedure.

If additional examinations (e.g. replica, hardness) after post-forming and post-weld heat treatment are required, this testing shall be reported and the reports shall be reviewed.

18 Modification to Clause 8

Replace the existing Clause 8 with the following:

8 Non-destructive testing of welds

8.1 Application of NDT

8.1.1 General

8.1.1.1 The following shall be applicable to all welded joints:

- a) welded joints shall be visually examined before any other NDT is performed;
- b) the area to be examined shall include the weld metal and the heat affected zones;
- c) surface examination stipulated in Table 8.2-1 shall be performed on the outer surface;
- d) where a welded joint is to be subsequently formed or heat treated, the required NDT shall be carried out on the weld in the final condition. If a weld will not be accessible for examination after heat treatment or forming, a suitable alternative shall be agreed;
- e) NDT-methods used and acceptance criteria for all NDT shall be in accordance with 8.4.5;
- f) weld imperfections, which have been assessed as weld defects, shall be repaired in accordance with EN 13480-4 and inspected again after repair.

8.1.1.2 Arc strikes and contact points with fused material shall be ground smooth and subjected to surface examination appropriate to the material used.

8.1.2 Examination of weld quality by sample inspection

Where the required extent of non-destructive testing is less than 100 %, the specified NDT techniques shall be employed at the earliest stage practicable in the fabrication process to ensure that sound welds are achieved. The timing shall be agreed. Sample welds to be examined shall be:

- a) randomly selected;
- b) representative of a batch of welds.

At least one complete sample weld shall be examined over the whole length.

Where the number of sample welds required is small, combinations of thicker sections and smaller diameters or thinner sections and greater diameters shall be given preference. All welders and welding operators shall be covered.