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SIST EN 13480-4:2012/A1:2013
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Kovinski industrijski cevovodi - 4. del: Proizvodnja in vgradnja - Dopolnilo A1

Metallic industrial piping - Part 4: Fabrication and installation

Metallische industrielle Rohrleitungen - Teil 4: Fertigung und Verlegung

Tuyauteries industrielles métalliques - Partie 4: Fabrication et installation

Ta slovenski standard je istoveten z: EN 13480-4:2012/A1:2013

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ICS:

77.140.75	Jeklene cevi in cevni profili za posebne namene	Steel pipes and tubes for specific use
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Metallic industrial piping - Part 4: Fabrication and installation

Tuyauteries industrielles métalliques - Partie 4: Fabrication
et installation

Metallische industrielle Rohrleitungen - Teil 4: Fertigung
und Verlegung

This amendment A1 modifies the European Standard EN 13480-4:2012; 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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EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 13480-4:2012/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 13480-4:2012 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by month year of February 2014, and conflicting national standards shall be withdrawn at the latest by February 2014.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 13480-4:2012 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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EN 13480-4:2012/A1:2013 (E)**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 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.

EN 287-1:2011, *Qualification test of welders — Fusion welding — Part 1: Steels*

EN 1418:1997, *Welding personnel — Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding of metallic materials*

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

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 13480-5:2012, *Metallic industrial piping — Part 5: Inspection and testing*

EN ISO 3834-3:2005, *Quality requirements for fusion welding of metallic materials — Part 3: Standard quality requirements (ISO 3834-3:2005)*

EN ISO 4063:2010, *Welding and allied processes — Nomenclature of processes and reference numbers (ISO 4063:2009, Corrected version 2010-03-01)*

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 13920, *Welding — General tolerances for welded constructions — Dimensions for lengths and angles — Shape and position (ISO 13920)*

EN ISO 15609 (all parts), *Specification and qualification of welding procedures for metallic materials — Welding procedure specification*

EN ISO 15610:2003, *Specification and qualification of welding procedures for metallic materials — Qualification based on tested welding consumables (ISO 15610:2003)*

EN ISO 15611:2003, *Specification and qualification of welding procedures for metallic materials — Qualification based on previous welding experience (ISO 15611:2003)*

EN ISO 15612:2004, *Specification and qualification of welding procedures for metallic materials — Qualification by adoption of a standard welding procedure (ISO 15612:2004)*

EN ISO 15613:2004, *Specification and qualification of welding procedures for metallic materials — Qualification based on pre-production welding test (ISO 15613:2004)*

EN ISO 15614-1:2004, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1:2004)*

EN ISO 17663:2009, *Welding — Quality requirements for heat treatment in connection with welding and allied processes (ISO 17663:2009)*

CEN ISO/TR 15608:2005, *Welding — Guidelines for a metallic materials grouping system (ISO/TR 15608:2005)*

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 13480-1:2012 together with the following apply.

3.1

field run piping

piping installed without preplanning by drawings of the piping routing and the support points

Note 1 to entry: Typical dimensions are DN 50 or smaller

3.2

spool (with or without overlength)

prefabricated assembly of components which forms part of a piping system

3.3

cold forming

forming at ambient temperature, but not below + 5 °C

3.4

hot forming

for ferritic steels, forming at temperatures at or above the maximum permissible temperature for post-weld heat treatment; for austenitic and austenitic-ferritic steels at temperatures above 300 °C

4 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.

5 Modification to 5.2.1

The revised sub-clause 5.2.1 shall read as follows:

The fabricators and/or installers shall ensure the correct transport, handling, storage, fabrication, installation and testing of all piping components including supports.

EN 13480-4:2012/A1:2013 (E)**6 Modification to 5.2.3**

The revised sub-clause 5.2.3 shall read as follows:

The fabricators and/or installers shall employ their own responsible supervisors and competent personnel. If sub-contractors are employed, the fabricator and/or installer remain responsible for their competence and the compliance with this European Standard.

NOTE The task and responsibilities of a welding co-ordinator are described in EN ISO 14731.

7 Modification to 5.2.5

The revised sub-clause 5.2.5 shall read as follows:

Co-ordination between those responsible for design and those responsible for fabrication and/or installation and testing shall be maintained at all times, to ensure that fabrication, installation and testing is carried out in accordance with the design specification.

8 Modification to 5.2.6

Add a new sub-clause 5.2.6 as follows:

5.2.6 The fabricator and/or installer of the piping shall fulfil the requirements of EN ISO 3834-3.

9 Modification to 5.3.3

The revised NOTE of 5.3.3 shall read as follows:

NOTE 5.3.3 is deemed to be fulfilled, when the quality characteristics of the material are not impaired by cold or hot forming, e.g. by cutting, grinding, straightening or bending, of the components and when the different components have been joined such that stresses and deformations which can impair the safety of the piping are excluded.

10 Modification to 5.4

The revised sub-clause 5.4 shall read as follows:

The piping systems shall be classified into different categories depending on the fluid carried, diameter and pressure. These are given in EN 13480-1.

11 Modification to 5.5

The revised sub-clause 5.5 shall read as follows:

Material grouping is given in EN 13480-2.

12 Modification to 5.6

The 1st paragraph of the sub-clause 5.6 shall read as follows:

Tolerances shall comply with EN ISO 13920, class C and class G, except where other classes are specified in this European Standard or by design.

13 Modification to 6.1

The 2nd paragraph of the sub-clause 6.1 shall read as follows:

Flame cutting shall be permitted for material groups 1, 2, 3, 4 and 5 only with preheating as specified for welding.

The 4th and 5th paragraph of the sub-clause 6.1 shall read respectively as follows:

Plasma cutting shall be permitted for all material groups given in this European Standard. Plasma cutting shall be preceded by preheating, as specified for welding.

Other cutting and bevelling processes are permitted, provided their suitability is demonstrated.

14 Modification to 6.2

The heading of the sub-clause 6.2 shall read as follows:

6.2 Identification of pressure parts

The 2nd and 3rd paragraph of the sub-clause 6.1 shall read respectively as follows:

Stamping shall not introduce a notching effect, therefore low-stress stamping is recommended.

If any method of marking other than hard-stamping, edging or engraving (vibrograph) is used, the fabricator shall ensure that confusion between different materials is not possible.

15 Modification to Clause 7

Replace the existing Clause 7 with the following:

7 Bending and other forming

7.1 General

7.1.1 Fabricators of formed pressure parts shall have adequate procedures, equipment and tools for the forming and the subsequent heat treatment.

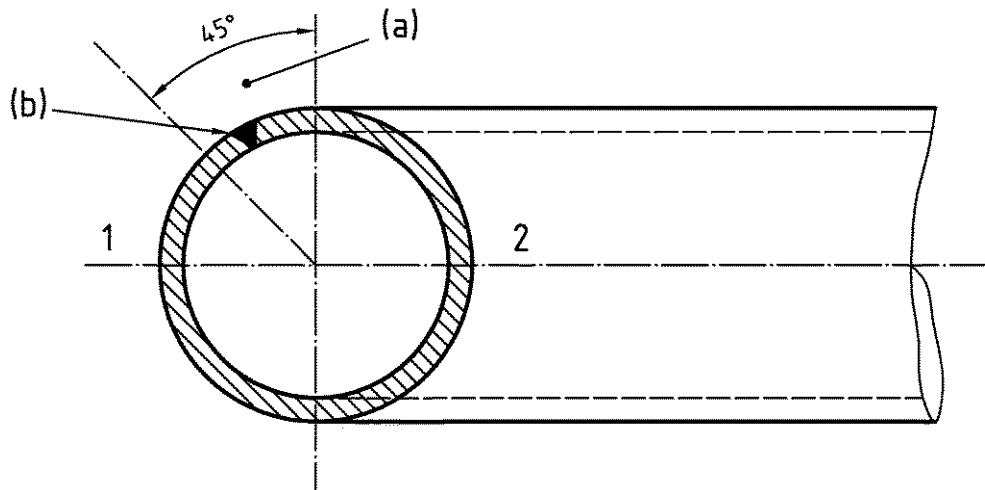
Pipes with internal coating such as glass, rubber or plastics shall not be formed unless it has been demonstrated that the forming process is not detrimental to the lining.

NOTE There are two kinds of forming within the scope of this European Standard: cold forming and hot forming.

The thickness after bending or forming shall be not less than that required by the design.

Longitudinal welds should be located at the neutral zone. The range of the neutral zone after bending is given in Figure 7.1.1-1.

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**Key**

1 extrados

2 intrados

(a) optimal range for the longitudinal weld at bending

(b) weld

Figure 7.1.1-1 — Optimal range for the longitudinal weld at bending

7.1.2 The forming and post-forming heat treatment of thermomechanical steels shall be given individual consideration. Account shall be taken of the recommendations of the steelmakers.

Pipes whose properties have been generated by thermomechanical means such as controlled rolling can be formed by cold methods. Such materials may be substantially changed by the forming process and require particular consideration to ensure that the specified properties are recovered after forming.

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7.1.3 The following formulae shall be used for the calculation of the percentage deformation for cold formed cylinders and cone products made by rolling (see Figure 7.1.3-1):

a) For cylinders and cones rolled from flat materials (see Figures 7.1.3-1a) and 7.1.3-1c):

$$V_d = \frac{50 e_{ord}}{r_{mf}} \quad (7.1.3-1)$$

b) For cylinders and cones rolled from intermediate product (see Figures 7.1.3-1b) and 7.1.3-1c):

$$V_d = \frac{50 e_{int}}{r_{mf}} \left(1 - \frac{r_{mf}}{r_{mi}} \right) \quad (7.1.3-2)$$

where

e_{ord} is the ordered thickness;

e_{int} is the thickness of the intermediate product;

r_{mf} is the average radius of the finished product;

r_{mi} is the average radius of the intermediate product;

V_d is the deformation as a percentage.

NOTE If no intermediate quality heat treatment is applied between individual forming steps, the deformation is the total amount of deformation of the individual steps. If intermediate quality heat treatment is applied between the forming steps, the deformation is that deformation applied after the last treatment.

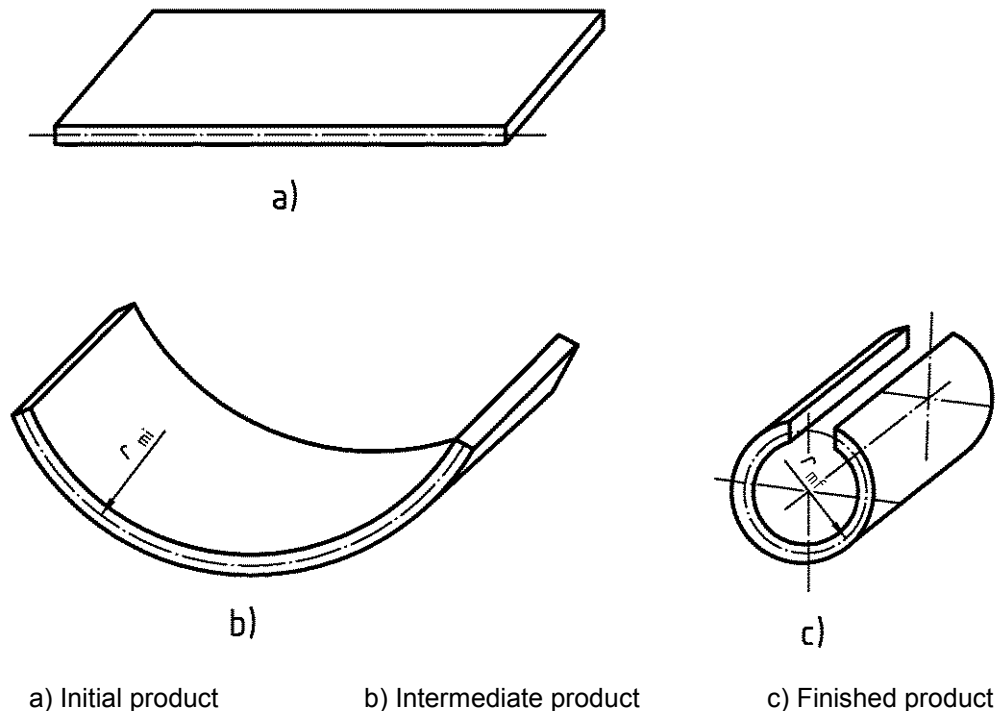


Figure 7.1.3-1 — Forming of cylinders and cones

7.1.4 Tools and equipment used for forming shall be maintained to ensure a smooth profile free from stress-raising defects, e.g. scores.

7.1.5 Heat treatment after forming shall be in accordance with the respective material standard.

7.1.6 Welding on to formed areas shall not be performed until heat treatment is complete.

7.2 Heat treatment after cold forming

7.2.1 Flat products

Flat products shall be heat treated after cold forming as required in Table 7.2.1-1.

For special design reasons, for example cyclic loading or stress corrosion cracking, heat treatment in excess of that in Table 7.2.1-1 may be specified after cold forming.

No heat treatment for austenitic steels is required:

- a) For austenitic steels having a documented minimum value of elongation after fracture (rupture) A_5 equal to or greater than 30 %, a maximum level of 15 % cold deformation shall be acceptable.

A greater deformation may be accepted if the evidence is supplied that there is a minimum elongation after fracture (rupture) of 15 % after cold forming.

Such evidence shall be deemed supplied, if the acceptance certificate shows that elongation after fracture (rupture) A_5 is not less than 30 %. This shall be applicable only in cases where there is no risk of stress corrosion cracking;

- b) For austenitic steels having a required minimum value of elongation after fracture (rupture) A_5 less than 30 %, evidence shall be supplied that there is a minimum elongation of 15 % after cold forming;
- c) Deformation shall not exceed 10 % if the working temperature is below $-196\text{ }^{\circ}\text{C}$.