
Metallic industrial piping - Part 4: Fabrication and installation

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.

CEN members are the national standards bodies of 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 United Kingdom.
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>5</td>
</tr>
<tr>
<td>Modification to Foreword</td>
<td>6</td>
</tr>
<tr>
<td>Modification to Clause 2</td>
<td>6</td>
</tr>
<tr>
<td>Modification to Clause 3</td>
<td>7</td>
</tr>
<tr>
<td>Modification to 5.1</td>
<td>7</td>
</tr>
<tr>
<td>Modification to 5.2.1</td>
<td>7</td>
</tr>
<tr>
<td>Modification to 5.2.3</td>
<td>8</td>
</tr>
<tr>
<td>Modification to 5.2.5</td>
<td>8</td>
</tr>
<tr>
<td>Modification to 5.2.6</td>
<td>8</td>
</tr>
<tr>
<td>Modification to 5.3.3</td>
<td>8</td>
</tr>
<tr>
<td>Modification to 5.4</td>
<td>8</td>
</tr>
<tr>
<td>Modification to 5.5</td>
<td>8</td>
</tr>
<tr>
<td>Modification to 5.6</td>
<td>8</td>
</tr>
<tr>
<td>Modification to 6.1</td>
<td>9</td>
</tr>
<tr>
<td>Modification to 6.2</td>
<td>9</td>
</tr>
<tr>
<td>Modification to Clause 7</td>
<td>9</td>
</tr>
<tr>
<td>Bending and other forming</td>
<td>9</td>
</tr>
<tr>
<td>7.1 General</td>
<td>9</td>
</tr>
<tr>
<td>7.2 Heat treatment after cold forming</td>
<td>11</td>
</tr>
<tr>
<td>7.2.1 Flat products</td>
<td>11</td>
</tr>
<tr>
<td>7.2.2 Pipes</td>
<td>12</td>
</tr>
<tr>
<td>7.3 Heat treatment after hot forming</td>
<td>13</td>
</tr>
<tr>
<td>7.3.1 Material groups 1, 3, 4, 5 and 6</td>
<td>13</td>
</tr>
<tr>
<td>7.3.2 Material groups 8.1 and 8.2</td>
<td>14</td>
</tr>
<tr>
<td>7.3.3 Heat treatment after hot forming for material group 10</td>
<td>17</td>
</tr>
<tr>
<td>7.3.4 Heat treatment after hot forming for clad materials</td>
<td>17</td>
</tr>
<tr>
<td>7.4 Tolerances</td>
<td>17</td>
</tr>
<tr>
<td>7.4.1 Out-of-roundness of bends under internal pressure equal to, or greater than, the external pressure</td>
<td>17</td>
</tr>
<tr>
<td>7.4.2 Out-of-roundness of bends under external pressure and vacuum</td>
<td>18</td>
</tr>
<tr>
<td>7.4.3 Waves at bends</td>
<td>18</td>
</tr>
<tr>
<td>7.4.4 Start-up bulge of induction bends</td>
<td>19</td>
</tr>
<tr>
<td>7.5 Surface finish</td>
<td>19</td>
</tr>
<tr>
<td>8.1 Installation of piping</td>
<td>19</td>
</tr>
<tr>
<td>8.2 Field run piping</td>
<td>20</td>
</tr>
<tr>
<td>8.3 Flanged or similar mechanical connections</td>
<td>21</td>
</tr>
<tr>
<td>8.3.1 Flange connections</td>
<td>21</td>
</tr>
<tr>
<td>8.3.2 Threaded connections</td>
<td>22</td>
</tr>
<tr>
<td>8.3.3 Couplings and compression fittings</td>
<td>22</td>
</tr>
<tr>
<td>8.4 Protection of ends of piping components</td>
<td>22</td>
</tr>
</tbody>
</table>
17 Modification to Clause 9
9 Welding
9.1 Welding personnel
9.2 Welding procedure specifications
9.3 Welding procedures
9.3.1 Verification of suitability
9.3.2 Application
9.4 Filler metals and auxiliary materials
9.5 Climatic conditions
9.6 Cleaning before and after welding
9.7 Joint preparation
9.8 Edge protection
9.9 Assembly for welding
9.10 Earthing
9.11 Performance of welding
9.11.1 Preheating
9.11.2 Striking marks
9.11.3 External welds
9.11.4 Dissimilar joints
9.12 Backing rings
9.13 Attachments
9.13.1 General
9.13.2 Temporary attachments
9.13.3 Permanent attachments
9.14 Post-weld heat treatment
9.14.1 General
9.14.2 Equipment
9.14.3 Temperature measurements
9.14.4 Controlling thickness
9.14.5 Rate of heating
9.14.6 Local heat treatment
9.14.7 Insulation
9.15 Weld identification
18 Modification to 10.2.1
19 Modification to 10.2.2
20 Modification to 10.2.4
21 Modification to 10.3
22 Modification to Clause 11
11 Marking and documentation
11.1 Marking of spools and components for installation
11.2 Marking and identification of installed piping
11.2.1 General
11.2.2 CE Marking of installed piping
11.2.3 Technical identification of installed piping
23 Modification to 12.1
24 Modification to 12.2
25 Modification to 12.5
26 Modification to Clause A.1
27 Modification to A.2.1
28 Modification to A.2.2
29 Modification to A.4.2
30 Modification to Annex B
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.
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 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 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


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 subcontracted 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.
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.