

This is a preview of "BS EN 13480-4:2012+A...". Click here to purchase the full version from the ANSI store.

BS EN 13480-4:2012+A1:2013



BSI Standards Publication

Metallic industrial piping

Part 4: Fabrication and installation

bsi.

...making excellence a habit.™

This is a preview of "BS EN 13480-4:2012+A...". [Click here to purchase the full version from the ANSI store.](#)

This British Standard is the UK implementation of EN 13480-4:2012+A1:2013. It supersedes BS EN 13480-4:2012 which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by $\boxed{A1}$ $\langle A1 \rangle$.

The UK participation in its preparation was entrusted to Technical Committee PVE/10, Piping systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2013. Published by BSI Standards Limited 2013

ISBN 978 0 580 80037 5

ICS 23.040.01

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2012.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

31 October 2013	Implementation of CEN amendment A1:2013
-----------------	---

This is a preview of "BS EN 13480-4:2012+A...". [Click here to purchase the full version from the ANSI store.](#)

EUROPÄISCHE NORM

August 2013

ICS 23.040.01

English Version

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 European Standard was approved by CEN on 8 May 2012.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a 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 European Standard 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, 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.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN 13480-4:2012) 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 December 2012, and conflicting national standards shall be withdrawn at the latest by December 2012.

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 European Standard EN 13480 for metallic industrial piping consists of eight interdependent and not dissociable Parts which are:

- *Part 1: General;*
- *Part 2: Materials;*
- *Part 3: Design and calculation;*
- *Part 4: Fabrication and installation;*
- *Part 5: Inspection and testing;*
- *Part 6: Additional requirements for buried piping;*
- CEN/TR 13480-7, *Guidance on the use of conformity assessment procedures;*
- *Part 8: Additional requirements for aluminium and aluminium alloy piping.*

Although these Parts may be obtained separately, it should be recognised that the Parts are interdependent. As such the manufacture of metallic industrial piping requires the application of all the relevant Parts in order for the requirements of the Standard to be satisfactorily fulfilled.

This European Standard will be maintained by a Maintenance MHD working group whose scope of working is limited to corrections and interpretations related to EN 13480.

A1 The contact to submit queries can be found at <http://www.unm.fr> (en13480@unm.fr). **A1** A form for submitting questions can be downloaded from the link to the MHD website. After subject experts have agreed an answer, the answer will be communicated to the questioner. Corrected pages will be given specific issue number and issued by CEN according to CEN Rules. Interpretation sheets will be posted on the website of the MHD.

This is a preview of "BS EN 13480-4:2012+A...". [Click here to purchase the full version from the ANSI store.](#)

This document supersedes EN 13480-4:2002. This new edition incorporates the Amendments/the corrigenda which have been approved previously by CEN members, and the corrected pages up to Issue 17 without any further technical change. Annex Y provides details of significant technical changes between this European Standard and the previous edition.

Amendments to this new edition may be issued from time to time and then used immediately as alternatives to rules contained herein. It is intended to deliver a new Issue of EN 13480:2012 each year, consolidating these Amendments and including other identified corrections.

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, 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.

Foreword to amendment A1

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.

This is a preview of "BS EN 13480-4:2012+A...". Click here to purchase the full version from the ANSI store.

Contents

Page

Foreword.....	4
1 Scope	6
2 Normative references	6
3 Terms and definitions	7
4 Symbols	7
5 General.....	7
5.1 Requirements on the manufacturer	7
5.2 Requirements on fabricators and installers of piping and supports	8
5.3 Requirements for fabrication and installation	8
5.4 Classification of piping	8
5.5 Material grouping.....	8
5.6 Tolerances	9
6 Cutting and bevelling	9
6.1 General.....	9
A1 6.2 Identification of pressure parts A1	9
7 Bending and other forming.....	9
7.1 General.....	9
7.2 Heat treatment after cold forming	11
7.2.1 Flat products	11
7.2.2 Pipes	12
7.3 Heat treatment after hot forming.....	13
7.3.1 Material groups 1, 3, 4, 5 and 6.....	13
7.3.2 Material groups 8.1 and 8.2.....	14
7.3.3 Heat treatment after hot forming for material group 10.....	17
7.3.4 Heat treatment after hot forming for clad materials.....	17
7.4 Tolerances	17
7.4.1 Out-of-roundness of bends under internal pressure equal to, or greater than, the external pressure	17
7.4.2 Out-of-roundness of bends under external pressure and vacuum	18
7.4.3 Waves at bends.....	18
7.4.4 Start-up bulge of induction bends	19
7.5 Surface finish	19
8 Installation of piping.....	19
8.1 Fixing and alignment.....	19
8.2 Field run piping	20
8.3 Flanged or similar mechanical connections	21
8.3.1 Flange connections	21
8.3.2 Threaded connections	22
8.3.3 Couplings and compression fittings	22
8.4 Protection of ends of piping components	22
9 Welding	22
9.1 Welding personnel.....	22
9.2 Welding procedure specifications	22
A1 9.3 Welding procedures A1	23
9.3.1 Verification of suitability	23
9.3.2 Application	23
9.4 Filler metals and auxiliary materials	24
9.5 Climatic conditions.....	24
9.6 Cleaning before and after welding	24
9.7 Weld joint preparation	24
9.8 Edge protection.....	24
9.9 Assembly for welding.....	24

This is a preview of "BS EN 13480-4:2012+A...". Click here to purchase the full version from the ANSI store.

9.10	Earthing	25
A1	9.11 Performance of welding A1	25
9.11.1	Preheating	25
9.11.2	Striking marks.....	25
A1	9.11.3 External welds A1	25
9.11.4	Dissimilar joints.....	26
9.12	Backing rings	26
9.13	Attachments	26
9.13.1	General	26
9.13.2	Temporary attachments.....	26
9.13.3	Permanent attachments.....	26
9.14	Post-weld heat treatment.....	27
9.14.1	General	27
9.14.2	Equipment	31
9.14.3	Temperature measurements	31
9.14.4	Controlling thickness	31
9.14.5	Rate of heating.....	33
9.14.6	Local heat treatment	33
9.14.7	Insulation.....	34
9.15	Weld identification.....	34
10	Adjustment and repair	34
10.1	General	34
10.2	Adjustment.....	34
A1	10.2.1 Cold hammering A1	34
10.2.2	Adjustments by means of heat	34
10.2.3	Adjustment by welding	35
10.2.4	Adjustment by local forging.....	35
10.3	Weld repair	35
11	Marking and documentation	35
11.1	Marking of spools and components for installation.....	35
11.2	Marking of installed piping.....	35
11.2.1	General	35
A1	11.2.2 CE Marking of installed piping	36
11.2.3	Technical identification of installed piping A1	36
12	Additional requirements	37
12.1	Cleaning	37
12.2	Temporary preservation	37
12.3	External corrosion protection	37
12.4	Thermal and acoustic insulation	37
12.5	Connections for static electricity.....	38
Annex A	(informative) Contamination and surface quality of stainless steel	39
Annex B	(normative) Dimensional tolerances for fabricated spools	42
Annex Y	(informative) History of EN 13480-4	44
A1	Annex ZA Relationship between this European Standard and the Essential Requirements of EU Directive 97/23/EC A1	45
	Bibliography.....	46

1 Scope

This Part of this European Standard specifies the requirements for fabrication and installation of piping systems, including supports, designed in accordance with EN 13480-3:2012.

2 Normative references

A1) 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) **A1***