BS 4515-1:2009

BSI British Standards

Specification for welding of steel pipelines on land and offshore

Part 1: Carbon and carbon manganese steel pipelines

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ISBN 978 0 580 56892 3

ICS 23.040.10

The following BSI references relate to the work on this standard:
Committee reference WEE/21/7
Draft for comment 08/30149349 DC

Publication history
First published as BS 4515 October 1969
Second edition March 1984
Third edition September 1995
Fourth edition February 1996

First published as BS 4515-1 July 2000
Second edition November 2004
Third edition December 2008

Amendments issued since publication

Date	Text affected

Contents

List of tables

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 72, an inside back cover and a back cover.

Foreword

Publishing information

This part of BS 4515 is published by BSI and came into effect on 1 January 2009. It was prepared by Subcommittee WEE/21/7, *Field welding of pipelines*, under the authority of Technical Committee WEE/21, *Pipework welding*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This part of BS 4515 supersedes BS 4515-1:2004, which is withdrawn.

Information about this document

This is a full revision of the standard, and introduces the following principal changes:

- removal of references to BS EN 288-9 which has been withdrawn. Where appropriate, requirements from BS EN 288-9 have been incorporated in the standard;
- revision of Clause **8** on testing, qualification and approval of welding procedures;
- revision of Annex A on hyperbaric welding.

If welding in accordance with this British Standard is agreed with a Statutory Authority as a basis for obtaining approval to operate a pipeline, the employer will need to obtain the Authority's agreement to any waivers of requirements. Where this standard provides for the employer to define requirements, the Authority's agreement might be necessary. Topics commonly involved include selecting the definition of the pipeline's starting and termination points, electing to use hardness limits higher than those in Table 4 or Table 7, selecting the methods and frequency of non-destructive testing, electing to use Engineering Critical Assessment to derive acceptance criteria, permitting multiple attempts at repair, or permitting single run or root repairs. The employer should ensure that all relevant points have been agreed with the Statutory Authority before welding begins.

In reflecting current industry practice, this British Standard places duties on, and allocates powers of approval to, the employer.

Consequently, the term ''qualification'' has been retained to describe the series of actions which demonstrate that the technical requirements of this British Standard have been met during the process of welding procedure, and welder approval.

Assessed capability. Users of this British Standard are advised to consider the desirability of quality system assessment and registration against the appropriate standard in the BS EN ISO 9000 series by an accredited third-party certification body.

Use of this document

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

It is also assumed that the Contractor will nominate a Welding Co-ordinator in accordance with BS EN ISO 14731.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Requirements in this standard are drafted in accordance with *The BSI guide to standardization – Section 2: Rules for the structure, drafting and presentation of British Standards*, subclause **11.3.1**, which states, "Requirements should be expressed using wording such as: 'When tested as described in Annex A, the product shall ...'". This means that only those products that are capable of passing the specified test will be deemed to conform to this standard.

Contractual and legal considerations

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

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

1 Scope

This British Standard specifies requirements for the welding of carbon, carbon manganese and low alloy steel pipelines with specified minimum yield strengths not exceeding 555 N/mm^2 (grade L555 as specified in ISO 3183:2007 and BS EN 10208-2:1997) and designed in accordance with PD 8010-1 and PD 8010-2.

The standard applies to pipes of outside diameter 21.0 mm and larger having a thickness of 3.0 mm or greater and is applicable to transmission pipelines for gases, liquids or slurries, both on land and offshore.

In addition to the definitive requirements, this standard also requires the items detailed in Clause **4** to be documented. For compliance with this standard, both the definitive requirements and the documented items have to be satisfied.

Information on hyperbaric welding is given in Annex A and information on brazing and aluminothermic welding of anode bonding leads is given in Annex B.

Additional recommendations for the welding of corrosion resistant alloy clad and lined pipelines are given in Annex G.

2 Normative references

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.

BS 499-1:1991+A1:1996, *Welding terms and symbols – Part 1: Glossary for welding, brazing and thermal cutting*

BS 7910:2005+A1:2007, *Guide to methods for assessing the acceptability of flaws in metallic structures*

BS EN 875, *Destructive tests on welds in metallic materials – Impact tests – Test specimen location, notch orientation and examination*

BS EN 895, *Destructive tests on welds in metallic materials – Transverse tensile test*

BS EN 970, *Non-destructive examination of fusion welds – Visual examination*

BS EN 1321, *Destructive test on welds in metallic material – Macroscopic and microscopic examination of welds*

BS EN 1435:1997+A2:2004, *Non-destructive examination of welds – Radiographic examination of welded joints*

BS EN 1714:1998+A2:2004, *Non-destructive examination of welded joints – Ultrasonic examination of welded joints*

BS EN 10045-1, *Charpy impact test on metallic materials – Part 1: Test method (V- and U-notches)*

BS EN 10160, *Ultrasonic testing of steel flat product of thickness equal or greater than 6 mm (reflection method)*

BS EN 10208-2:1997, *Steel pipes for pipelines for combustible fluids – Technical delivery conditions – Part 2: Pipes of requirement class B*

BS EN 13622:2002, *Gas welding equipment – Terminology – Terms used for gas welding equipment*