

Australian/New Zealand Standard™

Pipelines—Gas and liquid petroleum

Part 2: Welding



AS/NZS 2885.2:2016

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Australian/New Zealand Standard™

Pipelines—Gas and liquid petroleum

Part 2: Welding

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-038, Petroleum Pipelines, to supersede AS 2885.2—2007.

This Standard incorporates Amendment No. 1 (December 2016). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The inclusion of roles and responsibilities in AS/NZS 2885.2:2016, was approved by the Standards Development Committee on 1 May 2015, as a one-off exemption to the directives of *Standardisation Guide 009: Preparation of Standards for Legislative Adoption*.

The objective of this Standard is to provide requirements for the welding of pipelines designed and constructed in accordance with AS 2885.1.

The objective of this revision is to include technical changes which became necessary as a result of experience in the use of the Standard in the intervening years since the previous edition, in particular in relation to the construction of large diameter pipelines in recent years:

- (a) Definitions have been updated to match AS 2885 definitions, where applicable.
- (b) The sections in the document have been re-arranged to match the sequence of steps in qualifying a welding procedure and the subsequent welding and testing.
- (c) The qualifications for welding engineers, welding supervisors, welding inspectors, welders and welder operators have been defined and put in a new Section 3, Qualifications.
- (d) The materials section has been updated to put limits on boron in welding consumables; and the welding consumable table has been modified to reflect currently available consumables.
- (e) The welding design requirements have been updated and added to Section 5 (Design of a welded joint).
- (f) Section 6 (Qualification of a welding procedure specification) has been updated to include other welding processes and their specific requirements.
- (g) Requirements for qualifying aluminothermic and pin brazing welding have been added to Section 6.
- (h) Section 7 (Assessment of the test weld to qualify a welding procedure) has been updated to include requirements for sub-size Charpy tests and additional mechanical testing for some types of procedure qualification including repairs.
- (i) Section 13 (Post-weld heat treatment and post-weld cooling) has been updated to make it a requirement for weld procedure qualification requirements (WPS) to test the weld and base metal in the heat treated condition.
- (j) The items to consider prior to in-service welding has been added to Section 16 (Welding onto an in-service pipeline).
- (k) Section 17 (Criteria of acceptance for girth weld discontinuities) has been updated to include more comprehensive requirements for using Tier 3; and in addition, the Tier 1 acceptance criterion for ultrasonic testing has been added. The use of Tier 2 has been extended to include material grade with yield strength 485 MPa subject to undertaking all-weld metal tensile tests.

- (l) Figure 18.1 (Maximum height of external weld reinforcement in butt welds that are to be radiographed in order to achieve effective radiography) has been updated to relax the maximum height of external reinforcement in butt welds for radiographic testing (RT).
- (m) Section 19 (Non-destructive testing) has been modified to require 100% NDT.
- (n) Section 22 (Ultrasonic testing) has been updated to refer to a new Appendix H on the requirements for qualifying and using AUT on pipelines.
- (o) The Appendices have been re-arranged and include three new Appendices that provide additional requirements and supporting information on weld procedure requirements associated with changes to the consumable classification system, additional requirements for automated/mechanized welding and AUT system requirements.

The above list of changes is not intended to be complete. Users of this Standard should not rely upon the list in order to ascertain whether there have been changes made to the previous version of the Standard.

Statements expressed in mandatory terms in notes to tables and figures are deemed to be requirements of this Standard.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendices to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

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Australian/New Zealand Standard
Pipelines—Gas and liquid petroleum

Part 2: Welding

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies the minimum requirements for safety, welding consumables, weld preparations, welding processes, qualifications of welding procedures and personnel, and fabrication and inspection requirements for the construction and maintenance welding of carbon and carbon-manganese steel pipelines down to 3.2 mm wall thickness designed and constructed in accordance with AS 2885.1. The welding of corrosion resistant alloy steel pipelines, or pipelines with nominal thicknesses less than 3.2 mm, is not precluded, but is not expressly covered by this Standard. The welding of such pipelines has to be given special consideration.

The following types of welds are covered by this Standard:

- (a) Mainline.
- (b) Tie-in.
- (c) Special class e.g. golden weld.
- (d) Repair welds (see Section 25).
- (e) Welds on or between components.
- (f) Temporary welds used in construction e.g. test headers.
- (g) Structural attachments.
- (h) Aluminothermic or pin brazing welds for electrical attachments.
- (i) In-service welds.
- (j) Welds made in accordance with other standards.
- (k) Pipeline assemblies.

The welding may be done by a manual metal arc, submerged arc, gas tungsten arc, gas metal arc, flux cored arc or by a combination of these using a manual, semi-automatic, or automatic welding technique or a combination of these techniques. The welds may be produced by position or roll welding, or by a combination of position and roll welding.

This Standard is applicable to the welding of joints in or on pipelines, and the welding of pipeline assemblies manufactured from pipes and fittings (see Figure 1.1 for examples).

NOTE: The welding of fittings may present special difficulties when using typical pipeline welding procedures (see Appendix C).