

Australian/New Zealand Standard™

**Pressure equipment—Welding and  
brazing qualification**



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NEW ZEALAND  
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This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee ME/1, Pressure Equipment. It was approved on behalf of the Council of Standards Australia on 13 February 1998 and on behalf of the Council of Standards New Zealand on 16 March 1998. It was published on 5 May 1998.

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## Australian/New Zealand Standard™

# Pressure equipment—Welding and brazing qualification

Originated in Australia as AS 3992—1992.  
Revised and redesignated AS/NZS 3992:1998.  
Reissued incorporating Amendment No. 1 (April 2000).

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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME/1, Pressure Equipment to supersede AS 3992—1992, *Boilers and pressure vessels—Welding and brazing qualification*.

*This Standard incorporates Amendment No. 1 (April 2000). 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.*

This Standard is the result of a consensus among representative on the Joint Committee to produce it as a Joint Australian/New Zealand Standard. Consensus means general agreement by all interested parties. Consensus includes an attempt to remove all objections and implies much more than the concept of a simple majority, but not necessarily unanimity. It is consistent with this meaning that a member may be included in the Committee list and yet not be in full agreement will all clauses of this Standard.

This Standard unifies and revises the requirements for the qualification of welding and brazing procedures, welding and brazing personnel, and production test plates and welds, specified in AS 1210, *Pressure vessels*, AS 1228, *Pressure equipment—Boilers* and AS 4041, *Pressure piping*.

The main changes in this revision are as follows:

- (a) Inclusion of Amendments 1 and 2 to AS 3992—1992.
- (b) Inclusion of requirements for hard facing metal overlay.
- (c) Publication as a Joint Australian/New Zealand Standard.
- (d) Clarification and revision of text to current accepted welding and brazing practice.
- (e) Addition of diagrams to define parent material thickness.
- (f) Recognition of the changing role of the Australian regulatory authorities.

The objective of this Standard is to reduce misunderstanding, costs and delays in qualifying welding; avoid unnecessary duplication of testing; promote greater confidence in reciprocal acceptance of approved procedures; and improve safety.

This Standard is based on AS 1210, with due allowance for practices or requirements of AS 1228 and AS 4041. Modifications have been made to utilize current appropriate requirements of ASME BPV Sec IX *ASME Boiler and Pressure Vessel Code*, Section IX: *Qualification standard for welding, brazing procedures, welders, brazers and welding and brazing operators*, ISO 9956, *Specification and approval of welding procedures for metallic materials*, BS EN 287, *Approval testing of welders for fusion welding*, Part 1: *Steels*, BS EN 288, *Specification and approval of welding proceedings for metallic materials*, Part 1: *General rules for fusion welding* and AS 2885, *Pipelines—Gas and liquid petroleum*, Part 2: *Welding*.

Requirements have been formulated with a view to maximum compatibility with recognized leading international Standards.

This Standard introduced to the Pressure Equipment Standards the concept of prequalified welding procedures, i.e. procedures which have been proved by extensive use by many organizations to meet the quality requirements of the Standards readily and consistently. Such procedures are limited to materials and thicknesses which are readily welded with proved processes and consumables by qualified welders.

It is not intended that the publication of this edition will invalidate welding tests that were accepted in respect of other Standards of AS/NZS 1200, *Pressure equipment*.

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 appendix 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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## STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

### Australian/New Zealand Standard

## Pressure equipment—Welding and brazing qualification

### SECTION 1 SCOPE AND GENERAL

**1.1 SCOPE** This Standard specifies requirements for the qualification of welding and brazing procedures, welders and brazers, and requirements for production weld testing other than non-destructive examination, when used in the construction, alteration and repair of boilers, pressure vessels, pressure piping and their components as specified in AS/NZS 1200, AS 1210, AS 1228 and AS 4041.

This Standard may apply to automotive LPG fuel vessels (covered by AS/NZS 3509), serially produced pressure vessels (covered by AS 2971) or welded gas cylinders (covered by AS 2030), when specified by these Standards. This Standard does not apply to pipelines in accordance with AS 2885 except where referenced.

The Standard provides specific details for the following:

- (a) Manual metal-arc welding, flux cored arc welding, gas metal-arc welding, gas tungsten-arc welding, submerged arc welding, plasma transferred arc welding, electroslag welding and oxy-acetylene welding.
- (b) Torch brazing, furnace brazing, induction brazing, resistance brazing and dip brazing.
- (c) The welding and brazing of carbon, carbon-manganese, and low and high alloy steels; and copper, aluminium, nickel, titanium and alloys of these materials.

The principles established in this Standard may be used in the qualification of processes, materials and applications not covered by the above (see also Clause 1.5 and Clause 1.6).

For flash butt welding qualification, refer to AS 4413.

Specific details for stud welding, electron-beam welding, plasma arc welding, electro-gas welding, and friction welding processes are not covered by this Standard.

Where this Standard makes reference to other Standards, these referenced Standards are not intended to be limiting or exclusive and other equivalent National Standards acceptable to the parties concerned may be substituted for the referenced Standards. AS/NZS 1200 provides a list of pressure equipment Standards used in Australia and New Zealand.

Compliance with ANSI/ASME Section IX, BS EN 287 or BS EN 288 is deemed as an acceptable alternative to the requirements of this Standard where agreed between the parties concerned. Where this Standard (AS/NZS 3992) requires tests not already completed under these overseas Standards then this can be covered by those additional tests only, rather than repeating the full set of tests, e.g. as part of a production test plate.

**1.2 APPLICATION** This Standard is intended for use by designers, fabricators, welders, brazers, inspection bodies, inspectors, testing authorities and all persons concerned with the welding and brazing of pressure equipment.

Users of this Standard are reminded that it has no legal authority in its own right, but may acquire legal standing in one or more of the following circumstances:

- (a) Adoption by a government or other authority having jurisdiction.

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