

Australian/New Zealand Standard™

**Pressure equipment—Welding and
brazing qualification**



AS/NZS 3992:2015

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee ME-001, Pressure Equipment. It was approved on behalf of the Council of Standards Australia on 24 July 2015 and on behalf of the Council of Standards New Zealand on 7 August 2015.

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Australian/New Zealand Standard™

Pressure equipment—Welding and brazing qualification

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-001, Pressure Equipment, to supersede AS/NZS 3992:1998, *Boilers and pressure vessels—Welding and brazing qualification*.

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. It also aims for greater alignment with ASME and ISO Standards, and to be consistent with the current work health and safety laws.

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*.

This Standard is a major revision of AS/NZS 3992:1998 based on AS 1210, with due allowance for latest practices or requirements of AS 1210, AS 1228 and AS 4041. Modifications have been made to utilize current appropriate requirements of ASME BPVC-IX, ISO 9606 (all parts), ISO 15607 and AS 2885.2.

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

The main changes in this revision are as follows:

- (a) Extension of pre-qualified welding procedures.
- (b) Relaxation of bend test requirement.
- (c) Addition of temper bead welding.
- (d) Significant changes to weld production tests to align more closely with world practice and cover requirements for AS 1210 and AS 1228.
- (e) Addition of thermocouple attachments qualification.
- (f) Addition of general guidance on qualification of welding non-metallic material to cater for their wider use.
- (g) Addition of special treatment of welds.
- (h) Updating of referenced documents and alignment with current editorial practices.

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

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

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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 manufacture, 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. See Figure 1 for a summary of the welding and brazing qualification process.

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

This Standard may apply to automotive LP Gas fuel vessels (covered by AS/NZS 3509), serially produced pressure vessels (covered by AS 2971) or welded gas cylinders (covered by AS 2030.1), where specified by these Standards. This Standard does not apply to pipelines in accordance with AS 2885.2, 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 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, zirconium and alloys of these materials.

Specific details for stud welding, electron-beam welding, explosion welding, laser beam welding, electro-gas welding, fusion welding of plastics and friction welding processes are not covered by this Standard. For these, see ASME BPVC-IX or equivalent.

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