AS 1228—2006
(Incorporating Amendment No. 1)

Australian Standard®

Pressure equipment—Boilers

This Australian Standard® was prepared by Committee ME-001, Pressure Equipment. It was approved on behalf of the Council of Standards Australia on 22 August 2006.
This Standard was published on 18 December 2006.

The following are represented on Committee ME-001:

- A.C.T. WorkCover
- Australasian Institute of Engineer Surveyors
- Australian Aluminium Council
- Australian Building Codes Board
- Australian Chamber of Commerce and Industry
- Australian Industry Group
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- Materials Australia
- National Association of Testing Authorities, Australia
- Pressure Equipment Association
- Victorian WorkCover Authority
- Welding Technology Institute of Australia
- WorkCover N.S.W.

This Standard was issued in draft form for comment as DR 05285.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Australian Standard®

Pressure equipment—Boilers

Originated as part of AS CB1—1932.
Previous edition AS 1228—1997.
Sixth edition 2006.
Reissued incorporating Amendment No. 1 (May 2008).

Published by Standards Australia, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 7907 7

PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee ME-001, Pressure Equipment to supersede AS 1228—1997. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian, rather than an Australian/New Zealand Standard.

This Standard incorporates Amendment No. 1 (May 2008). 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 objective of this revision is to bring the Standard into line with the developments taking place worldwide.

Table 2.1, Materials, includes reference to the EN material standards. The design strength values for these materials may be derived from the appropriate EN material properties, in conjunction with the principles as set out in Appendix D of this Standard. A number of British (BS) material standards has been withdrawn in favour of the EN standards, however, reference to the BS standards has been retained in Table 2.1 and Table 2.2.1 at this time, in recognition that material stocks may still be available.

The design strength values in Table 2.2.1 have generally been revised and updated to fall in line with the latest editions of the AS (e.g. AS 1548), BS and ASME material specifications and standards, which were available at the time of this Standard going to print. Time-dependent design strength values in the table have been italicized, to assist in determining the calculation pressure for components designed in this range.

The following new Appendices have been included in this edition of the Standard:

(a) Appendix H – Guidance for design of saddle supports for firetube boilers.

This has been included to address the need for a simple design method for this equipment.

(b) Appendix I – Blowdown tank and vessel design conditions.

This has been included to recommend design conditions for these vessels. Although Blowdown Tanks do not fall under the scope of AS 1228, they do form part of the boiler system as required by AS 2593 and AS 2892. These tanks are classed as pressure vessels, and as such should be designed in accordance with AS 1210.

(c) Appendix J – Competencies of bodies and personnel for boiler construction and use.

This has been included to provide guidance in understanding the competency requirements, and assessing the competency of various bodies or personnel to perform designated tasks.

(d) Appendix K – Locomotive boilers and traction engine boilers.

This has been included in response to various enquiries regarding the use of previous Standards, to provide guidance in the restoration, design and construction of boilers associated with this equipment.

Other technical changes include the method for the thickness calculations of thick cylinders, unpierced flat ends, and opening reinforcement in Appendix F.

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:

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

(ii) Adoption by a purchaser as the required standard of construction when placing a contract.

(iii) Adoption where a manufacturer states that a boiler is in accordance with 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.

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

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S E C T I O N 1 S C O P E A N D G E N E R A L

1.1 SCOPE

This Standard sets out requirements for materials, design, construction, inspection and testing of boilers as defined in AS/NZS 1200.

NOTE: The Scope of this Standard covers requirements for cast iron in addition to welded boilers inclusive of vapour-generating and hot fluid units subject to internal vapour or liquid pressure. Other forms of construction should be by agreement between the parties concerned.

This Standard specifically applies to the design and construction of boilers including superheaters, reheaters and economizers.

It also applies to all pressure parts containing fluid up to and including the valves separating the pressure parts from—

(a) steam piping to and from other equipment;

(b) water piping to and from other equipment;

(c) drain piping;

(d) the surrounding atmosphere, except that for safety valves, their vent piping to the atmosphere is also covered; and

(e) for equipment such as reheaters which may not incorporate valves at their supply and return connection points, the Standard applies to the equipment included between the inlet to the inlet header and the outlet from the outlet header of such equipment.

This Standard also provides guidance on locomotive and other heritage boilers, and on the design of blowdown vessels.

1.2 REFERENCED DOCUMENTS

A list with titles of the documents referred to in this Standard is given in Appendix A.

1.3 DEFINITIONS

For the purposes of this Standard the definitions given in AS 4942 and those given in this Clause apply. For calculations, AS ISO 1000, the international system of units, has been applied.

1.3.1 Actual thickness

The actual thickness of the material used in the pressure part, which may be taken as the nominal thickness minus any applicable manufacturing tolerances.

1.3.2 Calculation pressure

Except as specified in Item (b) below, the calculation pressure for all pressure parts is as given in Item (a):

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