Australian Standard™

Serially produced pressure vessels

Standards Australia

This Australian Standard was prepared by Committee ME-001, Pressure Equipment. It was approved on behalf of the Council of Standards Australia on 15 February 2002 and published on 11 March 2002.

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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 2971—1987, *Serially produced pressure vessels.* After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

This Standard covers a wide range of small, usually low-hazard, pressure vessels whose design and construction are based on satisfactory burst and other performance tests of a significant number of representative samples. The main types of vessels falling into this group are small, serially produced refrigeration type vessels, air brake reservoirs, drink dispensers, and consumer items such as pressurized fire extinguisher bodies not covered by other Australian Standards, and beer kegs.

Almost invariably these types of vessels do not comply with AS 1210, *Pressure vessels,* which has been prepared primarily for one-off vessels where the design is based on proven formulas, and construction is based on proven materials, fabrication procedures, personnel, and tests which are predominantly non-destructive. AS 1210 does permit burst testing as a basis for acceptance of design of parts or vessels, but only when they cannot be calculated. Thus, there is a need to cover this alternative method of producing safe vessels where it is frequently equally sound and more economic to use burst and other performance tests to validate design, materials, and fabrication, all simultaneously.

The main changes in this revision include the following:

(a) An increase in limits on contained energy.

(b) The introduction of a two-tiered concept for vessels which distinguishes between vessels with a simple shape and design and those with a more complicated shape, higher design strength and incapable of simple analysis.

(c) A new appendix introducing the concept of an Integrated Pressure Equipment Test Station (IPETS).

(d) Alignment with Standardization Guide No. 17.1, *Drafting of Standards that may be referenced under occupational health and safety legislation*.

From 1995, there has been, and will continue to be, a phasing out of State and Territory regulatory authorities approving pressure vessel design and testing and a phasing in of competent bodies or persons to undertake this task. This Standard introduces a new concept of a pressure equipment test station, integral to the manufacturing process which will carry out these tasks.

The economy and proven safety record of this alternative approach, which essentially results in the specification of ‘performance’ type requirements was recognized during the revision of this Standard as was the need for consistency with the principles of AS 1210.

This Standard has been prepared to —

(i) avoid possible confusion between the various classes of AS 1210 vessels and the four classes of serially produced vessels; and

(ii) permit coverage of non-metallic vessels or pressure parts, e.g. plastic covers on cream dispensers or rubber protectors for thin bases of some vessels.

The adoption of various classes approximates to the principle established in AS 1210; the classification being based primarily on the minimum safety factor as in AS 1210. In this way, a variety of vessels can be covered in a systematic manner in one document. The basis of these classes is discussed in the Commentary (which follows the appendices to this Standard).

While the Standard primarily considers mass-produced or serially produced vessels, provision has been made for the production of vessels in very small numbers to meet the special needs of the refrigeration industry and the limited production runs in Australia.

Limits have been placed on volume, pressure and contained energy for these vessels to ensure reasonable harmonization with AS 1210 and to cover virtually all vessels currently produced to satisfactory standards by this approach.

It is envisaged that experience gained in the use of the Standard will highlight areas that need to be strengthened. The Standard will be regularly reviewed and revised as necessary to ensure it remains a useful document to all parties concerned and provides safe, reliable pressure plant.

Statements expressed in mandatory terms in notes to tables 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.