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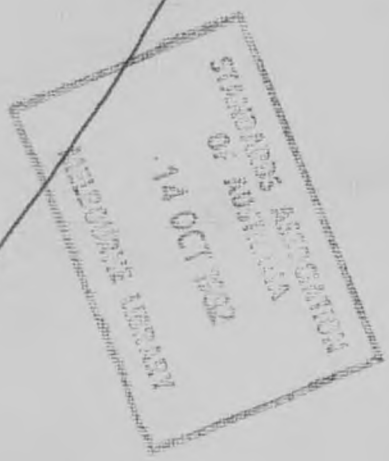
SAA UNFIRED PRESSURE VESSELS CODE

1989



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This Australian standard was prepared by Committee ME/1, Boilers and Unfired Pressure Vessels. It was approved on behalf of the Council of the Standards Association of Australia on 20 April 1982 and published on 18 October 1982.

The following interests were represented on the committee responsible for the preparation of this standard:

Aluminium Development Council

Australasian Institute of Metals

Australian Chamber of Commerce

Australian Compressed Air Institute

Australian Institute of Energy

Australian Institute of Non-destructive Testing

Australian Institute of Petroleum Limited

Australian Liquefied Petroleum Gas Association

Australian Society of Sugar Cane Technologists

Australian Valve Manufacturers Association

Australian Welding Institute

Australian Welding Research Association

Boiler and Pressure Vessel Manufacturers Association of Australia

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Department of the Capital Territory

Department of Defence

Department of Industrial Affairs and Employment, S.A.

Department of Industrial Relations, N.S.W.

Department of Labour and Industry, Tas.

Department of Labour and Industry, Vic.

Department of Labour and Industry, W.A.

Department of Employment and Labour Relations, Qld

Department of Mines and Energy, N.T.

Electricity Supply Association of Australia

Institution of Engineers, Australia

Metal Trades Industry Association of Australia

Railways of Australia Committee

Society of Mechanical Engineers of Australia

This standard was issued in draft form for comment as DR 80237 and DR 80266.

AUSTRALIAN STANDARD

UNFIRED PRESSURE VESSELS

known as the

SAA UNFIRED PRESSURE VESSELS CODE

AS 1210—1982

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PREFACE

This edition of this standard was prepared by the Association's Committee on Boilers and Unfired Pressure Vessels to supersede AS 1210—1977. The standard was first published in 1972 as part of the program of revision and metrication of the SAA Boiler Code which at that time was designated AS CB1. This standard forms part of the revised SAA Boiler Code which is referenced as AS 1200 and covers requirements for water tube, fire tube, shell and miscellaneous boilers, unfired pressure vessels, piping, welder certification, and related matters. The SAA Boiler Code is referred to in statutory regulations within Australia.

Revisions and additions contained in the published amendments to the 1977 edition of this standard, together with subsequent revisions and additions approved by the committee, have been included in this edition.

The changes introduced include extensive editorial modifications to align with current SAA practice and a number of important technical changes, including the following:

(a) The use of new steels to AS 1548—1981.

(b) The use of structural and similar quality steels (see Clauses 2.3.3 and 2.3.4).

(c) Reduction in the number of weld test plates (see Clause 5.2.2).

(d) Complete revision of the requirements on non-destructive examination.

A substantial part of the requirements for the design of flat tubeplates have been temporarily withdrawn for copyright reasons (see Clause 3.17). Completely revised requirements are being prepared by the committee, which will take account of latest world practice. In the interim, it is not intended that the withdrawal of any hitherto existing requirements for tubeplates should vary the accepted practice for the design of flat tubeplates that has been followed and amended from time-to-time since AS 1210 was first published in 1972.

The committee has decided to delete all reference to riveted construction throughout the standard as this type of construction is rarely used at the present time. For guidance, reference may be made to the now superseded AS CB1—Part 1, Boilers Other than Water Tube Boilers and Locomotive Boilers for Railway Purposes, reference copies of which are available at the SAA Libraries.

The clauses, tables and figures that have been subject to technical change in this edition, i.e. subsequent to the issue of Amendment No 2 to AS 1210—1977, are listed in Annex 2.

The standard follows in principle other codes forming part of the SAA Boiler Code in giving guidance to manufacturers, statutory authorities and users in the form of minimum engineering requirements which are necessary for the safe design, construction and installation of unfired pressure vessels. In special instances additional requirements may be necessary for adequate performance or safety.

The requirements in this standard have been formulated to afford reasonably certain protection of life and property and to indicate where a margin for deterioration in service may be needed so as to give a reasonably long, safe period of usefulness. The standard takes into consideration advancements in design and materials and the evidence of experience.

The standard contains basic data necessary for design, including material specification, design parameters, requirements for fabrication, testing and inspection. These requirements are specified in terms of principles to the fullest practicable extent, supplemented where necessary by further detail to obtain uniform interpretation of principle and guidance on best methods. In other areas the standard indicates where caution is necessary but a direct prohibition would be unwise at the present level of knowledge.

The standard incorporates the class system of vessels based on different qualities of classes of construction, and has attempted to give basic principles to indicate where such classes should be used. Three main classes are adopted using the present level of stress (safety factor of 4 approximately). An additional class of vessel, i.e. Class 1H, may be produced in accordance with AS 1210, Supplement No 1, which permits the use of design stresses higher than those contained herein.

The specific design requirements of the standard are based on a simplified engineering approach and are intended to be the standard methods of design. However, in special instances, particularly where guidance is not provided in this standard, other methods may be used provided the validity of the design is satisfactorily established.

No rules of construction can be written in sufficient detail to ensure good workmanship in construction. Each vessel manufacturer is responsible for taking every necessary step to make sure that the quality of workmanship and construction is such as will ensure compliance with good engineering practice.

The user will also need to consider many factors beyond those covered by this standard in the final specification of a vessel and is cautioned that the standard is not a complete design handbook and that he should be aware of the need for competent engineering judgment.

It should be noted that the standard has been written primarily to suit conditions in Australia where there is a strong relationship between the manufacturer (and designer) and the Inspecting Authority. However it is not intended to weaken the important link between these parties and the purchaser, who will be concerned with many other aspects beyond the scope of this standard and who may require additional or alternative requirements; but such requirements must not be less than those already specified in the standard and must meet the requirements of the Inspecting Authority in the State where the vessel is to be operated. Statements of above requirements should form part of the contract documents between the purchaser and manufacturer.

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.

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

New para. see Amdt 1.

(c) Adoption where a manufacturer states that a vessel is in accordance with this standard.

Acknowledgement is gratefully made to the American Society of Mechanical Engineers for permission to reproduce certain extracts from the ASME Boiler and Pressure Vessel Code. In addition, acknowledgement is made of the considerable assistance provided by British and other national standards.

CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
UNFIRED PRESSURE VESSELS

FOREWORD

The application of the several standards that form the SAA Boiler Code may give rise to a constant need for consideration of unusual and other designs which do not comply in all respects with the requirements of the relevant standard or which are not adequately covered in any standard.

Where it is desired to use materials or methods which do not comply with the requirements of or are not adequately covered by the relevant standard, designs incorporating such departures should be submitted to the relevant Inspecting Authority for approval. Where necessary, SAA Committee ME/1, Boilers and Unfired Pressure Vessels, may be asked to serve in an advisory capacity in the determination of the suitability of such designs. (See also Clause 1.5.)

It is emphasized that this activity of the committee is limited to technical aspects of the Code and that the committee has no power or jurisdiction to adjudicate upon contractual matters or regulatory matters or the duties of any persons concerned with the subject of the submission.

A method developed by Committee ME/1 for communicating the findings of the committee is by the use of Rulings. A Ruling is issued in reply to a specific enquiry from a specific organization and applies only to the set of circumstances referenced in the Ruling. Copies of Rulings are sent to the relevant Inspecting Authorities and may be used by the authorities as the basis for approval of the particular application or for approval of similar submission from other organizations. Current Rulings are available under the reference SAA Doc. 1200R.

Where the committee judges the subject to be suitable, a Ruling may be incorporated in an amendment to the relevant standard, whereupon the Ruling is withdrawn. If the timing is appropriate, the finding of the committee may be issued directly as an Amendment.

NOTES:

1. In the past some Rulings have also been designated 'Committee Opinions' but this term is no longer used.
2. From time to time, the committee has also issued Interpretations which were considered to be equivalent to an amendment. Existing Interpretations will either be withdrawn and reissued as Rulings or incorporated in the relevant standard.