AS 1664—1979

Australian Standard®

SAA Aluminium Structures Code

The following scientific, industrial and governmental organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Aluminium Development Council

Department of Labour and Industry, N.S.W.

Department of Public Works, N.S.W.

National Association of Australian State Roads Authorities

Railways of Australia Committee

This standard, prepared by Committee BD/50, Aluminium Structures, was approved on behalf of the Council of the Standards Association of Australia on 9 March 1979, and was published on 1 June 1979.

The rules are intended to include the technical provisions necessary for design and fabrication of aluminium alloy load-carrying members, but do not purport to comprise all the necessary provisions of a contract.

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RULES FOR THE USE OF ALUMINIUM IN STRUCTURES

known as the SAA ALUMINIUM STRUCTURES CODE

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PREFACE

This standard, which is a revision of AS 1664—1975 was prepared by the Association's Committee on Aluminium Structures. It is based on the 'Aluminium Construction Manual—Section 1: Specifications for Aluminium Structures' (2nd Ed. 1971) published by the Aluminium Association, New York and British Standard CP 118—1969, The Structural Use of Aluminium. The committee gratefully acknowledges the assistance received from these sources.

In the revision the principal changes have related to data on the range of aluminium alloys which has been generally extended. The standard does not now provide for alloy Alclad 3004 in H16 temper.

The standard applies to the design and fabrication of aluminium structures and is presented in a similar format to AS 1250, SAA Steel Structures Code; however it is emphasized that steel designs should not be directly copied as many types of welded connections used in steel fabrication are entirely unsuitable for aluminium structures. For welded aluminium structures particular attention shall be given to the design of welded connections and the possibility of failure of members by local buckling.

The committee has recommended that the international designation system for wrought aluminium and aluminium alloys used by the Aluminium Development Council (ADC) be adopted for all Australian standards. This designation system is used throughout this standard and a detailed explanation of the system can be found in the ADC publication 'Aluminium Standards and Data—Third Edition'.

The design sections of the standard (Section 5, Maximum Permissible Stresses, and Section 6, Combined Stresses) consist of a compilation of methods to determine the maximum permissible stresses for different types and combinations of stress. The maximum permissible stresses for alloys commonly used in structures are given in Tables A1 to A21 in Appendix A.

Aluminium alloys attain their strengths by heat treatment or strain hardening, and welding causes local overageing or annealing in heat-treatable and non-heat-treatable alloys respectively, producing a zone of lower strength along both sides of the weld bead. To account for this decrease in strength, permissible stresses for welded members are determined as outlined in Rule 5.3.3.

Attention is drawn to the following Australian, American and British standards and other documents which may be required for use in connection with this standard:

AS 1110	ISO Metric Hexagon Precision Bolts and Screws
AS 1111	ISO Metric Hexagon Commercial Bolts and Screws
AS 1112	ISO Metric Hexagon Nuts, Including Thin Nuts, Slotted Nuts and Castle Nuts
AS 1170	SAA Loading Code Part 1—Dead and Live Loads Part 2—Wind Forces
AS 1237	Flat Metal Washers for General Engineering Purposes (Metric Series)
AS 1250	SAA Steel Structures Code
AS 1275	Metric Screw Threads for Fasteners (Based on ISO Recommendations)
AS 1418	SAA Crane Code
AS 1449	Stainless and Heat-resisting Steel Plate, Sheet and Strip (Coils and Cut Lengths)
AS 1480	SAA Concrete Structures Code
AS 1511	SAA High-strength Structural Bolting Code
AS 1538	SAA Cold-formed Steel Structures Code
AS 1562	Code of Practice for the Design and Installation of Self-supporting Metal Roofing Without Transverse Laps
AS 1588	Filler Rods for Welding
AS 1627	Code of Practice for Preparation and Pretreatment of Metal Surfaces Prior to Protective Coating Part 1—Degreasing of Metal Surfaces Using Solvent or Alkaline Solutions
AS 1665	SAA Aluminium Welding Code
AS 1734	Wrought Aluminium and Aluminium Alloy Flat Sheet, Coiled Sheet and Plate for General Engineering Purposes
AS 1735	SAA Lift Code
AS 1866	Wrought Aluminium and Aluminium Alloy Extruded Rod, Bar, Solid Tubes and Hollow Shapes for General Engineering Purposes
AS 1867	Wrought Aluminium and Aluminium Alloy Drawn Tubes for General Engineering Purposes
AS K108	Metal Priming Paint, Anti-corrosive
ASTM D 962	Specification for Aluminium Pigments, Powder and Paste, for Paints
U.S.A.	Federal Government Specification TT-V-81F: Varnish, Mixing for Aluminium Paints
BS 641	Dimensions of Small Rivets for General Purposes
BS 1974	Large Aluminium Alloy Rivets: 1/2 in to 1 in Nominal Diameters
BS 2708	Unified Black Square and Hexagon Bolts, Screws and Nuts (UNC and UNF Threads)—Normal Series
BS CP118	The Structural Use of Aluminium
Aluminium Technology*	Book 2—Forming Aluminium Book 3—Machining Aluminium Book 4—Joining Aluminium

* Published by Aluminium Development Council.

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