

Australian/New Zealand Standard[®]

Aluminium structures

Part 1: Limit state design

AS/NZS 1664.1:1997

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee BD/50, Aluminium Structures. It was approved on behalf of the Council of Standards Australia on 27 June 1997 and on behalf of the Council of Standards New Zealand on 11 July 1997. It was published on 5 September 1997.

The following interests are represented on Committee BD/50:

Aluminium Development Council
Association of Consulting Engineers, Australia
Australian Building Codes Board
Institution of Professional Engineers New Zealand
University of Sydney

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Originated in Australia as part of AS 1664—1975.
Previous Australian edition AS 1664—1979.
Jointly revised and designated AS/NZS 1664.1:1997.

Incorporating:
Amdt 1—1999

PUBLISHED JOINTLY BY:

STANDARDS AUSTRALIA
1 The Crescent,
Homebush NSW 2140 Australia

STANDARDS NEW ZEALAND
Level 10, Radio New Zealand House,
155 The Terrace,
Wellington 6001 New Zealand

PREFACE

This Joint Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee BD/50, Aluminium Structures, to supersede, in part, AS 1664—1979, *Rules for the use of aluminium in structures (known as the SAA Aluminium Structures Code)*.

This Standard is technically equivalent to *The Aluminium Design Manual: Specifications and guidelines for aluminium structures, Part 1B: Specification for Aluminium Structures Load and Resistance Factor Design of Buildings and similar type structures* issued by the U.S. Aluminium Association Inc.

The objective of this Standard is to provide designers of aluminium building type structural load-carrying members and elements with limit state design criteria for use in design applications.

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

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CONTENTS

	<i>Page</i>
SECTION 1 GENERAL	
1.1 SCOPE	5
1.2 MATERIALS	5
1.3 FACTORED LIMIT STATE STRESSES	5
1.4 REFERENCED DOCUMENTS	5
SECTION 2 DESIGN PROCEDURE	
2.1 PROPERTIES OF SECTIONS	7
2.2 PROCEDURE	7
2.3 LOADING	7
2.4 LOAD COMBINATIONS AND LOAD FACTORS	7
2.5 EARTHQUAKE	7
SECTION 3 GENERAL DESIGN RULES	
3.1 INTRODUCTION	8
3.2 NOMENCLATURE	8
3.3 TABLES RELATING TO MECHANICAL PROPERTIES AND BUCKLING CONSTANTS	14
3.4 FACTORED LIMIT STATE STRESSES	20
SECTION 4 SPECIAL DESIGN RULES	
4.1 COMBINED AXIAL LOAD AND BENDING	46
4.2 TORSION AND SHEAR IN TUBES	47
4.3 TORSION AND BENDING IN OPEN SHAPES	47
4.4 COMBINED SHEAR, COMPRESSION AND BENDING	47
4.5 HORIZONTAL STIFFENERS FOR WEBS	48
4.6 VERTICAL STIFFENERS FOR SHEAR WEBS	48
4.7 EFFECTS OF LOCAL BUCKLING ON MEMBER PERFORMANCE	49
4.8 FATIGUE	53
4.9 COMPRESSION IN SINGLE WEB BEAMS AND BEAMS HAVING SECTIONS CONTAINING TUBULAR PORTIONS	58
4.10 COMPRESSION IN ELASTICALLY SUPPORTED FLANGES	63
SECTION 5 MECHANICAL CONNECTIONS	
5.1 BOLTED AND RIVETED CONNECTIONS	64
5.2 METAL STITCHING STAPLES	68
5.3 SELF TAPPING SCREW CONNECTIONS	68
SECTION 6 FABRICATION	
6.1 LAYING OUT	71
6.2 CUTTING	71
6.3 HEATING	71
6.4 PUNCHING, DRILLING AND REAMING	71
6.5 RIVETING	72
6.6 PAINTING	72
6.7 CLEANING AND TREATMENT OF METAL SURFACES	73

SECTION 7 WELDED CONSTRUCTION

7.1	LIMIT STATE STRESSES FOR WELDED MEMBERS	74
7.2	FILLER WIRE	74
7.3	MEMBERS WITH LONGITUDINAL WELDS	74
7.4	MEMBERS WITH TRANSVERSE WELDS	75
7.5	WELDING FABRICATION	75

SECTION 8 TESTING

8.1	SCOPE AND GENERAL	76
8.2	DEFINITIONS	76
8.3	TEST REQUIREMENTS	76
8.4	TEST FOR DETERMINING MATERIAL PROPERTIES	76
8.5	PROOF TESTING	76
8.6	PROTOTYPE TESTING	77
8.7	REPORTING OF TEST RESULTS	78

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Australian/New Zealand Standard**Aluminium structures****Part 1: Limit state design**

SECTION 1 GENERAL

1.1 SCOPE This Standard specifies requirements for the design of aluminium building type structural load-carrying members and elements. The limit state design (LSD) criteria are intended as an alternative to the allowable stress design (ASD) criteria (see AS 1664.2). One design specification (LSD or ASD) applies throughout the design of a single structure.

1.2 MATERIALS The principal materials to which these specifications apply are aluminium alloys that comply with AS 1734, AS 1865, AS 1866, AS 1867 and AS 2848.1. Those structural members frequently used are listed in Table 3.3(A).

1.3 FACTORED LIMIT STATE STRESSES The factored limit state stresses ϕF_L shall be larger than or equal to the required stresses computed for the factored nominal loads acting on the structure. The factored limit state stresses are given in Sections 3 to 7, while the method of analysis, load factors and load combinations are defined in Section 2. The factor ϕ is the 'capacity factor' which accounts for the unavoidable uncertainties in the determination of the limit stresses. The capacity factor may be multiplied by a factor of 1.1 for secondary members (such as purlins, girts, mullions, wall panels and roof decks) subjected to short duration loads such as wind or earthquake, except that the ϕ -factors shall not exceed 1.0.

Limit state stresses referred to herein shall be those for the strength limit state, unless noted otherwise.

1.4 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

- 1170 Minimum design loads on structures (known as the SAA Loading Code)
- 1170.1 Part 1: Dead and live loads and load combinations
- 1170.2 Part 2: Wind loads
- 1170.3 Part 3: Snow loads
- 1170.4 Part 4: Earthquake loads

1391 Methods for tensile testing of metals

AS/NZS

- 1664 Aluminium structures
- 1664.1 Supplement 1: Limit state design—Commentary
- 1664.2 Part 2: Allowable stress design

AS

- 1665 Welding of aluminium structures
- 1734 Aluminium and aluminium alloys—Flat sheet, coiled sheet and plate (adopted in New Zealand as NZS/AS 1734)



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