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DESIGN AND INSTALLATION OF METAL ROOFING

STANDARDS ASSOCIATION OF AUSTRALIA
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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

Australian Institute of Building

Australian Zinc Development Association

Confederation of Australian Industry

Copper and Brass Information Centre

CSIRO, Division of Building Research

Department of Defence

Department of Housing and Construction

Experimental Building Station

Federated Master Plumbers of Australia

Institution of Engineers, Australia

Local Government Departments

Master Builders Federation of Australia Incorporated

Metal Trades Industry Association

Royal Australian Institute of Architects

State Departments of Public Works

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AS 1562 Design and installation of sheet roof and wall cladding
AS 1562.1—1992. Metal
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Specifies requirements for the design and installation of all classes of self-supporting sheet metal roof and wall cladding for both cyclone and non-cyclone regions.

Committee BD/14: Supersedes AS 1562—19[illegible] (in part): Draft for Comment DR 91138: Publication date 1992-07-20: ISO 726[illegible]562 4.

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DESIGN AND INSTALLATION OF METAL ROOFING

AS 1562—1980

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PREFACE

The first edition of this standard was prepared in 1973 by the Association's Committee on Roofing Codes as a metric revision of AS CA42—1968. This second edition includes reference to new standards on structural design and on materials, which were not available at the time AS 1562 was published. A change brought about by the updating of cross-referenced standards is the inclusion of aluminium/zinc-coated steel sheet, which has largely replaced hot dipped zinc-coated steel sheet used in corrugated roofing in Australia. In addition, sections dealing with gutters and downpipes are now cross-referred to AS 2179 and AS 2180.

The committee gave a great deal of thought to roof loading, and considerable experiment was carried out to confirm the stated requirements, which are based on two acceptance criteria: firstly, an ultimate-load requirement that the roof shall neither blow off in the service condition for which the structure is designed nor cease to support any person who steps, inadvertently or otherwise, or falls, on any part of the sheeting; and secondly, a working-load requirement that legitimate resort to the roof for the purposes of installation or maintenance shall not cause damage.

During the preparation of the first edition, the committee was aware of the necessity to reconsider, when the SAA Loading Code (AS CA34, Part II—Wind Forces) was revised, the loading factor of 2.5 in Clause 5.3.2 which had been chosen to match the wind load provisions of SAA Int. 350. The new load factor of 1.8 was chosen so that the probability of failure of a roof under wind pressure would be reduced to what was considered to be an acceptable level. This recommendation was made on the basis that AS 1170, Part 2 provided a rational basis for design for wind pressures. The use of the new factor gives approximately equivalent results to those obtained previously by the use of the old factor in conjunction with the superseded standard (SAA Int. 350). Selection of the new factor was based on observations of experience with roofing failures under high wind forces which can often be attributed to failure of the substructure and not to failure of the sheeting or its fastenings where these had been designed and installed in accordance with the provisions of the former standard (AS CA42).

Because the ultimate-load criterion is intended to provide a margin against collapse (involving in many cases the actual tearing of sheeting or fracture of fastenings), the implicit margin of safety is set somewhat higher than those commonly based on considerations of mere yielding. In the light of this the committee decided that, in order to ensure that the testing of the sheeting and fixings would not be complicated by yielding in the supporting structure, the supporting structure of the test specimen may be made stiffer than that of the prototype.

As deflection of the supporting structure plays an influential part in the failure of certain types of fastening system, the degree of stiffening permitted under test conditions is limited. Even so, it is important to point out to users of this standard that such stiffening imposes a limit on the applicability of the test methods, particularly in cases in which the bending and/or rotation of purlins would play a decisive role in the loss of a roof due to wind forces.

This standard requires reference to the following Australian standards:

AS 1170	SAA Loading Code Part 2—Wind Forces
AS 1214	Hot-dipped Galvanized Coatings on Threaded Fasteners (ISO Metric Coarse Thread Series)
AS 1250	SAA Steel Structures Code
AS 1397	Hot-dipped Zinc-coated or Aluminium/Zinc-coated Steel Sheet in Coil and Cut Lengths
AS 1449	Stainless and Heat-resisting Steel Plate, Sheet and Strip (Coils and Cut Lengths)
AS 1475	SAA Brickwork Code
AS 1480	SAA Concrete Structures Code
AS 1481	SAA Prestressed Concrete Code
AS 1538	SAA Cold-formed Steel Structures Code
AS 1566	Copper and Copper Alloy Plate, Rolled Bar, Sheet, Strip and Foil for General Engineering Purposes
AS 1567	Wrought Copper and Copper Alloy Rods, Bars and Sections for General Engineering Purposes
AS 1573	Copper and Copper Alloy Wire for General Engineering Purposes
AS 1639	Code of Practice for Design and Installation of Corrugated Asbestos Cement Roofing
AS 1657	SAA Code for Fixed Platforms, Walkways, Stairways and Ladders
AS 1664	SAA Aluminium Structures Code
AS 1684	SAA Timber Framing Code
AS 1720	SAA Timber Engineering Code
AS 1734	Wrought Aluminium and Aluminium Alloy Flat Sheet, Coiled Sheet and Plate for General Engineering Purposes
AS 1789	Electroplated Coatings of Zinc on Iron and Steel
AS 2179	Metal Rainwater Goods
AS 2312	Guide to the Protection of Iron and Steel Against Exterior Atmospheric Corrosion
AS K132	Electroplated Coatings on Threaded Components

CONTENTS

SECTION 1. SCOPE AND DEFINITIONS — *Page*

1.1 Scope.... 4
1.2 Definitions.... 4

SECTION 2. MATERIALS

2.1 Sheets, Rolled Sections and Extrusions Used for the Manufacture of Roofing Sheets and Accessories 5
2.2 Sheet Fastenings 5

SECTION 3. DESIGN

3.1 General 6
3.2 Loadings 6
3.3 Supporting Structure 6
3.4 Slope of Roof
3.5 Purlins and Battens 6
3.6 Fixing of Roof Members 6
3.7 Roof Drainage 7
3.8 Protection Against Corrosion 7
3.9 Walking and Standing on Roofs 7
3.10 Roof Lights 7
3.11 Bird-proofing 7

SECTION 4. INSTALLATION

4.1 Safety Precautions 8
4.2 Transport, Handling and Storage 8
4.3 Supports at Hips and Valleys 8
4.4 Laying the Sheeting 8
4.5 Fastenings at Eaves, Ridges, Verges, and Corners 8
4.6 Drilling, Piercing and Cutting for Sheet Fastenings 8
4.7 Fixing the Sheeting 8
4.8 Projections Through Roofs 8

SECTION 5. TESTING

5.1 General 9
5.2 Resistance to Concentrated Forces 9
5.3 Resistance to Wind Forces 9

APPENDICES

A Determination of Resistance of Metal Roofing to Concentrated Forces and Wind Forces by Test 10
B Roof Ventilation 12

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
DESIGN AND INSTALLATION OF METAL ROOFING

SECTION 1. SCOPE AND DEFINITIONS

1.1 SCOPE. This standard relates to the design and installation of self-supporting metal roofing having no transverse joints.

1.2 DEFINITIONS. For the purpose of this standard, the following definitions apply:

Preformed sheet—a metal roofing sheet with longitudinal ribs which increase its resistance to vertical loads. It may be of corrugated type or of pan type, in which the distance between the ribs is greater than the width of the ribs.

Pan—the flat portion between the ribs in a pan type preformed sheet.

Accessories—gutters for rainwater, ridge capping, valley gutters, flashings, downpipes, gutter brackets and the like.

Rib—a longitudinal upstand produced by bending, folding or crimping.

De-indexing—the releasing of the interlock between preformed sheets.

Unclipping—the releasing of preformed sheets from their fastenings.

Creep—the phenomenon of increasing deformation under constant load.

Oil canning—minor distortion in the form of waviness or out-of-flat in a preformed sheet, normally caused by local buckling of the sheet metal.

Span—the distance between the centrelines of sheet fastenings to adjacent purlins or battens measured normal to the centrelines.