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Australian Standard 1297—1980

SURVEYORS MEASURING BANDS

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

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THE FOLLOWING SCIENTIFIC, INDUSTRIAL, PROFESSIONAL AND GOVERNMENTAL organizations were officially represented on the committee entrusted with the preparation of this standard:

Association of Consulting Engineers, Australia

Australian Institute of Steel Construction

CSIRO National Measurement Laboratory

Department of Housing and Construction

Department of Lands, N.S.W.

Department of Public Works, N.S.W.

Master Builders Federation of Australia Incorporated

Manufacturers and importers

National Association of Australian State Road Authorities

Royal Australian Institute of Architects

The Institution of Surveyors, Australia

University of Sydney

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AUSTRALIAN STANDARD

SURVEYORS MEASURING BANDS

AS 1297—1980

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PREFACE

This standard was prepared by the Association's Committee on Linear Measuring Instruments. It supersedes the first (1972) edition which was issued in one volume with other standards in the series under the designation AS 1290 to 1298, Linear Measuring Instruments for Use in Construction. Except for AS 1296 which is now withdrawn each of these standards is the subject of a new edition, issued separately.

The method of graduation is consistent with decisions on units, their multiples and submultiples made by the Metric Conversion Board and the Standards Association of Australia Metric Standards Advisory Committee.

In the preparation of this standard reference was made to a number of sources including—

BS 3693 Recommendations for the Design of Scales and Indexes
Part 1—Instruments of Bold Presentation and for Rapid Reading

BS 4484 Measuring Instruments for Constructional Works
Part 1—Metric Graduation and Figuring of Instruments for Linear Measurement

and acknowledgment is made of the assistance obtained therefrom.

In this edition, the following clauses have been amended:

3.1 Ribbon
3.2 Ends of Bands
3.4 Sleeves, Bosses or Plates used for Graduation Marking
4.1 Form of Graduation
4.2 Form of Figuring
5 Accuracy
6.2.1 Ribbon
6.3.1 Form of Graduation
6.3.3 Form of Figuring
7 Accuracy Requirement for Band and Reader

This standard requires reference to AS 1290, General Requirements for Linear Measuring Instruments Used in Construction.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
SURVEYORS MEASURING BANDS

1 SCOPE. This standard specifies the requirements for surveyors measuring bands, 30 m to 100 m long, together with readers 2 m and 3 m in length.

2 GENERAL REQUIREMENTS. For the purpose of this standard the definitions and requirements for presentation, graduation, figuring and other markings set out in AS 1290 shall apply.

3 BAND COMPONENTS.

3.1 Ribbon.

3.1.1 *For bands other than low expansion alloy bands.*

(a) The ribbon shall be manufactured in one continuous length, and shall be made of carbon steel or stainless steel, having an ultimate tensile strength of not less than 1450 MPa.

The coefficient of thermal expansion shall not exceed $11.9 \pm 10^{-6}/°C$.

(b) The width of the ribbon shall normally be 1.6 mm, or 2.1 mm or 3.2 mm, and shall be uniform to within a tolerance of ± 0.1 mm.

The thickness of the ribbon shall normally be 0.5 mm, and shall be uniform within a tolerance of ± 0.05 mm.

(c) The maximum permissible errors in edge straightness shall conform to the values shown in Table 1.

TABLE 1

BAND EDGE STRAIGHTNESS

Test length m	Maximum permissible departure from straightness mm
10	6
20	9
30	12
50	14
100	16

3.1.2 *For low expansion alloy bands.*

(a) The ribbon shall be manufactured in one continuous length and shall be made of a suitable low thermal expansion nickel-iron alloy such as 'invar'. The ribbon shall have been annealed and artificially aged by appropriate heat treatment to render it dimensionally stable. It shall have an ultimate tensile strength of not less than 450 MPa.

(b) The ribbon shall have a cross-section of 3.2 mm × 0.5 mm; it shall be uniform in width and thickness to within ± 0.1 mm and ± 0.05 mm respectively.

3.2 Ends of Band. The ends of the band shall comply with the following requirements:

(a) Each end of the ribbon shall terminate with a metal eye, which shall be either formed from the ribbon, reinforced, and firmly secured, or separately fabricated and securely attached to the ribbon.

The eyes and the manner in which they are secured shall afford (the band) adequate durability. In securing the eyes, rivets may be used only in the case of a band not less than 3.2 mm in width.

The width of the eyes shall normally not exceed the width of the ribbon.

(b) The eyes may be fitted with a non-detachable ring, or with a handle which shall be fitted with a swivel mounting, and may be detachable or non-detachable.

Alternatively, the eyes may be suitable for the attachment of a reader, which shall normally be used at the zero or left-hand end of the band.

A band in which the eye at the zero end is suitable for the attachment of a reader, and which is fitted at the other end with a non-detachable ring, may also be deemed to be acceptable.

(c) The eyes, rings or handles and the connections, shall withstand the following static forces without damage or deformation:

(i) Band 1.6 mm or 2.1 mm wide—not less than 150 N.

(ii) Band 3.2 mm wide—not less than 200 N.

3.3 Reel.

3.3.1 *For bands other than low expansion alloy band.* The reel or frame winder shall be of sufficient size and strength to accommodate the ribbon and shall be treated to resist corrosion.

3.3.2 *For low expansion alloy bands.* The reel shall be made from suitable metallic materials, treated to resist corrosion, or from suitable timber such as marine plywood, which shall be coated with a suitable durable lacquer to protect the band from corrosive agents in the timber.

The reel shall be so constructed that the band, when wound on the reel, shall be retained in a flat spiral of thickness approximately equal to the width of the band, with each turn of the band lying on top of the preceding turn, and with the diameter of the first turn not less than 400 mm.

3.4 Sleeves, Bosses or Plates used for Graduation Marking. Graduation of the instrument (see Clause 4.1) shall be marked on metal sleeves or bosses securely soldered to the ribbon, or on metal plates