

AS 2329—1999

Australian Standard™

**Mastic adhesives for fixing
wallboards**

This Australian Standard was prepared by Committee CH/17, Adhesives. It was approved on behalf of the Council of Standards Australia on 16 November 1998 and published on 5 February 1999.

The following interests are represented on Committee CH/17:

Adhesives and Sealants Manufacturers Association of Australia
Australian Institute of Packaging
Plywood Association of Australia
Printing Industries Association of Australia

Additional interests participating in preparation of Standard:

Raw material suppliers

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**Mastic adhesives for fixing
wallboards**

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PREFACE

This Standard was prepared by the Standards Australia Committee CH/17, Adhesives as a revision of AS 2329—1980. It forms part of a series of Standards dealing with functional adhesives of varying chemical types that are currently used for non-mechanical fixing of materials commonly used in the building industry.

The objective of this revision is to update materials which are specified in the 1980 edition and which are no longer available, and to include requirements for water-based adhesives.

The principal differences between this edition and the 1980 edition are as follows:

- (a) Requirements for water-based adhesives have been added.
- (b) Hoop pine has been substituted for coachwood.
- (c) Metal framing members are not dealt with in this Standard.
- (d) The doctor blade has been replaced by a simple adhesive applicator.
- (e) The grade of cotton duck for testing purposes has been changed.

Adhesives specified in this Standard may be required to bond to a variety of substrate materials. They will generally adhere to porous substances such as timber, cement sheet, particle board, plywood and wallboard. Adhesives in this Standard have gap-filling properties to bridge distortion and unevenness of the framing, the brickwork, or the concrete. They are intended for interior use only.

The Committee considered the question of non-porous substrates, but decided that there is insufficient information available at this time for their inclusion.

Standards in this series specify quality requirements for the adhesive for the designated purpose. In conjunction with comprehensive manufacturers' instructions, they may be used for subsequent workmanship warranties on bonded assemblies.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

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STANDARDS AUSTRALIA

Australian Standard**Mastic adhesives for fixing wallboards**

1 SCOPE This Standard specifies requirements for mastic adhesives used for bonding various porous substrates such as hardboard, cement sheet, particle board, plywood and wallboard panels to wood framing for interior use.

The Standard does not apply to adhesives for gypsum-board or plasterboard.

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

AS

1309 Glossary of terms used in the adhesives industry

1321 Methods for the sampling and testing of adhesives

1321.1 Part 1: Sampling

1321.3 Part 3: Bond strength of cured wood-to-wood adhesives in shear

2193 Methods for calibration and grading of force-measuring systems of testing machines

3567 Textiles—Cloth, duck—Cotton and polyester/cotton

AS/NZS

2272 Plywood—Marine

3 DEFINITIONS For the purpose of this Standard, the definitions in AS 1309 and those below apply.

3.1 Contact bond method—where the adhesive is applied to one substrate, and the other substrate is then immediately brought into contact with the adhesive. The two substrates are then separated, the adhesive remaining on both surfaces, and after a nominated drying time, the two substrates are reassembled under a nominated force and allowed to fully dry or cure.

3.2 Wet bond method—where the adhesive is applied to one substrate, and the other substrate is then brought into contact with the adhesive after a nominated open time. The assembly is then allowed to dry or cure.

4 PRODUCT INFORMATION The supplier shall provide all necessary information on storage requirements and bonding procedures such as mixing, spreading, pot life, open and closed assembly times, time at which the adhesive will support the wallboard unassisted, as well as on shelf life and cleaning instructions.

The information may be on the pack or supplied separately for industrial applications. Instructions for use, including cleaning up, shall be included with or printed on each retail pack.

5 SAMPLING The adhesive sample shall be selected for testing in accordance with AS 1321.1.

6 PERFORMANCE REQUIREMENTS

6.1 Consistency The adhesive shall be of uniform consistency suitable for application as specified by the manufacturer and in accordance with accepted commercial practice.

6.2 Shelf life When stored under the conditions recommended by the manufacturer in an unopened container as supplied by the manufacturer, the adhesive shall comply with the requirements of this Standard and remain suitable for use for a period of at least one year from the date of manufacture, unless otherwise specified.

6.3 Thermal stability After storage in the original unopened container at $40 \pm 2^\circ\text{C}$ for 7 days, the adhesive shall comply with the requirements of Clauses 6.4, 6.5, 6.6, 6.7 and 6.8.

6.4 Sag resistance When tested in accordance with Appendix A, the sag of extruded beads of the adhesive shall be not more than 6 mm.

6.5 Flow and transfer of the adhesive after 15 min drying time When tested in accordance with Appendix B, the adhesive shall spread as follows:

- (a) On at least 50 percent of the central 50 mm $\times$ 50 mm area of the (bottom) panel A.
- (b) On the (top) panel B, at least 75 percent of the wetted area of panel A.

6.6 Flexibility after accelerated ageing When tested in accordance with Appendix C, the adhesive shall not become embrittled as evidenced by chipping, flaking or cracking through to the substrate, after exposure at $70 \pm 2^\circ\text{C}$ for 500 ± 1 h.

NOTE: Surface crazing is permissible.

6.7 Adhesion strength of adhesive

6.7.1 Bond strength in tensile shear

6.7.1.1 Initial bond strength in tensile shear When tested in accordance with Appendix D, the mean initial bond strength in tensile shear shall not be less than 200 kPa.

6.7.1.2 Bond strength in tensile shear (dry substrate) When tested in accordance with Appendix E, using the method of preparation of the test assemblies described in Paragraph E5.1, the mean bond strength in tensile shear shall not be less than 1 MPa.

6.7.1.3 Bond strength in tensile shear after accelerated ageing (dry substrate) When tested in accordance with Appendix E, using the method of preparation of the test assemblies described in Paragraph E5.1, and conditioning the test assemblies at $70 \pm 2^\circ\text{C}$ for 500 ± 1 h prior to testing, the mean bond strength in tensile shear shall not be less than 0.8 MPa.

6.7.1.4 Bond strength in tensile shear (wet substrate) When tested in accordance with Appendix E, using the method of preparation of the test assemblies described in Paragraph E5.2, the mean bond strength in tensile shear shall be not less than 1 MPa.

6.7.2 Bond strength in peel before and after accelerated ageing

6.7.2.1 Before accelerated ageing When tested in accordance with Appendix F, the mean 180-degree bond strength in peel shall not be less than 40 N per 25 mm width of bond.

6.7.2.2 After accelerated ageing When tested in accordance with Appendix F, except that, in Paragraph F6.2, the test assemblies shall be conditioned at $70 \pm 2^\circ\text{C}$ for 500 ± 1 h prior to testing, the mean 180-degree bond strength in peel shall not be less than 32 N per 25 mm width of bond.

6.8 Static load in shear When tested in accordance with Appendix G, the assembly shall sustain a load in shear of 40 N at $40 \pm 2^\circ\text{C}$ for not less than 24 h.

7 MARKING AND PACKAGING

7.1 Marking Each product container shall be marked in accordance with the relevant regulations.

The identification of the contents, the batch number and the date of manufacture shall be marked either on the product container or on the outer pack.

7.2 Packaging The adhesive shall be packed in adequately marked, airtight containers, protected where necessary by an outer pack to prevent damage in transport.

APPENDIX A
METHOD FOR DETERMINING SAG RESISTANCE
(Normative)

A1 SCOPE This Appendix sets out a method for determining the sag resistance of mastic adhesives.

A2 PRINCIPLE The distance by which extruded beads of adhesives on a vertical panel of plywood are displaced is determined as a measure of sag.

A3 APPARATUS AND MATERIALS The following are required:

- (a) Marine plywood with faces of hoop pine (*Araucaria cunninghamii*) complying with AS/NZS 2272 and at least 270 mm × 270 mm × 4.5 ±0.5 mm, free from surface contamination.
- (b) Extrusion apparatus, capable of producing a bead of adhesive 6 mm to 7 mm in diameter.
- (c) Ventilated oven capable of maintaining an even temperature of 40 ±2°C.

A4 CONDITIONING Materials used in testing shall be conditioned at a temperature of 23 ±2°C and relative humidity of 50 ±5 percent for at least 24 h prior to testing.

The adhesive container shall be kept closed when not in use.

A5 PROCEDURE The test procedure, which shall be conducted at 23 ±2°C and a relative humidity of 50 ±5 percent, shall be as follows:

- (a) With the surface of the plywood panel horizontal, and using the extrusion apparatus, apply two straight beads of adhesive 6 mm to 7 mm in diameter and approximately 150 mm in length to the plywood panel as depicted in Figure A1, and mark the lower edge of the beads on the edge of the plywood.

NOTE: To ensure that the cross-section of the bead is constant over the test length, the ends of the bead should be cut off square.

- (b) Immediately place the prepared panel vertically in the ventilated oven, held at a temperature of 40 ±2°C.
- (c) After 20 ±1 min, remove the panel from the oven and place it in a horizontal position.
- (d) Measure the distance of displacement of the beads of adhesive from the initial position as indicated by the marks on the edges, to the final position, to the nearest millimetre.

A6 REPORT The report shall include the following:

- (a) Description of the adhesive.
- (b) The sag for each bead of adhesive, in millimetres.
- (c) A reference to this test method, i.e. Appendix A of AS 2329.