

AS 2754.1—1985

Australian Standard®

**ADHESIVES FOR TIMBER AND
TIMBER PRODUCTS
Part 1—ADHESIVES FOR
PLYWOOD MANUFACTURE**

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The following interests are represented on Committee CH/17:

Adhesives and Sealants Manufacturers Association of Australia
Australian Chemical Industry Council
Australian Council of Furniture Manufacturers
Australian Federation of Consumer Organizations
Confederation of Australian Industry
CSIRO, Division of Building Research
Department of Defence Support
Footwear Manufacturers Federal Executive Council
Plastics Institute of Australia Incorporated
Plywood Association of Australia Ltd
Printing and Allied Trades Employers Federation of Australia
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Part 1—ADHESIVES FOR
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PREFACE

This standard was prepared by the Association's Committee on Adhesives under the direction of the Chemical Standards Board, as a replacement for AS K88–1952, Synthetic Resin Adhesives for Plywood (Phenolic and Aminoplastic) and AS K89–1953, Protein Adhesives for Plywood. It is one of a series of standards for adhesives for timber and timber products. The standard is intended to cover all of the adhesives used currently by the Australian plywood manufacturing industry. Those currently in use are based on synthetic phenol–formaldehyde, natural polyphenol–formaldehyde, melamine–formaldehyde and urea–formaldehyde resins, and for this reason the Committee believed AS K89 to be redundant.

The standard differs from AS K88 in that it defines the actual service conditions under which plywoods possessing various bond types can be used. The quality of adhesives is determined by tests made on sample plywood assemblies. AS 2098 Part 2, Methods of Test for Veneer and Plywood—Bond Quality of Plywood (Chisel Test), specifies four different bond types A, B, C and D which are defined according to their resistance to a range of water soak treatments of varying severity. It has been shown with these adhesives that such tests provide reliable means of predicting the long term durability of the bond under a range of service conditions.

The test for gelation time is envisaged as a means of enabling the purchaser of the adhesive to check that the batch to batch variation in reactivity of the adhesive falls within the limits specified by the manufacturer. A temperature of 100°C has been chosen because this temperature is close to the range of temperatures used in plywood manufacture and also obviates the need for a controlled temperature water bath.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

ADHESIVES FOR TIMBER AND TIMBER PRODUCTS

PART 1—ADHESIVES FOR PLYWOOD MANUFACTURE

1 SCOPE. This standard specifies requirements for adhesives suitable for use in the plywood manufacturing industry, the criterion for suitability being the ability of an adhesive to produce bonded plywood panels of defined types and quality.

The standard sets out in tabular form (see Table 1) the relationship between the recognized plywood bond types (A, B, C and D), the chemical types of adhesives normally used to produce these bond types, and the service conditions and performance test requirements applicable to the four types of bond.

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

- AS 1309 Glossary of Terms used in the Adhesives Industry
- AS 1321 Methods for the Sampling and Testing of Adhesives
 Part 1 — Sampling
 Part 3 — Bond Strength of Cured Wood-to-wood Adhesives in Shear
 Part 7 — pH Value of Aqueous Extracts of Uncured Adhesives and of their Components, and of Cured Adhesive Films
 Part 9 — Brookfield Viscosity of Liquid Adhesives
 Part 10— Determination of Non-volatile Matter (Solids Content) of Adhesives
- AS 1580 Methods of Test for Paints and Related Materials
 Method 214.2—Consistency—Flow Cup
- AS 2098 Methods of Test for Veneer and Plywood
- AS 2098 Part—2 Bond Quality of Plywood (Chisel Test)
- AS 2244 Test Tubes
- AS 2269 Structural Plywood
- AS 2270 Plywood and Blockboard for Interior Use
- AS 2271 Plywood and Blockboard for Exterior Use
- AS 2272 Marine Plywood
- AS 2289 Glossary of Terms Used in the Plywood Industry
- Bulletin No. 38 'The Efficiency of Adhesives for Wood', Forest Products Research, Ministry of Technology, UK*

3 DEFINITIONS. For the purpose of this standard, the definitions given in AS 1309 and AS 2289, and the following apply:

Plywood adhesives—those adhesives in use in the plywood manufacturing industry which are based on synthetic phenol-formaldehyde, natural polyphenol-formaldehyde, melamine-formaldehyde and urea-formaldehyde resins, and mixtures thereof.

4 CLASSIFICATION OF ADHESIVES. The adhesives shall be classified according to *their ability to produce bond types* in plywood. The bond types A, B, C and D are classified in Table 1 in terms of their longterm durability under a range of service conditions, adhesive types and water soak treatments.

NOTES:

- Where adhesives other than those specified in Table 1 are being considered, the criteria for long term performance should be based upon Bulletin No 38 'The Efficiency of Adhesives for Wood'.
- This standard should be read in conjunction with the test methods specified in AS 2098.2.

5 SAMPLING. Selection of the adhesive sample shall be in accordance with AS 1321, Part 1.

6 TEST CONDITIONS. Unless otherwise specified, testing shall be carried out at a temperature of $23 \pm 2^\circ\text{C}$ and a relative humidity of 50 ± 5 percent.

7 PRODUCT INFORMATION. The adhesive manufacturer shall supply information which specifies the allowable limits on viscosity, non-volatile matter (solids) and gelation time of resin and/or mixed adhesive for each specific adhesive formulation.

NOTES:

- These limits are a matter for agreement between the adhesive manufacturer and the purchaser.
- The method used for determining viscosity should be in accordance with AS 1321, Part 9, or by means of a flow cup if this method is agreed to between the adhesive manufacturer and the purchaser.
- The method used for determining non-volatile matter should be in accordance with AS 1321, Part 10.
- The method for the determination of gelation time is given in Appendix A.
- Tests should be carried out within 72 h of receipt of the adhesive components/mixed adhesive.

The adhesive manufacturer shall also supply all necessary information on bonding procedures such as mixing, spreading, open and closed assembly times, prepress and press times, temperatures and pressures as well as thickness and range of moisture content, and the bond type(s) that can be expected to be produced. The adhesive manufacturer shall recommend the conditions for storage and the expected shelf-life under the storage conditions.

8 TEST REQUIREMENTS.

8.1 Testing of pH of mixed adhesive. When determined in accordance with AS 1321, Part 7, the pH of the mixed adhesive shall not be less than 2.

* Published by Her Majesty's Stationery Office, London.