

Australian/New Zealand Standard™

AS/NZS 4266.9

**Reconstituted wood-based panels—
Methods of test****Method 9: Thickness stability and glue bond
quality**

This Standard incorporates Amendment No. 1 (May 2004) and No. 2 (February 2006). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

1 SCOPE

This Standard sets out a method for determining thickness swelling and glue bond quality (or wet bending strength retention) for reconstituted wood-based panels after vacuum-soak treatment.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

2102 Micrometer callipers for external measurement

AS/NZS

4266 Reconstituted wood-based panels—Methods of test

A2 | 4266.1 Method 1: Sampling and cutting of test pieces

4266.5 Method 5: Modulus of elasticity in bending and bending strength

4266.35 Method 35: Dimensions of test pieces

4491 Timber—Glossary of terms in timber-related Standards

3 DEFINITIONS

A2 | For the purpose of this Standard the definitions in AS/NZS 4491 and AS/NZS 4266.1 apply.

4 PRINCIPLE

The test pieces are subjected to soaking and a vacuum and pressure treatment to determine thickness variability. Immediately after this process, the test pieces are subjected to a load until rupture (MOR) to determine glue bond quality.

5 APPARATUS

The following apparatus is required:

- A2 | (a) *Testing machine*—See AS/NZS 4266.5.
- (b) *Micrometer calliper*—complying with AS 2102.
- (c) *Steel rule*—graduated in 1.0 mm increments.
- (d) *Vacuum-pressure chamber*—
- (i) of sufficient volume to hold the test pieces;
- (ii) equipped with a water inlet, water drain and pressure gauge; and

- (iii) capable of holding a vacuum of 85 ± 5 kPa and a pressure of 400 ± 5 kPa when sealed.

A pump or similar apparatus shall be connected to the chamber to apply the required vacuum or pressure.

- (e) *Impermeable bag or wrap*—capable of containing test specimen.
- (f) *Damp cloth*.

6 TEST PIECES

6.1 Sampling and cutting

Two rectangular test pieces shall be prepared from each panel to be tested. These two test pieces shall be obtained in such a way that one has the machine direction parallel to, and the other has the machine direction perpendicular to, the length of the test piece. Sampling and cutting of the test pieces shall be carried out in accordance with AS/NZS 4266.1.

6.2 Dimensions

The test pieces shall be rectangular, the width shall be 100 ± 1 mm and its length shall be not less than 15 times its nominal thickness plus 50 ± 1 mm, with a maximum length of 1050 mm and a minimum length of 150 mm.

6.3 Conditioning

The test pieces shall be conditioned to constant mass in an atmosphere with a relative humidity of $65 \pm 5\%$ and a temperature of $20 \pm 2^\circ\text{C}$.

Constant mass is considered to be reached when the results of two successive weighing operations, carried out at an interval of 24 h, do not differ by more than 0.1% of the mass of the test piece.

7 PROCEDURE

7.1 Initial measurement

The thickness and width of each test piece shall be measured in accordance with AS/NZS 4266.35 at the following locations:

- (a) *Thickness* Two points, at the mid-length and 20 mm from each edge.
- (b) *Width* The mid-length.

7.2 Pressure soaking of test pieces

Prior to the bending test, the test pieces shall be immersed in water at $20 \pm 2^\circ\text{C}$ and subjected to a negative pressure of 85 ± 5 kPa for a period of 30 min followed immediately by the application of a pressure of 400 ± 5 kPa for a period of 23 ± 1 h. The test pieces shall be immersed so that their length is either horizontal or vertical, depending on the dimensions of the bath. They shall have a minimum clearance of 15 mm from each other and the bottom and sides of the vessel.

7.3 Thickness stability measurement

As each test piece is withdrawn from the water at the end of the pressure-soak period it shall be wiped with a damp cloth and immediately thereafter shall be sealed in a moisture-impermeable material, in which condition it may be stored for up to 4 h prior to testing. Within 15 ± 2 min of its removal from the plastic bag or wrap, the thickness of each test piece shall be re-measured and recorded at the same points as before and to the same degree of accuracy. Immediately after measuring, and while test pieces are still wet, each piece shall, in turn, be subjected to the bending strength test.

7.4 Bending strength test

- A2 | Determine the bending strength of the test pieces in accordance with AS/NZS 4266.5, except where the product is designed to be used with one surface as the 'top' or 'load bearing surface' and nominated by the manufacturer as such, then all test pieces shall be tested with the specified top face upwards.

8 CALCULATIONS

A1

8.1 Glue bond quality

The glue bond quality is the wet bending strength for each test piece, which shall be calculated as follows:

$$\text{Glue bond quality} = f_{\max.} = \frac{3 Fl}{2 bt^2} \quad \dots 8(1)$$

where

- $f_{\max.}$ = wet bending strength, in megapascals
- F = maximum flexure load, in newtons
- l = span between centres of supports, in millimetres
- b = mean width of test piece measured prior to water immersion, in millimetres
- t = mean thickness of test piece measured prior to water immersion, in millimetres

8.2 Thickness stability

Thickness stability (TS) is the percentage increase in thickness after vacuum pressure-soak treatment, expressed as a percentage of the original thickness, which shall be calculated as follows:

$$TS = \frac{t_2 - t_1}{t_1} \times 100 \quad \dots 8(2)$$

where

- TS = thickness stability
- t_1 = mean thickness of the test piece, in millimetres, before pressure soaking
- t_2 = mean thickness of the test piece, in millimetres, after pressure soaking

The result shall be expressed to three significant figures.

9 REPORT

The test report shall contain the following:

- (a) Name and address of the testing laboratory.
- A2 | (b) Sampling report according to AS/NZS 4266.1.
- (c) Date of the test report.
- A2 | (d) Reference to this Interim Standard, i.e., AS/NZS 4266.9.
- (e) Panel type and thickness.
- (f) Relevant product specification, e.g., AS/NZS 1859 series.
- (g) Surface treatment, if relevant.
- (h) Specific apparatus used, in case of different possibilities allowed in the Standard.