Australian Standard®

# Methods of test flat cellulose-cement sheets

# Method 2: Determination of flexural strength—Modulus of rupture

**1 SCOPE** This Standard sets out a method for determining the flexural strength (modulus of rupture) of flat cellulose-cement sheets.

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

AS
2193 Methods for the calibration and grading of force-measuring systems of testing machines.
3991 Methods of testing flat cellulose-cement sheets
3991.1 Method 1: Determination of dimensions of sheets

**3 DEFINITIONS** For the purpose of this Standard, the definitions below apply.

**3.1 Lot**—an aggregate of sheets of a single type and category of flat cellulose-cement sheet of specific characteristics and dimensions, and having been manufactured essentially under the same conditions and essentially at the same time.

**3.2 Sample**—two or more sheets drawn from a lot.

**3.3 Test specimen**—a section from each sample sheet of sufficient size to provide test pieces required for a specified test.

**3.4 Test piece**—a piece of sheet cut from a test specimen of the size required for a specified test.

**4 PRINCIPLE** A test piece is placed on two supports and a force applied along its centreline until it breaks. The bending strength is calculated from the maximum force which the test piece supported before failure, the distance between the supports and the width and thickness of the test piece.

**5 CONDITIONING OF TEST SPECIMENS**

**5.1 General** All bending strength determinations shall be made on test pieces cut from test specimens conditioned in accordance with this Clause (5).

**5.2 Conditioning—equilibrium strength** Test pieces 12 mm thick or less shall be placed for at least 4 d in a controlled atmosphere of 23 ±5°C and a relatively humidity of 50 ±10 percent. Test pieces of thicknesses greater than 12 mm shall be conditioned for at least 7 d.

**5.3 Conditioning—wet strength** Test pieces required to be tested in wet conditions shall be immersed in water at a temperature greater than 10°C for a minimum period of 24 h. Upon removal from the water, the test pieces shall be allowed to drain but shall be tested while wet.

For sheet thicknesses greater than 20 mm, the immersion period shall not be less than 48 h.

**6 APPARATUS** The following apparatus is required:

(a) A testing machine (see Figure 1) complying with the accuracy requirements specified for Grade B of AS 2193 fitted with a bending test attachment complying with Item (b).

(b) The bending test attachment specified in Item (a) shall be as follows (see Figure 1):
  (i) The test span (centre distance between bearers A and B), according to Table 1, is set to suit the product being tested.
  (ii) Bearers A, B and E are aligned so that they are parallel to both vertical and horizontal planes.