

British Standard Methods of test

Footwear and footwear materials

Part 4. Other components

Section 4.13 Transverse tensile strength of fibreboard

Méthodes d'essai des chaussures et des matériaux composant des chaussures

Partie 4. Autres composants

Section 4.13 Essai de résistance au clivage du carton

Prüfverfahren für Fussbekleidung und Fussbekleidungs material

Teil 4. Sonstige Bestandteile

Abschnitt 4.13 Querreissfestigkeit von Faserplatten

NOTE. It is recommended that this Section should be read in conjunction with the information in the General Introduction to BS 5131, published separately.

1. Scope

This Section describes a method for determining the transverse tensile strength of fibreboard. This property (also known as the 'internal bond strength' or the 'Z-direction tensile strength') is measured by the transverse force required to delaminate unit area of the board.

2. Principle

A disc of board is attached by adhesive between the ends of two metal cylinders. The force required to separate the board by pulling apart the cylinders is measured.

3. Apparatus and material

Use the following apparatus and material.

3.1 Conditioning cabinet or room, capable of maintaining an atmosphere of $20 \pm 2^\circ\text{C}$ and $65 \pm 2\%$ relative humidity.

3.2 Tensile-testing machine, with a force range appropriate to the sample under test and with a cross-head speed giving a cylinder (see 3.3) separation speed of 25 ± 5 mm/min.

NOTE. The cylinder separation speed is a function of the breaking force, the mechanics of the force measuring system of the machine used, the breaking extension and the cross-head speed.

The cross-head speed required to produce a cylinder separation speed of 25 mm/min is given by the formula:

$$25 B / (B - A)$$

where

A is the upper jaw movement, in millimetres, at the breaking force;

B is the lower or cross-head jaw movement, in millimetres, at the breaking force.

A and *B* can be determined by measuring the jaw movements during a preliminary test. A suitable cross-head speed for this preliminary test may be calculated by substituting values in the above formula such as might be obtained for an average board. A typical breaking force is 650 N and a typical breaking extension, in millimetres, is 0.4 times the board thickness, in millimetres. The upper jaw movement at a force of 650 N is the value *A*, and the breaking extension is *B* - *A*.

3.3 Pairs of solid metal cylinders, each of diameter 38.90 mm to 38.95 mm, with provisions for attachment into the tensile-testing machine. The end faces of the cylinders shall be at right angles to their axes. The cylinders shall fit in the tensile-testing machine so that the line of action passes through the axis of the two cylinders. One pair of cylinders is required for each test piece.

3.4 Collars, with internal diameters of 39 ± 0.025 mm, to keep the metal cylinders and test pieces coaxial during assembly.