

Australian/New Zealand Standard™

Methods of testing wool packs for greasy wool

Method 4: Handling resistance

1 SCOPE

This Standard specifies a procedure for determining the force required to continue to pull a rod through a specimen of woven fabric.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

2001 Methods of test for textiles

2001.1 Part 1: Conditioning procedures

2706 Numerical values—Rounding and interpretation of limiting values

3 DEFINITIONS

For the purposes of this Standard, definitions below apply.

3.1 Peak load

The load required to break one or more yarns. This load is registered on the chart as a peak, i.e. a value exceeding the values immediately preceding or following it.

3.2 Warp test

A test in which the warp yarns of the fabric sample are broken.

3.3 Weft test

A test in which the weft yarns of the fabric sample are broken.

4 PRINCIPLE

A specimen of specific shape and dimensions is cut up the centre to form two wings and folded so that the wings are face-to-face. The two wings are gripped in the upper jaw of a tensile testing machine and a rod is positioned between them at the base of the cut. The rod is then pulled through the fabric by a tensile testing machine to simulate the action of handling equipment. The force required to pull the rod through the fabric is calculated from the autographic chart by averaging peak force values.

5 APPARATUS

The following apparatus is required:

- (a) A tensile testing machine of the constant rate of extension type with—
 - (i) a rate of jaw separation of 200 mm per minute;
 - (ii) an autographic recorder giving a chart of force versus extension; and
 - (iii) the upper clamps or jaws holding the fabric measuring at least 70 mm × 25 mm, with the longer dimension perpendicular to the direction of application of the load.

- (b) Apparatus for holding the lower portion of the fabric sample as shown in Figure 1. The rod shall be 10 ± 0.1 mm in diameter and made of polished stainless steel*.
- (c) A conditioning facility with a means of providing and maintaining a standard atmosphere as specified in AS 2001.1.

6 TEST SPECIMENS

The following shall apply:

- (a) Each specimen shall be representative of the sample and shall not include seams, pack hems, or selvages. One weft-ways and one warp-ways specimen shall be taken from each of the four faces of the pack (total of eight specimens). No tapes broken in one test specimen shall be broken in another specimen.
- (b) With the aid of a template the specimens shall be cut to the dimensions shown in Figure 2 (including the area marked with a dotted line which will be sewn into a seam). The specimens for the warp test shall be cut with the longer dimension parallel to the weft direction (i.e. warp-torn). The specimens for the weft test shall be cut with the longer dimension parallel to the warp direction (i.e. weft-torn).
- (c) To prevent yarn slippage during testing, a triple folded seam shall be sewn on both sides of each specimen (see Figure 2).
- (d) A 135 mm cut shall be made lengthwise in each specimen starting at the point of the specimen (see Figure 2) to form two wings for clamping in the machine. The cut shall be made so that only warpways tapes are cut in a warp-ways test and only weft-ways tapes are cut in a weft test. A line shall be drawn across each wing from a point 80 mm down the lengthwise cut, making an angle of 55 degrees with the centre cut.

7 TEST PROCEDURE

The procedure shall be as follows:

- (a) Set the upper jaws of the machine and the rod attachment (in the lower) parallel to each other and perpendicular to the direction of movement of the jaws.
- (b) The specimen shall be folded along the line of the cut. The two wings of the specimen shall be placed centrally in the clamp with the 55 degree lines along the bottom edge of the clamp with the tapes at the edge of the 135 mm slit firmly held between the jaws (see Figure 3).

NOTE: The tapes at the edge of the 135 mm slit must be held securely by the jaws and it may be necessary to fold the edge of the fabric back on itself slightly when the specimen is placed between the jaws to achieve this.

- (c) Extend the specimen at 200 mm per minute.
- (d) Test all eight specimens.

8 CALCULATION OF RESULTS

The results shall be calculated as follows:

- (a) Divide the autographic recording into five equal portions from, and including, the first defined peak (see Figure 4).
- (b) Determine the highest peak value in newtons for each portion and calculate the specimen result as the average of these five values.
- (c) Calculate the arithmetic mean of the four specimen results for warp and weft specimens separately to three significant figures, rounded as specified in AS 2706.

* Apparatus available from the New Zealand Wool Group.

9 REPORT

The following shall be reported:

- The mean handling resistance in newtons for the warp specimens.
- The mean handling resistance in newtons for the weft specimens.
- The results of each individual test specimen on a separate sheet.
- A reference to this test method, i.e. AS/NZS 4547.4.

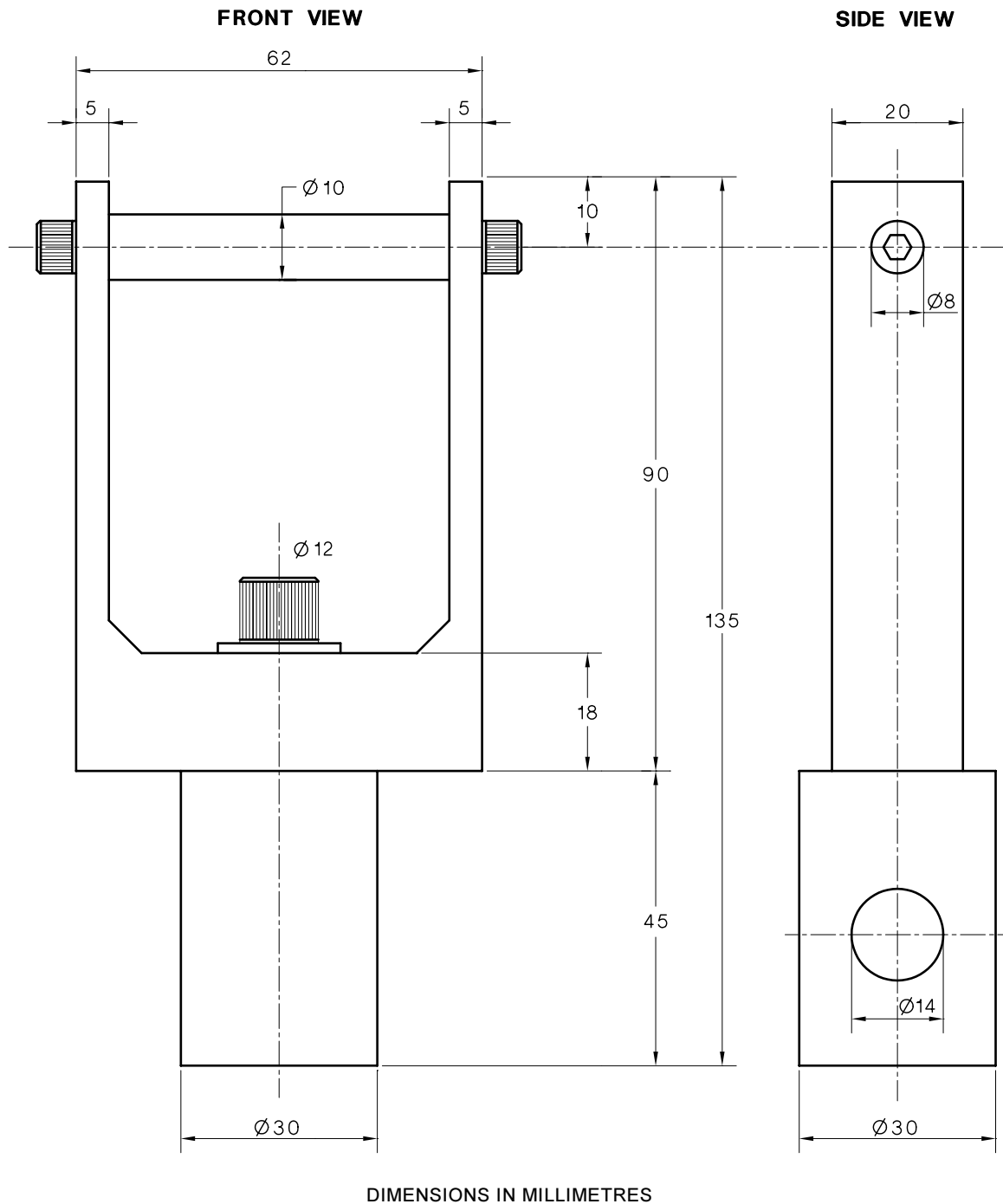


FIGURE 1 DIAGRAM OF LOWER ROD USED WITH TENSILE TESTING MACHINE