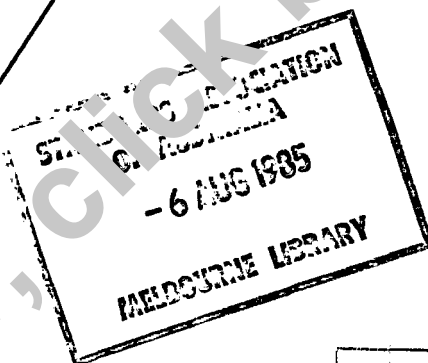


# Australian Standard<sup>®</sup> 1133—1985

• Amendments  
1 to 1133—1985 Method for the determination of fibre  
diameter of raw wool  
Committee TX/20. Publication date, 1985-02-03.

## WOOL—DETERMINATION OF THE MEAN FIBRE DIAMETER OF RAW WOOL



AS/NZS 1133:1996  
Wool—Determination by the  
Airflow Method of the mean  
fibre diameter of core samples  
of raw wool  
(IWTO-28-93)  
(In Professional Package 54H)  
38pp H  
Sets out a method for the  
determination of the mean fibre  
diameter of wool fibres sampled  
from bales of raw wool by coring,  
using cutters of nominal diameter  
from 12 mm to 25 mm. It is  
identical with and has been  
reproduced from IWTO-28-93.  
(TX/12): Supersedes AS 1133—1985:  
DR 95081: Publication date 1996-04-05.



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The following interests are represented on Committee TX/12:

Australian Council of Wool Buyers  
Australian Wool Corporation  
Australian Wool Testing Authority Ltd  
CSIRO, Division of Textile Physics  
Department of Defence  
Department of Primary Industry  
National Council of Wool Selling Brokers of Australia  
University of New South Wales  
Wool Council of Australia  
Wool Scourers and Carbonizers Association of Australia  
Wool Textile Manufacturers of Australia

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AS 1133 first published.....	1971
AS 1401 first published.....	1973
AS 1133 and AS 1401 revised and issued as AS 1133.....	1985

*This standard was issued in draft form for comment as DR 83177.*

STANDARDS ASSOCIATION OF AUSTRALIA  
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AMENDMENT No 1  
to  
AS 1133—1985  
WOOL—DETERMINATION OF THE MEAN FIBRE DIAMETER OF RAW WOOL

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REVISED TEXT

*SUMMARY:* This amendment applies to Clause 5.2 and Fig. A2.

Published on 3 February 1986.

AMDT  
No 1  
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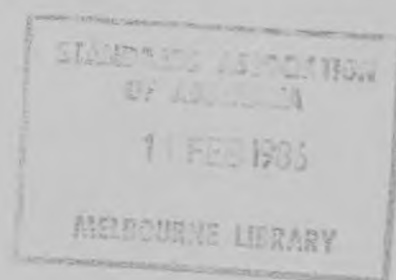
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**Page 6. Clause 5.2.**

*Delete* existing Clause 5.2 and *substitute:*

**5.2 Greasy wool**—unprocessed wool from sheep or wool shorn from sheepskins.

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## PREFACE

This standard was prepared by the Association's Committee on Testing of Wool under the direction of the Textile Standards Board. It supersedes AS 1133—1971, Determination of Fibre Diameter of Raw Wool, and AS 1401—1973, Sonic Fineness Testing of Raw Wool. The standard describes the airflow methods to be used for determining the mean fibre diameter of raw wool fibres sampled by coring methods. This standard embodies AS 1133—1971 which described the constant pressure airflow method and AS 1401—1973 which described a similar method but using sonic waves. Both methods measure the impedance to flow of air through a plug of wool fibre.

The revised procedures require that raw wool samples be drawn for testing in accordance with AS 1980. Scouring procedures prefer the use of non-ionic synthetic detergent at 70 °C. The standard provides for a single instrument or two instruments of the one type to be used for making one determination and permits the testing of two specimens (minimum), provided that the results are within a stated range.

The standard does not describe the constant-flow airflow method described in some international standards because this instrument is not used in Australia.

Calibration of both the airflow apparatus (constant-pressure) and the sonic fineness instrument with reference slivers cut into short lengths to simulate core samples is described.

The methods are similar but not identical to IWTO-28\* and IWTO E-7†.

The standard is one of a series for sampling and testing wool. The other standards in the series are as follows:

- AS 1134 Method for the Determination of Wool Base and Vegetable Matter Base in Raw Wool
- AS 1362 Wool—Method for the Calculation of Combined Test Certificates for Yield and Fineness of Raw Wool in Consignments
- AS 1363 Wool—Grab Sampling of Greasy Wool
- AS 1809 The Preservation of the Integrity of Raw Wool Samples for Display
- AS 1980 Wool—Core Sampling of Raw Wool in Bales
- AS 2104 Method for Matching and Building Sale Lots of Greasy Wool in Bales by Objective Measurement
- AS 2274 Wool—Requirements for the Issue of a Test Certificate for Raw Wool
- AS 2720 Wool—Measurement of Mean Staple Length—Method Using the CSIRO Staple Length Meter
- AS 2721 Wool—Method for Sub-sampling of Staples from Grab Samples
- AS 2722 Wool—Determination of Mean Staple Strength—Method Using the CSIRO Staple Strength Meter
- AS XXXX Wool—Method for the Measurement of Clean Colour‡

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\* IWTO-28 Determination by the airflow method of the mean fibre diameter of core samples of raw wool.

† IWTO E-7 Method for sonic fineness testing of raw wool

‡ In course of preparation.

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## STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard  
for

## WOOL—DETERMINATION OF THE MEAN FIBRE DIAMETER OF RAW WOOL

## FOREWORD

The airflow technique of measuring wool fibre diameter\* depends on the fact that, when air is caused to flow axially through a 'plug' of unmedullated compressed fibres there is a relationship between the resistance to flow and the mean diameter of the fibres constituting the plug. In the usual form of apparatus the flow resistance is determined by applying a known pressure differential across a sample and measuring the resultant rate of flow.

The departure of the sonic fineness instrument from the constant-pressure airflow instrument is that the former uses an alternating flow of air through the plug.

As the method is indirect, each instrument must be calibrated with standard wool of known mean fibre diameter (see Clause 9).

The methods require that the fibres be clean and dispersed in a uniformly open state so that special preparation of raw wool is required. A suitable preparation and calibration method has been described†. The measurements may be compared with other mean fibre diameter measurements if a correction is made for the effect of the coefficient of variation of the standard wool‡,§.

The mean fibre diameter of raw wool may not be the same as the mean fibre diameter of the resultant top. It is, however, possible for a mill to collect data and calculate a formula relating the two. The detailed form of the relationship is likely to vary from mill to mill.

\* Anderson, S.L. and Warburton, F.G., *J. Text. Inst.* 40, T749, 1949

† Stearn, A.E., 'A Sonic Fineness Tester for Textile Fibres'. *J. Text. Inst.*, 61, 485, 1970

‡ James, J.F.P. and Bow, M.R., *J. Text. Inst.* 59, 485, 1968

§ James, J.F.P. and David, H.G., *J. Text. Inst.* 59, 585, 1968

## METHOD

**1 SCOPE.** This standard sets out a method using two types of instruments described herein for determining the mean fibre diameter of wool fibres drawn from bales of raw wool by the core-sampling procedure described in AS 1980. It describes the procedures to be used to clean and prepare the wool sample prior to measurement.

**2 APPLICATION.** The standard is applicable to the measurement of raw wool as defined. On lambswool and heavily medullated wools, the method may give values which differ from those given by the projection microscope method (see Appendix C and AS 2001.2.1).

**3 REFERENCED DOCUMENTS.** The following standards are referred to in this standard:

AS 1134 Method for the Determination of Wool Base and Vegetable Matter Base in Raw Wool

AS 1980 Wool—Core Sampling of Raw Wool in Bales

AS 2001 Methods of Test for Textiles  
2001.1 Conditioning Procedures  
2001.2.1 Determination of Mean Fibre Diameter of Textile Fibres by the Projection Microscope

**4 PRINCIPLE.** A sample of raw wool is cleaned, if necessary, and prepared for measurement using the specified mechanical card.

The carded sample is brought to equilibrium with the standard testing atmosphere of  $20 \pm 2^\circ\text{C}$  and  $65 \pm 2$  percent r.h. and weighed test specimens are taken.

The test specimen is compressed to a fixed volume in a cylindrical chamber to form a plug of fibres. Air is moved through the plug of fibres causing a pressure difference across the plug. The mean diameter of the fibres in the test specimen is then determined from the impedance of the plug to the air flowing through it, derived from a calibration previously carried out, using standard wools.

**5 DEFINITIONS.** For the purpose of this standard, the following definitions apply:

**5.1 Core sample**—the wool drawn by the core-sampling procedure given in AS 1980 from a lot or consignment of raw wool in bales.

~~**5.2 Greasy wool**—wool shorn from sheep or sheepskins which has not been scoured, solvent-degreased or carbonized.~~

**5.3 Laboratory sample**—the randomly drawn portion, representative of the scoured and dried subsample, to be carded and conditioned.

**5.4 Raw wool**—wool fibre together with variable amounts of vegetable matter and extraneous alkali-insoluble impurities, mineral matter, wool waxes, suint and moisture. It includes—

- (a) greasy wool;
- (b) wool which has been scoured, carbonized, washed or solvent-degreased;
- (c) scoured skin wools;
- (d) slip wools.

**5.5 Subsample**—the randomly drawn portion, representative of the core sample, to be scoured and dried in accordance with AS 1134.

**5.6 Test specimen**—the randomly drawn portion weighing  $2.500 \pm 0.001$  g, representative of the carded and conditioned laboratory sample, to be measured in the airflow apparatus.

## 6 APPARATUS.

**6.1 Airflow instrument.** An instrument of one of the following types:

- (a) The constant-pressure type airflow instrument and its accessories as described in Appendix A.
- (b) The sonic fineness instrument and its accessories as described in Appendix B.

**6.2 Balance.** A balance for weighing test specimens to 0.001 g.

**6.3 Shirley analyser.** A Shirley analyser (wool model) as described in Appendix D or similar mechanical card capable of homogenizing and fully opening the scoured laboratory sample, without excessive loss of wool and eliminating dust and most of the vegetable matter.

**6.4 Conditioning apparatus.** A means of producing and maintaining the standard laboratory atmosphere of  $20 \pm 2^\circ\text{C}$  and  $65 \pm 2$  percent r.h., as described in AS 2001.1.

## 7 SELECTION AND PREPARATION OF TEST SPECIMENS.

**7.1 Greasy and slip wools.** Laboratory samples of greasy and slip wools shall be drawn from the scoured subsamples prepared for the determination of the wool content of raw wool in accordance with AS 1134. If the sample has been drawn for purposes of determining mean fibre diameter only, the sample shall be scoured and dried in accordance with AS 1134.

**7.2 Scoured and carbonized wool.** Laboratory samples shall be drawn from samples of scoured and carbonized wools obtained by coring methods without further treatment, except as described below.

**7.3 Preparation of test specimens.** Test specimens shall be prepared from laboratory samples selected and prepared as specified in Clauses 7.1 and 7.2 as follows:

- (a) From each of the scoured subsamples, draw at random approximately 10 g of wool.
- (b) If the alcohol extract of the laboratory sample drawn as specified in (a) exceeds 1.5 percent, when determined in accordance with AS 1134, degrease the laboratory sample so that it is within the limit.
- (c) Card the laboratory sample on the Shirley analyser in accordance with Appendix D.
- (d) Dry and condition the carded laboratory sample in accordance with Clause 8.
- (e) Using forceps, remove any excessive vegetable matter.
- (f) Draw at random test specimens weighing  $2.500 \pm 0.001$  g from the conditioned, carded laboratory sample.

**8 DRYING AND CONDITIONING OF THE LABORATORY SAMPLE.** After carding (see Appendix D), ensure that the laboratory sample has