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METHODS OF TEST FOR TEXTILES

PART 3—CHEMICAL TESTS

AS 2001.3.2
DETERMINATION OF ALKALI CONTENT OF WOOL

PREFACE

This standard method for determining the alkali content of wool is based on International standard ISO 2916, Wool — Determination of Alkali Content, and IWTO Method 21-69, Method for the Determination of the Alkali Content of Wool

In appendices information on the accuracy of the method is given, together with a method for determining the confidence limits of the results of tests within a laboratory and between laboratories based on inter-laboratory trials.

This standard requires reference to BS 2071, Soxhlet Extractors.

METHOD

1 SCOPE. This standard describes the procedure for the determination of the alkali content of wool.

2 APPLICATION. The method is applicable to undyed wool in any form, viz loose fibres, card sliver, tops, yarn or fabric. It may be applied to dyed wool if the amount of dye extracted in the course of the test does not affect the determination of the end-point of the titration.

3 PRINCIPLE. A weighed quantity of degreased wool is immersed in dilute boric acid solution which extracts the alkali from the wool. The amount of alkali extracted is determined by titration with a standard solution of hydrochloric acid. The alkali content is expressed as a percentage of the oven-dry mass of the original wool sample.

4 APPARATUS. The following apparatus is required:

(a) Conical flasks with glass stoppers, capacity 250 ml.
(b) Erlenmer flasks, capacity 250 ml.
(c) Microburette, 2 ml.
(d) Pipettes, 50 ml and 100 ml.
(e) Weighing bottle with lid.
(f) Sintered-glass crucible, porosity No 1.
(g) Analytical balance, accurate to 0.0005 g.
(h) Desiccator.
(j) Oven, controlled at 105 ± 3°C.
(k) Mechanical shaking device (optional).
(l) Soxhlet apparatus, complying with BS 2071.*

5 REAGENTS.

Boric acid solution. Dissolve 10 g of boric acid in 1 litre of water.

Hydrochloric acid. *M*/20 solution, standardized.

Methyl red indicator solution. Prepare a 1 g/litre solution of methyl red in absolute ethanol.

Methylene blue indicator solution. Mix, with warming, 4 ml of a 10 g/litre aqueous solution of methylene blue with 96 ml of ethanol.

Dichloromethane.

NOTE: Observe precautions applicable to toxic solvents in operations using dichloromethane.

Distilled water or water of equivalent quality.

6 SELECTION AND PREPARATION OF TEST SPECIMENS.

6.1 Selection. Test specimens shall be selected from a representative sample of the material under test. The sample shall be not less than 10 g. If the sample is a yarn or cloth, cut it into short lengths (approximately 10 mm) and leave them to attain equilibrium with the laboratory atmosphere. Felted materials that cannot be cut into yarn shall be cut first into small pieces.

6.2 Preparation of Sample. Unless it is known that the dichloromethane extract is less than 1 percent, the sample shall be extracted with dichloromethane in a Soxhlet apparatus for 1 h, at a minimum rate of 6 cycles per hour. Evaporate the dichloromethane from the cleaned sample and remove all vegetable matter and foreign substances from the wool.

6.3 Test Specimens. At least two representative test specimens, each of mass 2.000 ± 0.001 g, shall be taken for determination of the alkali content and one representative test specimen of mass 1.000 ± 0.001 g for determination of the oven-dry mass.

7 PROCEDURE.

7.1 Determination of Oven-dry Mass. For the determination of oven-dry mass the procedure shall be as follows:

(a) Place the 1 g specimen in the weighing bottle and dry in the oven at 105 ± 3°C.

* BS 2071, Soxhlet Extractors.

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