भारतीय मानक

Indian Standard

IS 1383 : 2023

ग्रे और तैयार सूती वस्त्र सामग्री में अभिमार्जन हानि के निर्धारण के तरीके

(दूसरा पुनरीक्षण)

Methods for Determination of Scouring Loss in Grey and Finished Cotton Textile Materials

(Second Revision)

ICS 59.060.10

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October 2023 **Price Group 4**

Chemical Methods of Test Sectional Committee, TXD 05

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textiles Division Council.

In the cotton textile industry, yarns and fabrics undergo treatments in the course of which extraneous matter of various types is gathered by or added to the original material which if it is not scoured or is partly scoured may also contain natural impurities, such as oils, fats, waxes, and pectins. The formulation of standard methods of test for determining the quantity of natural impurities and extraneous matter present in the material is, therefore, necessary.

This standard was first published in 1960 and covered a method of test for determining scouring loss which is considered to be severe for fabrics like cotton gauze, bandage cloth and fabrics of loose construction. The first revision in 1977 was undertaken to cover another method which is a milder method compared to the existing one and is widely used in the industry. The existing method has also been modified slightly on the basis of experience gained during its use.

This revision has been made in the light of experience gained since its last revision and to incorporate the following major changes:

a) The apparatus and reagent have been updated; and
b) Reference to the Indian standard has been updated.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

In reporting the result of a test made in accordance with this standard, if the final value, observed or calculated is to be rounded off, it shall be done in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’.

Indian Standard

METHODS FOR DETERMINATION OF SCOURING LOSS IN GREY AND FINISHED COTTON TEXTILE MATERIALS

(Second Revision)

1 SCOPE

1.1 This standard prescribes two methods for determining the scouring loss (loss in mass on scouring) of grey and finished cotton textile materials.

1.2 The methods prescribed in this standard are generally applicable to grey and finished cotton textile materials wherein only starch or tamarind kernel powder or both, and water-soluble or easily removable finishing agents, such as oils, fats, and china clay, have been used and which would normally be removed during the scouring process.

2 REFERENCES

The standards given below contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standards:

IS No.	*Title*
IS 1070 : 2023	Reagent grade water — Specification (*fourth revision*)

3 PRINCIPLE

The test specimen is taken and its moisture content is determined. Another test specimen is scoured, washed and its oven-dry mass is determined. The scouring loss is calculated on the basis of oven-dry mass of the test specimen.

4 SAMPLING

4.1 Sample shall be selected so as to be representative of the lot. Sample drawn in accordance with the procedure laid down in the specification of the material or as agreed to between the buyer and the seller shall be taken as representative of the lot.

5 APPARATUS

5.1 Soxhlet Apparatus

5.2 Drying Oven — Capable of maintaining a temperature of 105 °C ± 3 °C.

5.3 Weighing Balance — Capable of weighing to an accuracy of 0.001 g.

5.4 Conical Flask

6 REAGENTS

6.1 Unless specified otherwise analytical reagent grade chemicals shall be employed in test and distilled water (*see* IS 1070) shall be used where the use of water is intended.

6.2 Desizing Enzyme — Diastase (or other suitable enzyme).

6.3 Sodium Chloride — Solid

6.4 Caustic Soda Solution — 2 percent (*m*/*v*), containing, 1 percent turkey red oil Grade 2 (total fatty matter, percent by weight, *Min* 50 percent)

6.5 Acetic Acid Solution — 1 percent (*v*/*v*)

6.6 Chloroform

7 ESTIMATION OF MOISTURE

7.1 Draw from the sample (*see* **4.1**) at least 2 test specimens (*see* Note), each weighing approximately 3 g. Take one test specimen and weigh it accurately in a clean, dry and tared weighing bottle. Place the weighing bottle containing the test specimen in the drying oven and dry the specimen at 105 °C ± 3 °C to constant mass. Weigh the oven-dry specimen accurately. Calculate the percentage of moisture in the test specimen, by the following formula:

$$\text{Moisture content, percent} = \frac{(a-b)}{a} \times 100$$

where

a = original mass, in g of the test specimen; and

b = oven-dry mass, in g of the test specimen.

NOTE — If the samples under test is fabric, the specimens drawn shall preferably be square in shape.

7.2 Similarly determine the moisture content in the second test specimen and take the average of the two values.

8 PREPARATION OF TEST SPECIMENS

Draw from the sample at least two test specimens each weighing about 5 g. If the sample under test is yarn, cut each test specimen, separately into pieces about 15 cm long, form into separate bundle and tie each bundle loosely round the middle. If the sample under test is fabric, trim each test specimen parallel to the directions of warp and weft and pull out, to form a fringe, 5 threads all round.

9 PROCEDURE

9.1 Method A (Severe Method)

9.1.1 Weigh accurately one test specimen drawn as in **8**. Dip the specimen in a solution (weighing 20 times the mass of the specimen), containing, 5 g of diastase and 10 g of sodium chloride per litre, at 50 °C and at a *p*H of 6.5 to 7.7 (*see* Note 1 and Note 2). Allow the specimen to remain in the solution for 13 h. During this period, take it out from the desizing bath and wring it by hand four times. At the end of the period, remove the specimen, wash it thoroughly (without wringing) four times in hot and cold water successively, using 50 ml of water for each wash.

NOTES

1 The temperature and *p*H given for the desizing solution are the optimum for bacterial diastase. If any other type of desizing enzyme is used, then the temperature and *p*H should be modified to that recommended by the supplier. As many enzymatic desizing agents slowly deteriorate in storage, great care should be taken to see that the sample of desizing agent, at the time of test, is of satisfactory desizing efficiency.

2 If any doubt exists as to whether the size or finish has been completely removed, the treatment with the enzymatic desizing solution should be repeated, the specimen being again weighed after drying to constant mass at 105 °C ± 3 °C and the percentage loss in mass again calculated. If the percentage loss in mass has increased by not more than 0.25, then it may be considered that complete desizing has been affected and the second figure be accepted as the final figure. If the percentage loss in mass has increased by more than 0.25, then the desizing treatment should be repeated until the figure for percentage loss in mass does not differ from the previous figure by more than 0.25.

9.1.2 Put the specimen in a 500 ml conical flask containing caustic soda solution weighing 20 times the mass of the specimen and boil for one hour. Add adequate quantity of water to make up for the loss during boiling. At the end of the period remove the specimen, wash it thoroughly (without wringing) in hot water and dip it for 5 min in acetic acid solution. Finally wash (without wringing) the specimen in cold water. Dry the specimen in drying oven at 105 °C ± 3 °C to constant mass and weigh it accurately.

9.2 Method B (Mild Method)

Weigh accurately one test specimen drawn as in **8**. Extract the specimen for one hour with chloroform in a soxhlet apparatus at the rate of 6 cycles per hour. Allow the chloroform to dry off in the air, and wash the specimen by alternate immersion in hot running water and wringing by hand 12 times in succession. Immerse the specimen in 0.5 percent aqueous solution of diastase (20 times to 30 times the mass of the specimen) at 50 °C and wring by hand repeating the process three times in succession. Finally, return the specimen to the solution and heat to 70 °C. Allow the specimen to remain in the solution for 15 min and then wash it well in hot running water. Squeeze and dry the specimen at l05 °C ± 3 °C and weigh accurately.

10 CALCULATION

10.1 Calculate the percentage of scouring loss by the following formula:

Scouring loss, percent (oven-dry basis)

$$\frac{\left[\left(M_1-\frac{M_1 m}{100}\right)-M_2\right]\times 100}{\left(M_1-\frac{M_1 m}{100}\right)}$$

where

M_1 = original mass, in g, of the specimen;

m = moisture content, percent (*see* **7.2**); and

M_2 = oven-dry mass in g of the specimen after treatment (*see* **9.1** or **9.2**).

10.2 Repeat the test with the remaining test specimen(s) and find out the average of all the values.

11 REPORT

11.1 The report shall include the following information:

a) Type of material;

b) Method used (A or B);

c) Scouring loss, percent; and

d) Number of test specimens tested.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Chemical Methods of Test Sectional Committee, TXD 05

Organization	*Representative(s)* DR
The Synthetic and Art Silk Mills Research Association, Mumbai	MANISHA MATHUR **(*Chairperson*)**
Agilent Technology India Pvt Limited, New Delhi	SHRI PRAVEEN ARYA DR MANOJ SURWADE (*Alternate*)
Ahmedabad Textile Industry's Research Association, Ahmedabad	SHRIMATI DEEPALI PLAWAT SHRI JIGAR DAVE (*Alternate*)
Bidhata Industries Pvt Ltd, Mumbai	SHRI ROHIT PACHERIWALA R. K. PACHERIWALA (*Alternate*)
Central Coir Research Institute, Kochi	DIRECTOR, RDTE SENIOR SCIENTIFIC OFFICER (POLYMER) (*Alternate*)
Central Silk Technological Research Institute (CSTRI), Bengaluru	DR NIVEDITA S.
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Global Organic Textile Standard, Thane	SHRI RAHUL BHAJEKAR SHRIMATI PRACHI GUPTA (*Alternate*)
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Textiles Committee, Mumbai	SHRI KARTIKAY DHANDA DR P. RAVICHANDRAN (*Alternate*)

Organization	*Representative(s)*
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SCIENTIST 'D'/JOINT DIRECTOR
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