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DRAFT EAST AFRICAN STANDARD

Textiles — Method for determination of scouring loss in grey and finished cotton materials

EAST AFRICAN COMMUNITY

Second Edition 2021

Copyright notice

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 061, Textiles, textile products and accessories.

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

This second edition cancels and replaces the first edition (EAS 256:2001), which has been technically revised. The main changes compared to the previous edition are as follows:

— A clause on normative references has been added;

Introduction

In the textile industry, yarns and fabrics undergo treatments during manufacture in the course of which extraneous matter of various types is gathered by or added to the original textile material. The standard, therefore, lays down standard methods for estimating the quantity of each and for determining the water-soluble matter, which if present beyond certain limits in the textile materials adversely affect their quality.

Textiles — Method for determination of scouring loss in grey and finished cotton materials

1 Scope

This Draft East African Standard describes two methods for determining the scouring loss (loss in mass on scouring) of grey and finished cotton textile materials.

The methods apply 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 fats, and china clay have been used and which would normally be removed during the scouring process.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

4 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.

5 Sampling

Samples shall be selected so as to be representative of the lot. Samples drawn in accordance with the procedure laid down in the specification of the material shall be taken as representative of the lot.

6 Apparatus

6.1 Soxhlet apparatus

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

6.3 Weighing balance — Capable of weighing to an accuracy of 0.001 g.

6.4 Weighing bottle

6.5 Desiccator

7 Reagents

7.1 Analytical reagent grade chemicals shall be employed in test and distilled water shall be used where the use of water is intended.

7.2 Desizing enzyme — Diastase (or other suitable enzyme).

7.3 Sodium chloride — Solid.

7.4 Caustic soda solution — 2 % (m/v), containing 1 per cent turkey red oil Grade 2 (total fatty matter, per cent by mass, min. 50 per cent). **7.5 Acetic acid solution** — 1 per cent (v/v).

7.6 Trichloroethane or dichloromethane.

8 Estimation of moisture

8.1 Draw from the sample (see Clause 4) at least two 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 ± 3° C to constant mass. Cool it in a desiccator to room temperature and weigh the oven-dry specimen accurately. Calculate the percentage of moisture in the test specimen, by the following formula:

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

where,

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

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

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

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

9 Preparation of test specimens

9.1 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 loosely round the middle. If the sample -under test is fabric, trim each test specimen parallel to the directions of warp and weft and pullout, to form a fringe, 5 threads all round.

10 Procedure

10.1 Method A (Severe Method)

10.1.1 Weigh accurately one test specimen drawn as in 8.1. 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 pH of 6.5 to 7.7 (see Notes 1 and 2). Allow the specimen to remain in the solution for 1 h 30 min. 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.

NOTE 1 The temperature and pH given for the desizing solution are the optimum for bacterial diastase. If any other type of desizing enzyme is added, then the temperature and pH 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.

NOTE 2 If any doubt exists as to whether the size or finish has been completely removed, the treatment with the enzymatic de sizing solution should be repeated, the specimen being again weighed after drying to constant mass at 105 ± 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.

10.1.2 Put the specimen in a 500-ml conical flask containing caustic soda solution (see 6.4) 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 minutes in acetic acid solution (see 6.5). Finally wash (without wringing) the specimen in cold water. Dry the specimen in a drying oven at 105 ± 3°C to constant mass, cool it in a desiccator to room temperature and weigh it accurately.

10.2 Method B (Mild Method)

10.2.1 Weigh accurately one test specimen drawn as in 8.1. Extract the specimen for one hour with trichloroethane or dichloromethane in a Soxhlet apparatus at the rate of 6 cycles per hour. Allow the trichloroethane or dichloromethane 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 per cent aqueous solution of diastase (20 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 minutes and then wash it well in hot running water. Squeeze and dry the specimen at 105 °C ± 3 °C and cool it in a desiccator to room temperature.

11 Calculation

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

$$Scouring\ loss, per\ cent\ (oven-dry\ basis) = \frac{\left[\left(M_1 - \frac{M_1 m}{100}\right) - M_2\right] \times 100}{\left(M_1 - \frac{M_1 m}{100}\right)}$$

where;

M_1 = original mass in g,

m = moisture content, per cent (see 8.1), and

M_2 = oven-dry mass in g of the specimen after treatment (see 10.1 or 10.2).

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

12 Report

The report shall include the following information:

a) Type of material;

b) Method used (A or B);

c) Scouring loss, per cent; and

d) Number of test specimens tested.

Bibliography

EAS 256:2001, Textiles — Method for determination of scouring loss in grey and finished cotton materials