



EAST AFRICAN COMMUNITY



EDICT



OF

GOVERNMENT

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EAS 155-1 (2000) (English): Cotton yarns
Specification, Part 1: Grading by
appearance



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EAST AFRICAN STANDARD

Cotton yarns — Specification

Part 1:
Grading by appearance

EAST AFRICAN COMMUNITY

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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.

In order to achieve this objective, the Community established an East African Standards Committee mandated to develop and issue East African Standards.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. 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 procedures of the Community.

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.

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Cotton yarns — Specification

Part 1:

Grading by appearance

1 Scope

This East African Standard specification describes methods for grading of cotton yarns by appearance.

This standard specification applies to single spun grey cotton yarns. It does not apply to single spun slub yarns or plied yarns,

2 Terms and definitions

2.1

bunch

a defect in a yarn characterized by a segment not over 6 mm in length that shows an abrupt increase in diameter caused by more fibres matted in this particular place

2.2

cover

the outside layers of fibres that form the surface of yarn

2.3

fuzz

untangled fibre ends that protrude from the surface of a yarn

2.4

nep

a small knot of entangled fibres

2.5

slub

an abnormally thick place in a yarn

2.6

thick place

a yarn defect characterized by a diameter greater than that of the adjoining segments and extending for 6 mm

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2.7

thin place

a yarn defect characterized by a segment that is substantially (at least 25 %) small or in diameter than the average diameter of yarn

NOTE A thin place may be of any length.

2.8

yarn appearance

the visual effect obtained by viewing a sample of yarn, wound with a designated traverse on a blackboard of designated size

3 Principle

Yarn specimens wound on blackboards are compared with standard photographs of specimens representing the appearance grades. The grade is based on fuzziness, neppiness, unevenness, and visible foreign matter.

4 Description of grade

4.1 Grade A yarn

4.1.1 Grade A yarn shall have no large neps which are over three times the normal diameter of the yarn but may have very few small ones.

4.1.2 Grade A yarn shall have good uniformity along its entire length, and good cover without excessive fuzziness.

4.1.3 It shall have no foreign matter present.

4.2 Grade B yarn.

4.2.1 Grade B yarn may have no large neps, but may have few small ones.

4.2.2 Grade B yarn may have no more than three small pieces of foreign matter per board or specimen provided they do not form slubs.

4.2.3 Grade B yarn may be slightly more irregular and may have slightly more fuzz than Grade A yarn.

4.3 Grade C yarn

Grade C yarn may have more neps, and larger ones as well as more fuzziness and a greater amount of foreign matter than Grade B yarn. The contrast between the thick and thin places and the normal diameter of the yarn may be greater than in Grade B yarn resulting in an overall rougher appearance.

4.4 Grade D yarn

4.4.1 Grade D yarn may have some slubs that are more than three times the average diameter of the yarn.

4.4.2 Grade D yarn may have more neps, neps of larger size, more thick and thin places, more fuzz and more foreign matter than Grade C yarn.

When slubs or large neps are present, Grade D yarn may have fewer neps than Grade C yarn. Grade D yarn may have an overall rougher appearance than Grade C yarn.

4.5 Yarn blow grade D.

Yarn below grade D may have more defects and an overall rougher appearance than Grade D.

NOTE The permitted number of defects for any grade should always be determined by comparison with the official spun yarn appearance, standard photographs kept at the respective partner National Standards Body.

5 Apparatus

5.1 Yarn appearance standards

5.1.1 These are a series of photographic standards representing Grades A, B, C and D in six ranges of yarn numbers.

5.1.2 Grade A is the highest and others are progressively lower. The range of yarn numbers to be graded by each series is listed in Table 1.

5.2 Yarn grading cabinet.

5.2.1 A cabinet with the storage space for appearance standards and the specimen to be graded shall be displayed, and lifts mounted on brackets to illuminate the specimen and standards at proper angle.

5.2.2 The lights on the cabinet shall consist of two units focused on the standard when in the grading position from a location about 300 mm in front with one unit slightly above and one unit shall be equipped with two 150 W daylight incandescent bulbs mounted in a reflector which extends across the cabinet to provide uniform light intensity over the standard.

5.3 Yarn Boards

Rectangular heavy cardboard, wallboard or light plywood, at least 140 mm x 250 mm in size finished completely in dull black.

NOTE To fit type winder, there should be a rounded 20 mm notch at the centre of one of the long edges to accommodate the screw of the revolving clamp. In one of the short edges, there should be knife cuts or small notches to hold the ends of the yarn. One of these should be placed approximately 10 mm from the straight side of the board and the other about 20 mm from the notched side.

5.4 Yarn board winder

5.4.1 This is a small machine to rotate a yarn board end-over-end, and fitted with a traversing guide to advance the yarn across the board as it is wound.

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5.4.2 The machine shall be capable of spacing the yarn evenly as required in Table 1 with a tolerance of $\pm 10\%$

5.4.3 All parts of the tension device on the winder which comes in contact with the yarn shall be made of a smooth material such as porcelain or metal, to prevent disturbance of the fibre in the yarn.

Table 1 — Requirements for preparation of specimens

S.No.	Range of yarn numbers (linear densities), Tex	Count	Wraps per cm ²
1	590 to 50	8	8
2	50 to 25	18	9
3	25 to 16	30	10
4	16 to 12	42	13
5	12 to 8	60	15
6	8 to 4	100	19

NOTE 1 Actual single yarn counts should be used on boards.

NOTE 2 The specified number of wraps may be subject to a tolerance of $\pm 10\%$.

6 Adjustment of yarn board winders

Set the traversing mechanism of the winder for the required spacing, wind a trial board, and count the wraps in a width of at least 25 mm. If the number of the wraps does not conform to the tolerances specified in Table 1, adjust to the correct spacing (see note below).

NOTE The spacing is critical in its influence on the appearance of the specimen. Closer spacing places a greater length of yarn on the board and hence, a larger number of imperfections per unit area. Wider spacing has the opposite effect.

7 Sampling

For the laboratory sample, take five packages (cones, spools, bobbins etc) at random from each case of the lot sample. Prepare one specimen from each package in the laboratory sample.

8 Conditioning

The specimens need neither be pre-conditioned nor conditioned.

9 Preparation of specimens

9.1 Mount a yarn board in the revolving clamp of the winder and set the traversing mechanism to give the spacing specified in Table 1 for nominal yarn number.

9.2 If comparing two or more lots which differ slightly in yarn number and fall in different series, (for example, 17 and 15 tex), wind them to the same spacing and compare with the same series of standards.

9.3 In any case, compare only yarns the linear densities of which are not more than 10 % above the upper limit nor more than 10 % below the lower limit of the series of standards by which they are graded.

9.4 Mount the package to unwind freely, lead the yarn through the tension device and traversing pigtail guide, and secure the end in a notch or knife-cut near the left hand side of the board. When unwinding yarn over end of the package, wind the board at 50 rpm to 100 rpm using just sufficient tension to space the yarn evenly on the board.

9.5 If the package must be unwound from the side; wind at a low enough speed to avoid jerking, breaking or tangling the yarn.

9.6 Wind until the last wrap is within approximately 20 mm of the right-hand side and secure the end of the yarn near the right-hand corner.

10 Procedure

10.1 Place the appropriate series of Spun Yarn Appearance Standards in the grading position on the shelf or in the grading cabinet.

10.2 Set one specimen at a time in front of the panel of standards and move it from side to side for comparison with the different standards from about 1 m.

10.3 Thick places, bunches, or slubs are considered the worst defects in yarn because in practically all cases they will cause end breakage in subsequent processes. Yarn with bunches or slubs shall not be assigned Grade A or Grade B.

10.4 When any one defect or a combination of them is excessive for a grade, assign the next lower grade to the specimen.

10.5 Assign to the specimen the grade designated for the photograph, which it is equal to or better than without being equal to the next higher grade. Consider the descriptions given in Clause 5 in making the assignment.

10.6 Also, grade the back of the specimen in a similar manner. Record the grade of the poorer side as the grade of the specimen if the two sides are as much as one grade different.

10.7 Each specimen shall be graded independently by three experienced yarn graders, and the grade reported shall be that assigned by all three graders when they are in agreement, or by two in agreement, provided the third grader does not differ by more than one grade from the grade assigned by the other two. When the range of the grades assigned by the three graders to a specific specimen is greater than one, the three graders shall review the specimen in question and agree on the grade to be assigned, or if they cannot agree the specimen shall be rejected.

10.8 For acceptance grading of commercial lots, recognize only the five grades: A, B, C, D and Below D. If 80 % of the specimens graded are equal to or better than the specified grade, and the remaining 20 % do not fall below the next lower grade, consider the lot as meeting spun yarn appearance specifications.

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10.9 For quality control or research purposes, the grader may assign plus (+) grades to specimens that are intermediate in appearance between one grade and the next higher grade.

11 Test report

The test report shall include the following particulars:

- a) reference to this East African Standard specification;
- b) description of the state of the material and the sampling method used;
- c) grade of the poorest specimen in the lot;
- d) grade equalled or exceeded by at least 80 % of the specimen;
- e) yarn appearance grade, if determined;
- f) nominal yarn number (linear density);
- g) wrap spacing; and
- h) series of spun yarn appearance standards used for grading.

