ETHIOPIAN STANDARD

ES 2740:2021

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Specification for Cotton Embroidery Threads

ICS: 59.080.20

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Foreword

This Ethiopian Standard has been prepared under the direction of Technical Committee for Textile Threads(TC 69) and published by the Ethiopian Standards Agency (ESA).

This Ethiopian Standard cancels and replaces ES 2740:2005(R-2014), *Specification for Cotton Embroidery Threads.*

In preparing the Ethiopian standard reference was made to Indian Standards IS 1803 :1973(R-2018),Cotton Embroidery Threads.

Specification for Cotton Embroidery Threads

1. Scope

1.1. This Ethiopian standard prescribes constructional details and other particulars of 7 varieties of cotton embroidery threads, bleached or dyed.

1.2. This standard does not specify the feel of the embroidery thread, nor does it specify the degree of whiteness of the bleached thread or the color of the dyed thread.

2. Normative Reference

ES 145 sewing threads- code for packaging

ES ISO 2060: textiles yarn from packages - determination of linear density (mass per unit length) by the skein method

ES 127: yarns-determination of breaking load and elongation by the single strand method

ES ISO 105-B01: Textiles - Tests for color fastness - Part B01: color fastness to light: day light

ES I SO 1 05-B04: Textiles - Tests for Color Fastness - Part B0 4: Color Fastness to Artificial Weathering: Xenon Arc Fading Lamp Test

ES ISO 105-B10: Textiles -Tests for color fastness - Part C10: color fastness to washing with soap or soap and soda

ES ISO 105-X05: Textiles - Tests for Color Fastness - Part Xo5: Color Fastness to Organic Solvents

ES 2742: Method for Designation of Ticket Numbers of Industrial Sewing Threads

ES 2739: Method for Determination of Viscosity (Or Fluidity) Of Solutions of Cotton and Regenerated Cellulosic Man- Made Fibers in Cuprammonium Hydroxide

3. Terms and Definition

3.1.
Cuprammonium Fluidity
This is a sensitive index for the determination of chemical degradation of cotton cellulose during scouring, bleaching, souring, etc

4. General Requirement

4.1. Yarn-Cotton yarn for the embroidery thread shall be evenly spun with suitable nuuber of turns per meter to produce a balanced thread.

4.2. Thread-The embroidery thread shall be reasonably free from knots, kinks, projections, dubs, broken or loose ends, and ether manufacturing imperfections which affect its appearance or service ability.

4.3. Direction of Twist-Unless otherwise agreed, the direction of single and double yarns shall be at the discretion.

4.4. Finish- White embroidery thread shall have a uniform bleached finish. The dyed embroidery thread shall be evenly dyed to the required and shall be free from dyeing defects.

4.4.1. The threads shall be mercerized. Finishing and dressing materials liable to cause subsequent tendering shall not be used.

4.5. Working-Where required, the threads shall satisfactorily perform on all the appropriate types of hand and power-driven sewing machines.

5. Specific Requirements

5.1. The embroidery thread shall comply with the requirements of Table 1.

Table 1 Particulars of Cotton Embroidery Thread

VARIETY NO (1)	NOMINAL LINEAR DENSITY IN TEX (OR NOMINAL COTTON COUNT) ** (2)	*LENGTH Min (3) m/kg	*SINGLE THREAD BREAKING LOAD ON 50 cm TEST LENGTHS Min (4) kgf (see Note)
1	60 tex X 2 (or 10s/2)	8 000	3.12
2	50 tex x 2(or 12s/2)	10 000	2.6
3	42texX2(or14x/2)	11 200	2.0
4	16 tex x 2(or 36x/2)	30 000	0.54
5	12 tex x 2(or 50s/2)	42 000	0.5
6	9.8 tex x 2(or 60s/2)	50 000	0.43
7	8.6 tex x 2(or 68s/2)	54 000	0.40
METHODS OF TEST,REF TO CL	-	A-3	ES 127:2001†

* The minimum breaking load values and minimum lengths in meters per kilogram as specified in the table shall apply to embroidery threads irrespective of the type of finish.

** Linear density in tex-mas in grams per kilometer.

† (Method for determination of breaking load, elongation at break and tenacity of yarns.

NOTE-The breaking load shall be determined using constant-rate-of-traverse machine.

5.2. Color Fastness -The dyed threads with color declared as fast shall conform to the requirements given in

Table 2.REQUIREMENTS FOR COLOUR FASTNESS

SL No.	AGENCY	RATINO	METHOD OF TEST REF To
i)	Washing	4 or better	ES ISO : 105 C10*
ii)	Light	5 or better	ES ISO : 105 B04 †
iii)	Organic solvents	3 or better	ES ISO 105-X05‡

*Method for determination of color fastness of textile materials to washing: Test 4 (revised)

†Method for determination of color fastness of textile materials to artificial light (xenon lamp).

‡Method for determination of color fastness of textile materials to organic solvents.

5.3. Cuprammonium Fluidity-The cuprammonium fluidity of the embroidery thread shall not be more than 8 rhes. The fluidity shall be determined by the method prescribed in ES 2739*.

* Method for determination of viscosity (or fluidity) of solutions of cotton and regenerated celluloses in cuprammonium hydroxide (first revision).

5.4. Length or Weight- The length or weight of thread determined on individual units shall be not less than two percent of the declared length and the average length of thread per box or per bundle shall be not less than one percent. The length of embroidery thread shall be determined using a wrap reel with tensioning device as specified in Annex A.

6. PACKAGING

6.1. The embroidery thread shall be made up in the form of tubes, reels or balls.

6.2. Unless otherwise specified, embroidery thread shall be packed in accordance with the provisions of ES145

7. MARKING

7.1. Each tube, reel or ball shall be marked preferably on a label with the following information:

a) Name of the material (in the case of goods supplied to government agencies);
b) Nominal count (in the case of goods supplied to government agencies) or ticket number;
c) The length or weight of thread in a unit package;
d) The work 'fast' in the case of the threads conforming to 3.3;
e) Year of manufacture (in the case of goods supplied to government agencies); and
f) Manufacturer's name, initials or trade-mark; if any.

8. Sampling

8.1. Lot-The quantity of cotton embroidery thread of the same variety delivered to a buyer against a dispatch note shall constitute the lot.

8.2. The conformity of the lot to the requirements of this standard shall be determined on the basis of the tests carried out on the samples selected from the lot.

8.3. Unless otherwise agreed to between the buyer and the seller, the number of packs to be selected at random from a lot shall be as follows:

Number	**Packs to be Selected**
Up to 15	5
16“ 30	7
31“ 50	10
51“ 100	15
101“ 300	25
301and above	30

8.4. One tube, reel or ball shall be selected at random from each of the pack selected according to 9.3. The tube, reel or ball thus selected shall constitute the test sample for determining:

a) length in m/kg,

b) breaking load,

c) length per tube, reel or ball (subject to a minimum of 20 samples).

8.4.1. For testing color fastness and cuprammonium fluidity, two specimens of the required size for a lot size of 30 packs or less, and 3 specimens for a lot size of more than 30 packs shall be taken from the tubes, reels or balls drawn in accordance with 7.4 and tested individually.

8.5. Criteria for Conformity-The lot shall be declared as conforming to the requirements of this standard if the following conditions are satisfied:

a) From the test results for lengths or breaking load, the average and the range R or average range R shall be calculated and the value of the expression X (- 0.4R) and (−R) is greater than or equal to the relevant value specified (Check)

NOTE-When the number of test results is 10 or more, they shall be grouped in groups of five. The mean range W is the value obtained by taking the average of the ranges of the groups.

b) All the test specimens tested for color fastness and cuprammonium fluidity satisfy the relevant requirements.

c) The average of the length measurements is not less that the marked length.

ANNEX A
(Clause 3.5, and Table 1)
MEASUREMENT OF LENGTH

A-1. ATMOSPHERIC CONDITIONS FOR TESTING

A-1.1 The tests shall be carried out in a standard atmosphere (see IS: 196-1966*)

A-2 CONDITIONING OF TEST SPEIMENS

A-2.1 Prior to test, the test specimens shall be conditioned in the standard atmosphere for at least 24 hours.

A-3.1 Apparatus

A-3.1.1 Warp Reel – with a perimeter of 1 000 4mm. Determine the actual perimeter of the reel with a strip of gummed paper passed tightly around the reel and secured by adhesion at the overlap, Cut the paper strip and measure its length to an accuracy of 0.1 percent.

A.3.1.2 Adjustable Yarn Tensioning Device-It shall be capable of giving a reeling tension that will result in skeins of the specified length when measured under a load of 0.5 gf/tex.

A-3.1.3 Weighing Balance –It shall be capable of weighing skeins in grams and with an accuracy of 0.2 percent.

A-3.2 Place the package constituting the test specimen on the wrap reel and wind 100 ml of thread under a suitable reeling tension (see A-3.1.2). Remove the thread so wound from the warp reel and weigh in grams.

A-3.3 Calculation – Calculate the length per kilogram by the following formula:

where

W1 = weight in g of 100 m of thread.

A-3.4 Similarly determines the length in m/kg of other test specimens.

* Atmospheric conditions for testing (revised).

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Ethiopian Standards Agency

Organization and Objectives

The Ethiopian Standards Agency (ESA) is the national standards body of Ethiopia established in 2010 based on regulation No. 193/2010.ESA is established due to the restructuring of Quality and Standards Authority of Ethiopia (QSAE) which was established in 1998.

ESA's objectives are:-

- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and services are in compliance with the required standards,
- ❖ Facilitat the country's technology transfer through the use of standards,
- ❖ Develop national standards for local products and services so as to make them competitive in the international market.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/ or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes. Orders for all Ethiopian Standards, International Standard and ASTM standards, including electronic versions, should be addressed to the Documentation and Publication Team at the Head office and Branch (Liaisons) offices. A catalogue of Ethiopian Standards is also available freely and can be accessed in from our website.

International Involvement

ESA, representing Ethiopia, is a member of the International Organization for Standardization (ISO), and Codex Alimentarius Commission (CODEX). It also maintains close working relations with the international Electro-technical Commission (IEC) and American Society for Testing and Materials (ASTM).It is a founding member of the African Regional Organization for standardization (ARSO).

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