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**Textiles - Knitted apparel fabrics-
Specification**

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Foreword

This Ethiopian Standard has been prepared under the direction of Technical Committee for Textile-Fabrics (TC 70) and published by the Ethiopian Standards Agency (ESA).

ARS 656: 1991 Textiles - Knitted apparel fabrics - Generale requirements published by Afrian Regional Organization for Standardization

Acknowledgement is made for the use of information from the above publication.

DRAFT STANDARD

Textiles Knitted apparel fabrics — General requirements

1. Scope

This Ethiopian Standard specifies the requirements for knitted cotton fabric suitable for apparel purposes. The standard is generally applicable to knitted fabrics made from all types of fibers or blends of textile fibers.

This standard is not applicable to knitted fabrics for which specific uses are specified.

2. Normative reference

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ES ISO 11827 Textiles-Composition-Identification of fibers

ES ISO 105-A02: 2005 textiles tests for color fastness part A02: grey scale for assessing change in color.

ES ISO 105-A03: 2005 textiles tests for color fastness part A03: grey scale for assessing staining

ES ISO 3758, Textiles — Care labeling code using symbols

ES ISO 105-B02: 2015 textiles-test for color fastness-part B02: colorfastness to artificial light: xenon arc fading lamp test

ES ISO 7771: 2013 textiles - determination of dimensional changes of fabrics induced by cold - water immersion

ES ISO 3071 : 2013 textiles — determination of pH of aqueous extracts

ES ISO 22198, Textiles — Fabrics — Determination of width and length

ES ISO 105-b01: 2015 textiles - tests for color fastness - part b 01: color fastness to light-day light

ES 3443 : 2009 specification for textile labels requiring to be washed and/or dry cleaned

ES ISO 105-c10: 2013 textiles — tests for color fastness — part c10: color fastness to washing with soap or soap and soda

ES ISO 105-b07: 2013 textiles — tests for color fastness — part b07: color fastness to light of textiles wetted with artificial perspiration

ES ISO 105-x11: 2014 textiles - tests for color fastness - part x11: color fastness to hot pressing

ES ISO 105-x12: 2018 textiles — tests for color fastness —part x12: color fastness to rubbing

3. Definitions

For the purpose of this Standard the definitions given in ES ISO 8499, ES ISO 6938 and ES 6579 shall apply.

4. Requirements

4.1. General

- 4.1.1.** The fabric shall be evenly knitted and reasonably free from mends, ladders; dropped stitches, holes, cuts, etc.
- 4.1.2.** It shall not be over boarded or pulled in length while calendaring.
- 4.1.3.** The width of the fabric shall be uniform throughout.
- 4.1.4.** The fabric shall be uniformly knitted with straight and even selvages (exact for circular knit fabrics).
- 4.1.5.** The fabric shall be free from knitting defects.
- 4.1.6.** Where dyed, the fabric shall be of uniform color and free from dyeing defects while printed fabrics shall be free of misprints and other printing defects.

4.2. Specific Requirements

4.2.1. Fiber composition

- 4.2.1.1.** When tested by the methods of test described in ES ISO 11827 the fiber composition of the fabric shall be as indicated on the label.

4.2.2. Dimensions

- 4.2.2.1.** When tested by the methods of test described in ES ISO 22198 the length and width of the fabric shall be as indicated on the label.

4.2.3. Mass

- 4.2.3.1.** Where the fabric is sold on the basis of mass, the mass of the fabric shall be determined by the method of test described in ARS 404.
- 4.2.3.2.** The determined mass shall be as indicated on the label.
- 4.2.3.3.** Color fastness — the color fastness ratings of colored fabrics shall comply with the requirements specified in Table 1.

Table 1 — Color fastness requirements

Fastness to	Numerical rating		Method of test
	Change in color	Staining	
Light	5 or better		ES ISO 105-B01 or ES ISO105-B02
washing	3 or better	3 or better	ES ISO 105-C10
Perspiration (acid or alkali)	4 or better	4 or better	ES ISO 105-E04
Hot pressing	4 or better	4 or better	ES ISO 105-X11
Dry cleaning	4 or better	4 or better	ES 3443
Rubbing Dry	4 or better	4 or better	ES ISO 105X12 and ES ISO 105X16
Wet	4 or better	3 or better	

Table 2 — other requirements of knitted cotton fabric

R.No	Characteristics	Requirement	Method of test
i	Length	As declared; ± 1 per cent	ES ISO 22198
ii	Width	As declared; ± 3 per cent	
iii	Dimensional change (max)	± 4 per cent	ES ISO 7771
iv	pH value of aqueous extract	6 to 8	ES ISO 3071

4.2.3.4 The fabric shall conform to the requirements of table 3 below.

Table 3 - Specific requirements for knitted apparel fabrics

Characteristic	Requirement	Method of test
Bursting strength in Newton (minimum)	270	ES ISO 13938-1
Dimensional change(Maximum)		
a) after 5 washes	! 3"1.	ES ISO 5077 and ES 3443
b) after 3 dry cleanings	! 31.	
Pilling resistance (for wool, man-made fibers and blends), (Minimum)	4	ES ISO12945-1
Color fastness to:		
a) light (minimum)	4	Part B01 or Part 8£12
b) washing (minimum)		part c
- change in color	4	
- staining	4	
c) perspiration (minimum)		Part £04
-change in color	4	
- staining	4	
d) rubbing (minimum)		Part n2
- dry	4	
- wet	4	
e) dry cleaning	4	Part D

5. Grading

- 5.1.** The grading of the fabric shall be made on the basis of serious, major and minor defects as defined in annex A.
- 5.2.** For the purpose of grading, in a fabric roll of 100 meters, the number of pieces in a roll shall not be more than six and the minimum length of each piece shall not be less than 3 meters.
- 5.3.** Cut pieces — the minimum length of the pieces shall not be less than 40 cm.

Table 4 — Grading of fabrics

Length of fabric	Type of defects	Number of defects permissible	
		Grade A	Grade B (seconds)
100 meters	Serious	Nil	Nil
	Major	Nil	6
	Minor	6	12

6. Tests

6.1. methods of test

- 6.1.1.** Samples of the fabric shall be tested in accordance with the methods of test indicated in 4.2, 4.3, 4.4 and table 3.

6.2. Testing

- 6.2.1.** From the bulk samples obtained by B.1 of annex B, examine the lot for the following characteristics:
- packing and marking;
 - width of fabric;
 - length of piece: and
 - knitting and dyeing defects
- 6.2.2.** From the laboratory samples obtained by B.2 of annex B. test for the requirements of table 3 and the fiber composition.

7. Packaging and marking

7.1. Packing

The fabric shall be supplied in clean and dry state.

It shall be packed in a package protecting it from dust and dirt.

7.1.1. Product units

- 7.1.1.1. Unless otherwise specified by the purchaser each piece of fabric shall be rolled full width on a tube.
- 7.1.1.2. Only pieces of the same type, width, design and color-way shall be rolled on the same tube
- 7.1.1.3. Each roll shall consist of not more than two pieces of fabric.
- 7.1.1.4. No cut piece shall have a length less than a quarter of the total length of the fabric making the roll.
- 7.1.1.5. Each roll shall be wrapped in a suitable packaging material which should protect the contents from any environmental hazards.

7.1.2. Bulk containers

- 7.1.2.1. Rolls of fabric shall be packed in suitable bulk containers which should protect the contents.
- 7.1.2.2. Generally rolls of the same fiber type, design and color shall be packed in one bulk container.

7.2. Marking**7.2.1. Product units**

- 7.2.1.1. The following information shall be legibly and indelibly marked on a label attached securely to the outer top layer of each piece:
 - a) fiber composition
 - b) mass of fabric, in kg, if product is sold by mass
 - c) number of pieces, if more than one of each piece shall be given
 - d) 100 per cent cotton
 - e) give any special finishes applied to the fabric
 - f) country of origin
 - g) manufacturer's name and/trade mark
 - h) length in meters
 - i) width in centimeters;
 - j) Care instructions in accordance with ES ISO 3758, Textiles — Care labeling code using symbols
 - k) Grade (if other than grade A, grade B items are to be stamped 'SECONDS' in clear and bigger letters).

7.2.2. Bulk containers

- 7.2.2.1. Bulk containers shall have securely affixed to them a label bearing the following information:
 - a) Name of manufacturer or registered trade mark or name, if any;
 - b) fiber composition;
 - c) number of rolls in container;
 - d) total length of pieces, in meters, or total net mass of pieces, in kg;
 - e) country of origin

Annex A
(Normative)
Grading and classification of defects

A.1 Serious defects

A.1.1 Ladders more than 2.5 cm from the fabric edges.

A.1.2 Dropped stitches

A.1.3 Occurrence of more than one needle line 2.5 cm from the fabric edges

A.2 Major defects

A.2.1 one continuous needle line more than 2.5 cm from the fabric edges

A.2.2 continuous small holes/cuts and holes/cuts of size exceeding 1 cm

A.2.3 Continuous oil and/or other stains and oil and/or other stains of size exceeding 1 cm.

A.2.4 Misprints

A.2.5 Uneven color distribution

A.2.6 Distortion of designs of more than 5 cm

A.3 Minor defects

A.3.1 mixed thread

A.3.2 bleeding of prints

A.3.3 Stenter curved sides

A.3.4 needle lines up to 15 cm length

A.3.5 Holes of size below 1 cm

A.3.6 Non-continuous color and/or other stains of size below 1 cm.

Annex B

(Normative)

Procedure for sampling

B.1 Bulk sample (number of pieces from a shipment or lot)

B.1.1 Take at random from the shipment or lot the appropriate number of pieces shown in table 4.

B.1.2 Ensure that no piece which shows signs of damage or dampness incurred during transit is included in the sample.

Table 4 - Bulk sample

Number of pieces in shipment or lot	Number of pieces in bulk sample, (minim)
3 or less	1
4 to 10	2
11 to 30	3
31 to 75	4
76 or more	5

B.2 Laboratory samples

B.2.1 From each piece in the bulk sample, cut (from a portion taken at random but at least 1m from an end of the piece) a laboratory sample, of full width and of length giving a sample of an area not less than 2m².

B.2.2 Ensure that areas that are creased or that have visible faults are not included in a sample

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- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and services are in compliance with the required standards,
- ❖ Facilitate 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

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