
Test Method and Defect inspection Requirement for Garment

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Foreword

This Ethiopian Standard has been prepared under the direction of Technical Committee for Made-up-Textiles & Ready-Made Garments (TC 72) and published by the Ethiopian Standards Agency(ESA).

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Test Method and Defect inspection Requirement for Garment

1. Scope

This Ethiopian standard covers the test method and inspection of garment starting from raw material to the finished packed product.

This standard doesn't include home textiles and foot wears.

2. Normative references

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 105-B02, Textiles — Tests for colour fastness — Part B02: Colour fastness to artificial light

ES ISO 105-C06, Textiles — Tests for colour fastness — Part C06: Colour fastness to domestic and commercial laundering

ES ISO 105-C10, Textiles – Tests for colour fastness – Part C10: Colour fastness to washing with soap or soap and soda

ES ISO 105-E04, Textiles — Tests for colour fastness — Part E04: Colour fastness to perspiration

ES ISO 2859-1, Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection

ES 6583- code of practice for grading of textile fabrics

ES ISO 12947-1, Textiles — Determination of the abrasion resistance of fabrics by the Martindale method — Part 1: Martindale abrasion testing apparatus

ES ISO 12947-2, Textiles — Determination of the abrasion resistance of fabrics by the Martindale method — Part 2: Determination of specimen breakdown

ES ISO 12947-3, Textiles — Determination of the abrasion resistance of fabrics by the Martindale method — Part 3: Determination of mass loss

ES ISO 12947-4, Textiles — Determination of the abrasion resistance of fabrics by the Martindale method — Part 4: Assessment of appearance change

ES ISO 13934-1, Textiles — tensile properties of fabrics — Part 1: Determination of maximum force and elongation at maximum force using the strip method

ES ISO 13935-1, Textiles — Seam tensile properties of fabrics and made-up textile articles — Part 1: Determination of maximum force to seam rupture using the strip method

ES ISO 13935-2, Textiles — Seam tensile properties of fabrics and made-up textile articles — Part 2: Determination of maximum force to seam rupture using the grab method

ES ISO 13937-4, Textiles — Tear properties of fabrics — Part 4: Determination of tear force of tongue shaped test specimens (Double tear test)

3. Terms and Definitions

For the purposes of this standard the definitions given in ES ISO 3534-1, ES ISO 3534-2 and the following shall apply.

3.1.

Apparel accessories

Includes: scarves, hats, gloves, mittens, belts, bags etc.

3.2.

Functional outer wear

Includes ski wear including hat & gloves, winter overalls, rainwear. One or more functions are requested e.g. waterproof, water resistant, water repellent, windproof, breathable.

3.3.

Pile fabric

Fabric like velvet, velour, corduroy etc

3.4.

Pullers with play value

Decorative pullers / easy grip-able

3.5.

Sleep bags

Full length fabric bag with neck opening and armholes but without sleeves, hood or specific areas for feet and legs

3.6.

Defect

Non-fulfillment of an intended usage requirement

NOTE 1 The term "defect" is appropriate for use when a quality characteristic of a product or service is evaluated in terms of usage (as contrasted to conformance to specifications).

NOTE 2 since the term "defect" now has definite meaning within the law, it should not be used as a general term.

3.7.

Lot

Definite amount of some product, material or service, collected together

NOTE an inspection lot may consist of several batches or parts of batches.

3.8.**Lot size**

Number of items in a lot

3.9.**Fabric relaxation**

“Relaxing” refers to the process that allows the material to relax and contract prior to being manufactured.

4. Garment testing method and requirements

Testing and requirements for different types of garments are specified in table 1 below.

Table 1 Garment testing and technical requirements

Sr.No	Test type	Requirement	Test method
A. PHYSICAL TESTING			
1	Breaking strength N, Min:		ES ISO 13934-2
	a) <160g/m ²	120	
	b) 160-250g/m ²	150	
	c) >250g/m ²	200	
2	Seaming slippage/properties		ES ISO 13936-2 Seam according to ready-made product
	a) Woven textile fabrics weight ≤ 220 g/ m ² – load applied 60 N	Seam opening ≤ 6 mm	
	b) Woven textile fabrics weight > 220 g/ m ² – load applied 120 N	Seam opening ≤ 6 mm	
3	Seam strength (N)		ES ISO 13935-1&2.
	a) Woven textile fabrics weight ≤ 220 g/ m ² – load applied 60 N	Seam opening ≤ 6 mm	
	b) Woven textile fabrics weight > 220 g/ m ² – load applied 120 N	Seam opening ≤ 6 mm	
	c) lining – load applied 80 N	Seam opening ≤ 6 mm	
4	Snagging resistance		ASTM D 3939
	Fabrics in knitted micro-fibre	Warp & weft: 3	
5	Tearing strength (N), Min.		ES ISO 13937-2
	a) Woven toques/blouses/dresses/fancy jackets	>10	
	b) Woven fabric, bottoms	>15	

	c) Woven fabrics, jackets, coats & outer wear	150-200g/m2:>15 200-400g/m2:>20	
	d) Denim (bottoms and jackets)	Scrapped / chemical treated: >15N Untreated: > 20N	
6	Bursting strength	250kpa	ES ISO13938-1&2
7	Abrasion resistance rubs		ES ISO 12947-4, ES ISO 105-X12
	a) Dry	4	
	b) Wet	3-4	
8	Pilling resistance - ICI pilling box		ES ISO 12945-1 The test should be performed before wash
	Knitted textile products		
	Exceptions		
	Wool/wool blends	7 200 rev: 3	
	Lamb's wool/lamb's wool blends containing >20% lamb's wool	7 200 rev: 2-3	
9	Pilling resistance - Martindale		ES ISO 12945-2 The test should be performed before wash
	Woven textile products	2000 rev: 3	
	Exceptions		
	Pyjama & shirts in brushed fabric in 100% cotton & cotton/synthetic blends pilling to be evaluated in appearance after 5 times wash test	3-4	
10	Accessories(attachment) strength N, under maximum force for 10s		ES ISO 8124-1
	a) Children's wear size 50-128 cm in length Accessories $\geq$ or equal to 6mm	90	
	b) Children's wear size 50-164 cm in length Accessories $\geq$ 6mm	70	
	c) Children's wear size 50-164 Accessories $\leq$ 6mm	50	
	d) General fabric weight <100g/m2	50	
	e) General fabric weight >100g/m2	70	

11	Zipper test - general		ES 6767 Annexes
	a. All products with zipper	As specified ES 6767	
B. COLOUR FASTNESS AND DIMENSIONAL CHANGE			
12	Colour fastness to artificial light-xenon test, min.		ES ISO 105-B02
	a) Ski wear including gloves, hats & winter overalls Beach wear, e.g., sun hats & sarongs	Change in colour: 4	
	b) Swimwear fabrics including embroidery, print etc.	Change in colour: 5	
	c) Plastic decorations on swimwear, e.g., sequins, plastic bead, buckle etc.	No major change	
	d) Exceptions		
	e) Swimwear in white colour with OBA	Change in colour: 4	
	f) Swimwear in neon colours and very bright colours of pink, turquoise, yellow and green	Change in colour: 2	
13	Colour fastness to washing, min.		ES ISO 105-C10 ES ISO 6330, ES ISO 3759 & ES ISO 5077
	a) Products labeled with care instructions, possible to wash in water	Colour staining: 3-4 Change in colour: 4 Cross staining: 4-5	
	Exceptions		
	b) Solid dark-coloured products in - 100% polyester - polyester blends≥ 30% polyester	Colour staining: 2 Change in colour: 4	
14	Colour fastness to dry cleaning		ES ISO 105 D01
	Products labelled with “dry clean only” or dry clean as optional cleaning method	Change in colour: 4 Cross staining: 4-5	
15	Colour fastness to perspiration, min.		ES ISO 105-E04
	a) Baby’s textile products	Acid & Alkaline Colour staining: 3-4 Change in colour: 3-4 Cross staining: 4-5	
	b) Adult’s & children’s textile product	Acid & Alkaline Colour staining: 3 Change in colour: 3	

		Cross staining: 4-5	
16	Colour fastness to dry rubbing, min.		ES ISO 105-X12 Face & reverse side. Before & after wash or dry clean. (based on ES ISO 105-X12)
	a) Adult's & Children's products	3-4	
	b) Baby's products	4	
	c) All small accessories not possible to test according to ISO 105-X12	Jewellery: 2-3 Hair accessories: 3-4	
	Exceptions		
	a) Baby's & smaller children's products:	3	
17	b) Older children's & adult's products: - Placement prints in foil and pigment on front side of garment - Pile fabric - Linen - Wool in rough structure - Peached products - Indigo dyed jersey	3	ES ISO 105- X12
	Colour fastness to wet rubbing, min.		
	a) Swimwear b) Functional outer wear	3	ES ISO 105-X12 Face & reverse side Before & after wash or dry clean
	c) Bath robes d) Morning gowns	2-3	
18	Colour fastness to water		
	a) All products	Colour staining: 3-4 Change in colour: 4 Cross staining: 4-5	ES ISO 105-E01 or Chinese standard GB/T 5713
19	Colour fastness to chlorinated water		ES ISO 105-E03
	a) General	Change in colour: 4 Cross staining: 4	concentration of chlorine 50 mg/l
	b) Swimwear fabrics including embroidery print etc.	Change in colour: 3-4 Cross staining: 4-5	
	c) Swimwear in white colour with OBA	Change in colour: 3-4 Cross staining: 4-5	
	d) Swimwear in neon colours and very bright colours of pink, turquoise, yellow	Change in colour: 3 Cross staining: 4-5	

	and green		
20	Colour fastness to saliva		ES ISO 105-E04
	a) Baby's products	Colour staining: 4 Change in colour: 4 Cross staining: 4-5	
21	Colour fastness to sea water		ES ISO 105-E02
	a) Swimwear	Colour staining: 3-4 Change in colour: 4 Cross staining: 4-5	
22	Colour fastness to Hot pressing at 150 ± 2 °C for 15 s in dry state, min.		ES ISO 105-X11
	a. Textile details such as prints, labels, badges, and other trims in contrast colours.	Colour staining: 4 Change in colour: 4 Cross staining: 4-5	
23	Colour fastness to phenolic yellowing		ES ISO 105-X18
	a. All products	Change in colour: 4	
24	Dimensional change on laundering percent, Max:		ES ISO 3759/ ES ISO 6330/ ES ISO 5077
	a. Products with care instructions, possible to wash in water	Woven fabric: Length: $\pm 3\%$ Width: $\pm 3\%$ Knitted fabric: Length: $\pm 5\%$ Width: $\pm 5\%$	
25	Dimensional stability to dry clean		
	a. Products with care instruction "dry clean only" or dry clean as optional cleaning method	Woven fabric: Length: $\pm 3\%$ Width: $\pm 3\%$ Knitted fabric: Length: $\pm 5\%$ Width: $\pm 5\%$	
26	Twisting		ES ISO 105-C10
	b. Products with care instructions, possible to wash in water	General < 5% Trousers < 8%. 1 cm or less twisting is within the tolerance for all types of	Measure after wash at bottom hem

		garments	
27	Abrasion resistance – Children’s functional outer wear		ES ISO12947 parts
	a) Children’s functional outer wear in size 86-140 cl Knee- and bottom area Beaver- & Cordura nylon	After > 8000 rev No holes	
	b) Children’s functional outer wear in size 86-140 cl, Knee- and bottom area Other qualities	After > 5000 rev No holes	
28	Abrasion resistance - socks and tights		ES ISO12947 parts
	a. Socks and tights (except micro fibre)	After > 7000 rev No thinning	
C. TECHNICAL GARMENT SPECIAL REQUIREMENT			
29	Air permeability		
	a. Functional outer wear with “wind proof” function	< 20 mm/s	ES ISO 9237
30	Water penetration		ES ISO 811
	a)Functional outer wear with “waterproof” function	Fabric and over sealed/taped seams After 5 washing/drying cycles: > 2000 mm	Increase of water pressure 60 cmH2O/min Temp. of water 20°C The requirement applies to lowest received value, not the mean value.
	b)Functional outer wear with “water resistant” function	Fabric and over sealed/taped seams After 5 washing/drying cycles: > 1500 mm	
31	Water vapor		ES ISO15496 Measure before wash
	a.Functional outer wear with “breathable” function	≥ 0,1 g/m2 Pah	

5. Garment product inspection

5.1. Sampling

5.1.1. Styling Sample

At first, we need to make a styling sample for getting styling approval as per buyer’s specification, fitting & workmanship. Everything we need to follow as original sample & comments. For styling samples, we give fabric & accessories similar to original color or approved lap dip.

5.1.2. Size Set Sample

Size set sample covering all sizes & covering all sizes & colors. All actual fabric & accessories are used for styling samples. Must adjust the pattern as require fittings; grading and workmanship according to approval specification & comments.

5.1.3. Pre-Production Sample (P.P Sample)

For the final configuration of styling fitting & workmanship, before state production we make another size set sample covering all size & color for approval. After receiving p.p sample comments, manufacturer meets all of the buyer requirements, then start bulk production.

5.1.4. Counter Sample

In every step of sampling, we should keep a counter sample with marking the sample name. The pre-production sample counter should follow with p.p comments for bulk production. We should make a copy of the p.p sample with comments to give every line in production.

5.1.5. Shipment Sample

The shipment sample has to prepare for buyer 15 days before shipment covering all sizes & colors with all actual accessories. These requirements vary from buyer to buyer. We always fulfill our buyer's requirements.

5.2. Warehouse/Store**5.2.1. Accessories Inspection**

For this purpose, use ISO 2859-1 and follow 1.5 AQL/10% of accessories as per packing list quantity or follow AQL level specified by the buyer.

5.2.2. Fabric inspection

For this purpose, use ES 6583 Annex B where 4- point fabric inspection system acceptable range will be depending on buyer's requirement.

5.2.3. Shade Band**5.2.3.1. Objective**

- a) To set up an acceptable shade range for factory bulk production guidelines.
- b) To find out shade & solve a problem at the earlier stage before bulk production.

5.2.3.2. Shade Band Making Method

- a) Shade band must be submitted before bulk production is started.
- b) Each shade let be made two sets of leg panels for buyer approval.
- c) Leg panel dimension is to be (8"half x 16")
- d) Whenever the handstand/spray effects are presented in the standard, they should be demonstrated on one side of the leg panels.
- e) A pocket to be sewn on one side of the leg panel
- f) Leg panel to be washed the same as the bulk washing
- g) Achieve shade as close as the washing standard
- h) Half/Cut leg panels are not acceptable for approval

5.3. Fabric relaxation

The relaxing process allows fabrics to shrink so that further shrinkage during customer use is minimized thereby reduces fabric wastage. Knitted fabrics needs relaxation period of 24 hours and Lycra fabrics needs relaxation period of 48-72 hours based on the Lycra composition.

5.4. Cutting inspection

5.4.1. Spreading: The Quality Control inspector should check the work of each spreader for the following

5.4.1.1. Placement of Marker: Check and verify so that the marker is sited on the range with the brink matching to the selvage of the piece goods. Also, you need to confirm that all cut pieces will be finished properly.

5.4.1.2. Markers: Make sure that there are no makers with creased or overlapped parts in the markers.

5.4.1.3. Splices: After spreading is finished then check the splice laps that both plies extend past the marked splice by less than 1/2 (half) inch and not more than 1 (one) inch.

5.4.1.4. Tension: Check tension during spreading. This is very important on knit fabrics

5.4.1.5. Count: Check the count after completion of spreading, and before cutting. Count all plies at both ends. There is no tolerance.

5.4.2. Cutting: The quality control inspector should check each cut pieces as per the buyer requirement or normally follow top, middle and bottom panel inspection of each part and if there is high fabric defect inspect each cut panel 100%.

The Quality control inspector should check for

- a) **Miscut:** Check for miscut or the failure of the cutter to “split the line **“Tolerance is 1/16”** Report all defects for miscut to the cutting foreman (Supervisor)
- b) **Matching:** Plies check the top ply with the bottom ply. Compare both to a hard pattern or the paper marker Comparison to a hard pattern is best. Tolerance is +- 1/8”.
- c) **Rugged Cutting:** Check for rugged cutting according to the standards for your product. This judgment defect. It is more important on critical parts if the part has to be recut, it is a defect.
- d) **Notches:** Check the notch location by placing the pattern over the top ply. Tolerance is +- 1/8”.
- e) **Pattern Check:** Compare the pattern to marker paper to ensure that the maker was correct.

5.4.3. Printing- 100 % inspection of printing panels

5.4.4. Embroidery- 100% inspection of embroidery

5.5. Sewing

5.5.1. 100% in Line Q.I Audit

Follow the root canal system in sewing. For that, analyze the source & reason for defects and take preventive action as per the root cause. Q.I checks 100% incomplete garments of the quality control. The hourly defects record is very important for root cause analysis.

5.5.2. 100% End inspection

End line Q.I must check 100% for garment defect and measurement with refence of buyer measurement requirement. Q.I write down the name & ID no of operators & keeps an hourly record of defects.

5.6. Finishing

5.6.1. Trimming

Trimming is the most important thing in quality issues. We don't allow tread end **over 3 mm**.

5.6.2. Inside Checking

In finishing section, **check 100%** garments, process-wise in the side of garments.

5.6.3. Preliminary Top Side Checking

In finishing section, **check 100%** garments, the process-wise top side of garments.

5.6.4. Pressing

Check for preliminary and repressing process.

5.6.5. Measurement Check

100% of garments should a measurement check before packing. Measurement defects garments should not advance for packing.

5.6.6. Metal Detection (standard has to be checked)

There is no perfection to enter any okay garments without metal detector machine checking. We sent all okay garments to the packing section through the metal detector machine. The packing section is isolated by the gatekeeper system. Detection standard shall be as per buyer specification and can be 0.8, 1.0- and 1.2-mm diameter sphere of ferrous metal. We keep a 100% record of metal detection.

Needle detector machine should be checked the reaction as per buyer specifies by 0.8 ϕ 1.0 ϕ or 1.2 ϕ with TEST PIECE, at starting time, before lunch, after lunch, and end of work.

9points	1	2	3	4	5	6	7	8
TOP	●			●				●
MIDDLE	●			●				●
DOWN	●			●				●



5.7. Internal and External Audit

For this purpose, use ISO 2859-1 for choosing the appropriate sampling plan and AQL level

5.8. Labelling

The garments should be properly labelled. The size and details of labels should be as agreed to between the buyer and the seller and as far as possible, should indicate the following:

- Fibre content;
- After-care instructions;
- Size designation;
- Manufacturer's name, initials or trademark; and
- Country of origin.

NOTE -Incase of garments made from combination of fabrics, the fibre content shall be determined on the basis of pre dominant fabric(s). Wadding's used in the garments shall not be considered for declaring the fiber content.

5.9. Packaging

Garment packages should be so designed as to ensure that the garments reach the consumer in satisfactory condition. The details such as, method of garment folding, number of garments in each package, type of outer packing, etc., should be worked out in consultation with the buyer and shall be comply with code for packing of ready -made garments for export (ES 6770)

Annex A

(Normative)

Classification of Critical, Major and Minor Defects

Woven Shirts

Appearance, Color and Fabric[Defect by Zone]			
Defect		Zone A	Zone B
1.	Dirt Spot	Major	Major
2.	Shaded Parts	Major	Major
3.	Shading between Garments	Major	Major
4.	Holes of any Size repaired or not	Major	Major
Sewing [Seams and Stitches Defects by Zone]			
Defect		Zone A	Zone B
1.	Run off Stitches up to 1/8"	Major	Minor
2.	Run off Stitches over 1/8"	Major	Major
3.	One or More Skip Stitch on a Chain Stitch	Major	Major
4.	More than One Skip Stitch on a Lock Stitch	Major	Major
5.	Stitching Margin Variation Needle to Edge over 1/16"	Major	Minor
6.	Any Exposed Stitch or Under part	Major	Minor
7.	Blind stitch Bite Too Deep	-	Major
8.	Stitch count Variation over +2 or -1 per inch	Major	Major
9.	Tight Stitch, Thread Tension	Major	Major
10.	Raw Edge, Open Seam, Lose Seam or Fraying	Major	Major
11.	Uneven Front Placket >1/8" at Bottom	Major	-
12.	Incorrect Placket Width 1/8" or Less	Major	Minor
13.	Uneven High-Low Pockets [2 Shirt Pocket] of Pocket Flaps more than 1/4" in relation to each other	Major	Major
14.	Mismatch Pockets Plaid Match over 1/8"	Major	
15.	Uneven Collar Points over 1/8"	Major	
16.	Collar Overlap when Buttoned	Major	
17.	Incorrect Size Buttonhole	Major	Major

18.	Buttonholes Non reparable, Anchored Threads or Broken Stitches	Major	Major
19.	Incorrect Buttons	Major	Major
20.	Missing Buttons	Major	Major
21.	Buttons Out of Line on Top Center 1/8" Tolerance	Major	
22.	Four Hole Button Sewn in Two Eyes or Upside Down	Major	Major
23.	Buttons Not Securely Sewn	Major	Major
24.	Sewn In Pleats on Outside	Major	Major
25.	Uneven Pleating Shirring or Poor Sewn Pleats	Major	Major
26.	Mismatch Plaid/Stripe up to 1/8"	Major	Minor
27.	Mismatch Plaid/Stripe over 1/8"	Major	Major
28.	Improper Interlining, Excessive Fullness of Parts	Major	Major
29.	Interlining Twisted or Garment Part Twisted	Major	Major
30.	Bubble Formation at Collars Due to Improper Fusing of Interlining	Major	Major
31.	Needle Chews Up to One per inch	Major	Major
32.	Incorrect Thread or Accessories	Major	Major
33.	Sharp Point/Edges on Hardware or Broken Needles	Critical	Critical
Pressing [Defect by Zone]			
Defect		Zone A	Zone B
1.	Permanent Crease	Major	Major
2.	Pressing Not as Specified	Major	Major
3.	Burn Marks, Scorch Marks, Pressure Marks	Major	Major
Cleanliness [Defect by Zone]			
Defect		Zone A	Zone B
1.	Attached Sewing Threads up to 1/4"	Major	Minor
2.	Attached Sewing Threads over 1/4"	Major	Major
3.	Attached Threads Over 1/2" Inside Garment	Major	Major
4.	Sewn-In Waste or Thread	Major	Major
5.	Stain, Soil under 1/8"	Major	Minor
6.	Stain, Soil over 1/8"	Major	Major

7.	Ring from Cleaning Gun or Rubbed Spots	Major	Major
8.	Drill Hole or Pencil Mark Visible	Major	Major
9.	Needle Chews or Feed Dog Abrasion	Major	Major
10.	Component Parts not Securely Tacked	Major	Major
11.	Mildew or Heavily Odoured Garments	Major	Major
Packing/Finishing Defects			
Defects			
1.	Improper Placement of Main, Size and Wash Care Label	Major	Major
2.	Extra Buttons Not Present	Major	Major
3.	Garment Fold not as Specified	Major	Major
4.	Hangtags Missing	Major	Major
5.	Incorrect Size Labels	Major	Major

Woven Bottoms

Appearance, Colour and Fabric[Defect by Zone]			
Defect		Zone A	Zone B
1.	Uneven Dye, Dirt Spot	Major	Major
2.	Shaded Parts	Major	Major
3.	Dye Misprints, Dye Smear	Major	Major
4.	Obvious Foreign or Colour Yarn	Major	Major
5.	Not Obvious Foreign or Colour Yarn	Major	Minor
6.	Poor Matching of Colour or Print Patterns	Major	Major
7.	Texture Change	Major	Major
8.	Shading Between Garments	Major	Major
Fabric (Defect by Zone)			
Defect		Zone A	Zone B
1.	Slubs and Misweaves up to 1/8"	Major	Minor
2.	Holes of any Size Repaired or not	Major	Major
3.	Standard weight exceeding Tolerance	Major	

4.	Drop Stitch, Mend, Broken Stitch, End Down, Bent Needle, Needle Line	Major	Major
5.	Dye Discoloration, Streaks, Blotches, Print out of Register	Major	Major
6.	Bow or Bias fabric over 1" side to side	Major	Major
Sewing [Seams and Stitches Defects by Zone]			
Defect		Zone A	Zone B
1.	Run off Stitches up to 1/8"	Major	Minor
2.	Run off Stitches over 1/8"	Major	Major
3.	One or More Skip Stitch on any stitch type	Major	Major
4.	Incorrect Stitch Type	Major	Major
5.	Stitching Margin Variation Needle to Edge over 1/8"	Major	Minor
6.	Any Exposed Stitch or Under part	Major	Minor
7.	Blind stitch Bite Too Deep	-	Major
8.	Stitch count Variation over +2 or -1 per inch	Major	Major
9.	Tight Stitch, Thread Tension	Major	Major
10.	Raw Edge, Open Seam, Lose Seam or Fraying	Major	Major
11.	Misaligned front back over 1/8"	Major	Major
12.	Incorrect Placket width up to 1/8"	Major	Major
13.	Incorrect Placket width over 1/8"	Major	Major
14.	Mismatch Pockets, 4-way plaid match over 1/8"	Major	Major
15.	Uneven collar points over 1/8"	Major	
16.	Collar Overlap when Buttoned	Major	
17.	Incorrect Size Buttonhole	Major	Major
18.	Buttonholes Non-reparable, Anchored Threads or Broken Stitches	Major	Major
19.	Incorrect Buttons	Major	Major
20.	Missing Buttons	Major	Major
21.	Buttons Out of Line on Top Center 1/8" Tolerance	Major	
22.	Four Hole Button Sewn in Two Eyes or Upside Down	Major	Major

23.	Buttons Not Securely Sewn	Major	Major
24.	Sewn In Pleats on Outside	Major	Major
25.	Uneven Pleating Shirring or Poor Sewn Pleats	Major	Major
26.	Mismatch Plaid/Stripe up to 1/8"	Major	Minor
27.	Mismatch Plaid/Stripe over 1/8"	Major	Major
28.	Improper Interlining, Excessive Fullness of Parts	Major	Major
29.	Interlining Twisted or Garment Part Twisted	Major	Major
30.	Crow's feet	Major	Major
31.	Needle Chews Up to One per inch	Major	Major
32.	Incorrect Thread or Accessories	Major	Major
33.	Severe Puckering and Badly Roped Hems	Major	Major
34.	Incorrect or missing Bartack	Major	Major
35.	Uneven hem > 1/2" each side	Major	Major
36.	Sharp Point/Edges on Hardware or Broken Needles	Critical	Critical
Pressing [Defect by Zone]			
Defect		Zone A	Zone B
1.	Permanent Crease	Major	Major
2.	Poor Press	Major	Minor
3.	Burn Marks, Scorch Marks, Pressure Marks	Major	Major
Cleanliness [Defect by Zone]			
Defect		Zone A	Zone B
1.	Attached threads upto 1/4"	Major	Minor
2.	Attached threads over 1/4"	Major	Major
3.	Attached threads over 1/2" inside of garment	Major	Major
4.	Sewn in waste or thread on outside	Major	Major
5.	Stain, Soil under 1/8"	Major	Minor
6.	Stain, Soil over 1/8"	Major	Major
7.	Ring from Cleaning Gun or Rubbed Spots over 1/4"	Major	Major

8.	Drill Hole or Pencil Mark Visible	Major	Major
9.	Needle Chews or Feed Dog Abrasion	Major	Major
10.	Component Parts not Securely Tacked	Major	Major
11.	Mildew or Heavily Odoured Garments	Major	Major
12.	Nap up/down, shaded parts	Major	Major
13.	Pile direction not as specified	Major	Major
Packing/Finishing Defects			
Defects			
1.	Improper Placement of Main, Size and Wash Care Label	Major	Major
2.	Extra Buttons Not Present	Major	Major
3.	Garment Fold not as Specified	Major	Major
4.	Hangtags Missing	Major	Major
5.	Incorrect Size Labels	Major	Major

Woven and knit jacket

Appearance, Colour and Fabric[Defect by Zone]			
Defect		Zone A	Zone B
1.	Uneven Dye, Dirt Spot, Streak	Major	Major
2.	Shaded Parts	Major	Major
3.	Dye Misprints, Dye Smear	Major	Major
4.	Obvious Foreign or Colour Yarn	Major	Major
5.	Not Obvious Foreign or Colour Yarn	Major	Minor
6.	Poor Matching of Colour or Print Patterns	Major	Major
7.	Texture Change	Major	Major
8.	Shading Between Garments	Major	Major
Fabric (Defect by Zone)			
Defect		Zone A	Zone B
1.	Slubs and Misweaves upto 1/8", Clearly contrasted dye smear	Major	Minor

2.	Slubs and Misweaves over ¼"	Major	Major
3.	Holes of any size, repaired or not, needle cut, tear	Major	Major
4.	Fabric not as specified	Major	Major
5.	Barre, Bent Needle Slubs upto size of Loop	Major	Minor
6.	Improper Repairs	Major	Minor
7.	Any Pattern Errors	Major	Major
Sewing [Seams and Stitches Defects by Zone]			
Defect		Zone A	Zone B
1.	Run off Stitches upto 1/8"	Major	Minor
2.	Run off Stitches over 1/8"	Major	Major
3.	One or More Skip Stitch on any stitch type	Major	Major
4.	Incorrect Stitch Type	Major	Major
5.	Stitching Margin Variation Needle to Edge over 1/8"	Major	Minor
6.	Any Exposed Stitch or Underpart	Major	Minor
7.	Blindstitch Bite Too Deep	-	Major
8.	Stitchcount Variation over +2 or -1 per inch	Major	Major
9.	Tight Stitch, Thread Tension	Major	Major
10.	Raw Edge, Open Seam, Lose Seam or Fraying	Major	Major
11.	Misaligned Front/Back over 1/8"	Major	Major
12.	Incorrect Placket Width upto 1/8"	Major	Major
13.	Incorrect Placket Width over 1/8"	Major	Major
14.	Mismatch Pockets, 4-way plaid match over 1/16"	Major	Major
15.	Uneven collar points over 1/8"	Major	
16.	Collar Overlap when Buttoned	Major	
17.	Incorrect Size Buttonhole	Major	Major
18.	Buttonholes Non reparable, Anchored Threads or Broken Stitches	Major	Major
19.	Incorrect Buttons	Major	Major
20.	Missing Buttons	Major	Major
21.	Buttons Out of Line on Top Center 1/8" Tolerance	Major	

22.	Four Hole Button Sewn in Two Eyes or Upside Down	Major	Major
23.	Buttons Not Securely Sewn	Major	Major
24.	Sewn In Pleats on Outside	Major	Major
25.	Uneven Pleating Shirring or Poor Sewn Pleats	Major	Major
26.	Mismatch Plaid/Stripe upto 1/8"	Major	Minor
27.	Mismatch Plaid/Stripe over 1/8"	Major	Major
28.	Improper Interlining, Excessive Fullness of Parts	Major	Major
29.	Interlining Twisted or Garment Part Twisted	Major	Major
30.	Needle Chews Upto One per inch	Major	Major
31.	Incorrect Thread or Accessories	Major	Major
32.	Severe Puckering and Badly Roped Hems	Major	Major
33.	Incorrect or missing bartack	Major	Major
34.	Malfunctioning, Wavy or Incorrect Zipper	Major	Major
35.	Misplaced Buttonhole or Hook and Eye over 1/8"	Major	Major
36.	Misplaced Button over 1/8" or Missing Button	Major	Major
37.	Misplaced Rivet over 1/8" or Missing Rivet	Major	Major
38.	Crow's Feet	Major	Major
39.	Sharp Point/Edges on Hardware or Broken Needles	Critical	Critical

Annex B

(Normative)

Sample fabric inspection format

FABRIC INSPECTION REPORT (4 Point system)						
Supplier:		Invoice Qty		Style #	Inspection Date	
Invoice No #		Color		PO #	Inspection Qty	
Roll/Bale Number	Accept	Reject	Accept	Reject	Accept	Reject
Lot number						
Ticketed Length (Mts)						
Actual Length (Mts)						
Priority codes	Points	Total	Points	Total	Points	Total
SLUBS						
BARRE						
UNVENNESS						
YARN CONTAMINATION						
MIISING YARN						
HOLES						
REED MARK						
LOOSE ENDS						
DYE SPOTS						
SHADE VARIATION						
SKEWING						
BOWING						
JOINTS						
STAINS						
OIL STAINS						
SOIL						
WATERMARKS						
OTHERS						
OTHERS						
OTHERS						
Sign QA	Sign Fabric in charge		Sign QAM		Sign GM	

Annex C
(Normative)

Sample fabric shade/shrinkage test format

FABRIC SHADE /SHRINKAGE REPORT								
BUYER					SUPLLIER			
STYLE					FABRIC			
PO#					INVOICE QTY			
COLOR					NO OF ROLLS			
RECEIPT DATE					INVOICE WIDTH			
P/LIST ROLL NO	P/LIST YDG	ACTUAL YDG	CUTTABLE WIDTH	SHADE	SHRINKAGE		CSV	REMARKS
					LENGTH	WIDTH		

Annex D

(Normative)

Sample Cut panel inspection format

CUT PANNEL INSPECTION REPORT						
factory			description			
buyer			fabric content			
style #			order qty			
po#						
parts name						
matching pattern place-top						
matching pattern place-middle						
matching pattern place-bottom						
cutting shape						
others						
remarks						
parts name						
matching pattern place-top						
matching pattern place-middle						
matching pattern place-bottom						
cutting shape						
others						
remarks						
parts name						
matching pattern place-top						
matching pattern place-middle						
matching pattern place-bottom						
cutting shape						
others						
remarks						
sign cutting incharge	SIGN -QA		SIGN QAM			SIGN PM

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,
- ❖ 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

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.

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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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