
**Guide Line for Garment Production, Quality
Control and Maintenance systems**

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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).

In preparing this standard reference has been made to IS 12675 *Guide Line for Garment Production, Quality Control and Maintenance systems*

Acknowledgement is made to the (IS) Indian standards for the use of the said publication in preparing The standard.

Guide Line for Garment Production, Quality Control and Maintenance systems

1. Scope

This Ethiopian standard specifies the guide line for garment Production, quality Control and maintenance systems to ensure final garment quality.

2. Normative References

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

ES 6765: Code for packaging of readymade garments for export

ES 6267: standard terminology relating to apparel

ES 6268: Standard terminology relating to care labeling for apparel, textile, home Furnishing, and leather products

ES ISO 8239: Sewing machines needles – fitting dimensions – tolerances and combinations

ES ISO 10821: Industrial sewing machines – Safety requirements for sewing machines, units and systems

ES 6182: Standard terminology relating to seams and stitches used in home sewing

3. Terms and Definition

For the purpose of this standard, the definitions given in ES 6267 and the following definition shall apply.

3.1.

Operation breakdown

The method of preparing operations' list in a sequence is called as operation breakdown.

3.2.

Operation Bulletin (OB)

An Operation Bulletin is one of the primaries Industrial engineering tools that is done to understand garment construction – like stitch class and seam types used in making the sample garment. In addition to that it helps to set a production line with the correct number of machines and manpower.

3.3.

Productivity

Productivity is the ratio of output to the Inputs in a given time. This gives idea about how better we are utilizing the resources

3.4.

Maintenance

Maintenance is a set of organized activities that are carried out in order to keep an item in its best operational condition with minimum cost acquired. It also the combination of all technical and administrative actions, including supervision actions, intended to retain an item in, or restore it to, a state in which it can perform a required function.

4. Guide Lines for Garment Production Process

Garment production should include

Pre-production processes/product development

Production processes

4.1. Pre-production processes/product development

Pre-production processes shall be done before the actual or mass production of a garment. Tasks done under this sub section will create suitable environment or situation to the forth coming production process. Activities under preproduction process are listed as below.

4.1.1. Designing and sketching: Creating a design of a specific garment to be made and sketching should be prepared accordingly.

4.1.2. Costing: Costing should include cost of raw materials, direct labours and direct and indirect overheads.

4.1.3. Sample making: factory should develop garment samples according to buyer's specified design. As per the development stages samples can include Proto sample, Fit sample, Size set sample, Sales man sample, production sample, Top of production (TOP) sample and shipment sample.

4.1.4. Production Planning: The factory should be plan timelines like when to start cutting, when to submit pre-production sample, when to finish sewing and finishing, final inspection date and shipment date. Number of sewing machines available, availability of specialized sewing machine, requirements of embroidery, availability of skilled workers, availability of fabrics and availability of working capital should be into consideration during planning.

4.1.5. Pre-production meeting (PP meeting):-

PP meeting should consider the following

4.1.5.1. PP meeting should discuss construction details of a style that is approved by customer and going to load in production.

4.1.5.2. It should ensure that production team understand and agree on style specification and relevant standards, such as print and embroidery specification

4.1.5.3. During PP meeting participants should discuss any difficulty incurred during sample making and to approach different methods of handling the operation prior to production.

4.1.5.4. In this meeting responsible persons should be defined for the tasks involved in preproduction and production processes.

4.2. Production processes

4.2.1. General

The following should be performed at different garment production process

4.2.1.1. Standard operating procedures (SOP) or work instructions should be given to operators and carried out the work as specified and should be monitored accordingly.

4.2.1.2. Garment production planning, organizing, leading, controlling and evaluation system should able to clearly define at each level of managements.

4.2.1.3. The required working condition and light should be maintained throughout the production process.

- 4.2.1.4. There should be a system for continuously monitoring the individual operator's output and efficiency periodically and the low efficiency operators should be re-trained.
- 4.2.1.5. Machine break downs should be recorded for analyzing and corrective and preventive actions should be taken.
- 4.2.1.6. Raw material, Work-in-process materials and finished goods should be covered to avoid dust accumulation.
- 4.2.1.7. Management information system related to activities such as labor, machinery status, raw material, production, etc. should be checked according to the quality and production plan.
- 4.2.1.8. It should be follow yearly, monthly, weekly, daily and hourly production plan
- 4.2.1.9. Actual garment production should be evaluated at least weekly based on the available data and should be compared with the estimation and standard.
- 4.2.1.10. Industrial Engineer should apply production and productivity improvement tools like: time study, method study, kaizen and ergonomics.
- 4.2.1.11. Necessary waste bins should be provided for collection of waste to make the department housekeeping neatly.
- 4.2.1.12. Awareness and refreshment training should be given to employees as it is needed accordingly.
- 4.2.1.13. The target should be set properly
- 4.2.1.14. **Calculation of final manpower and machine requirement:** the final manpower and machine requirement should be calculated On the basis of Operation Bulletin (OB) and the line plan.
- 4.2.1.15. **Preparation of Line layout:** Line layout should be based on the operation bulletin, line plan manpower requirement and machines requirement. It should be arranges the manufacturing steps in a natural flow order, link process steps to minimize cycle time and travel distance, eliminate crossover points, and simulate a continuous flow process.

4.3. Cutting

Cutting section should include the following activities:

- 4.3.1. **Marker making** - Marker maker should be finding the most efficient layout of pattern pieces on a fabric for a specified style. The operation should be done manually by tracing pattern pieces onto a fabric or through computerized system by manipulating and plotting.
- 4.3.2. **Spreading**—The fabric should be laid on a spreading table based on the length and width of the marker.
- 4.3.3. **Cutting**- Laid fabric should be separated into the exact copy of the pattern pieces by the operation cutting.
- 4.3.4. **Ticketing**—In order to avoid cut pieces of different shades get mixed each cut piece of fabric should be given a unique number.
- 4.3.5. **Bundling** - cut pieces after passing through ticketing and fusing should be bundled or tied up together before taken to the sewing operation.
- 4.3.6. **Fusing**—For the garment required fusing, interlining should be boded to the back of the fabric by means a thermoplastic resin creating suitable and easy condition for the sewing operator.
- 4.3.7. **Printing and embroidery**—For garments which require printing and embroidery cut pieces before bundled should be printed and embroidered according to the type of the style and requirement of the customer.

4.4. Sewing

Cut parts in bundles should be sewn together obtaining the garment and it should depend on correct choices of stitches, seams, threads, needle, sewing machine and fabrics to be sewn.

4.4.1. Cut parts moved to sewing: The cut parts should be moved to feed the sewing lines based on the incoming slip. A copy of this slip shall be sent to the store.

4.4.2. Collecting trims & accessories: A slip should be generated with the details of the trims and accessories required for the production. Input man shall collect all the trims and accessories from the store.

4.5. Washing and dyeing

Garment washing and dyeing is an optional process and it should be done according to the nature of the product and customer requirement.

4.6. Finishing and Packing

After sewing of the garments, all pieces should be checked by quality checker to ensure that garments are being made as per buyer quality standard.

4.6.1. Can use UBT machines in sewing, you may still need to trim threads from garments to get clean garments

4.6.2. Products should be Ironing properly

4.6.3. Checking normally should be done for visual appearance and measurements.

4.6.4. Spotting should be required to remove stain in the pieces.

4.6.5. Various chemicals (solvents) should be used to remove various kinds of oil stain, marks and hard stain.

4.6.6. During packing garments should be randomly checked by internal quality controllers to ensure that only quality goods are being packed after these processes the garment are ready to ship or dispatch.

4.6.7. This department mainly should deal with the operations which make the garment presentable and saleable to the customers.

5. Guide Lines For Garment Quality Control and Assurance

The design of garments and the materials to be used in the manufacture of garments should ensure the fitness for purpose and relate to the method of production. Materials and trimmings selected for production of garments should be compatible with each other.

5.1. Materials Inspection

The materials should be inspected for defects and variations, checked for conformity to the related specification and properly labeled.

5.2. Grading, Pattern Cutting and Sample Making

Grading should be done in a logical sequence ensuring that the original design concept is maintained. Patterns should be cut to ensure that garments are produced in conformity with the established size schedules. Reference samples should be produced under conditions that are as close as possible to the factory production methods.

5.3. Lay Planning

While lay planning, following factors should be taken care of:

- 5.3.1. Correct positioning of pattern pieces on fabric grain;
- 5.3.2. Inclusion of all required pattern pieces;
- 5.3.3. Matching of checks and stripes;
- 5.3.4. Correct positioning of pattern pieces for pile fabrics or one side fabrics;
- 5.3.5. No overlapping of pattern pieces;
- 5.3.6. Availability of sufficient space between parts for accurate cutting;
- 5.3.7. Correct identification of all pieces by size, style, etc;
- 5.3.8. Accurate marking;
- 5.3.9. Inclusion and correct positioning of all notches and drill marks; and
- 5.3.10. Fully marking of parts within defined lay width

5.4. Laying, Cutting and Fusing

5.4.1. Laying

The fabrics should be laid tension-free, straight and pattern matched. The procedures should be specified for dealing with the following, if necessary:

- 5.4.1.1. One side materials,
- 5.4.1.2. Material batch preparation,
- 5.4.1.3. Fault marking and cutting out, and
- 5.4.1.4. Correct positioning of notches and drill holes.

5.4.2. Cutting

Knife profile and cutting speeds should be checked. Cleanliness and safety aspects should be ensured during cutting.

5.4.3. Fusing

Regular checks should be carried out for the duration, temperature and pressure ratings of the fusing press at least twice every day. The press settings can be monitored by bond strength measurements on test samples by fusing at the same time as garment parts. Fused parts should be checked when cool and before any subsequent operations, for colour and appearance changes as well as shrinkage.

5.5. Stitching

The equipment, operations and materials which require adequate attention for proper stitching and pressing of garments are as given below:

- 5.5.1. Sewing machines, cleanliness and settings;
- 5.5.2. Needles size, type and condition;
- 5.5.3. Stitch density and thread tension;
- 5.5.4. Sewing thread material, count, colour and shade; and
- 5.5.5. Seam allowance;

5.6. Final Pressing

- 5.6.1. Regular checks should be carried out at least twice every day for functioning of press and cleanliness of press covers.
- 5.6.2. In case of final dry heat pressing, checks mentioned in 5.4.3 should be carried out twice every day.

5.6.3. The garments should be checked for the following defects before as well as after all stages of pressing:

5.6.3.1. Unwanted creases/impressions/stain marks, and

5.6.3.2. Pressing glaze.

5.6.4. The garments after pressing should be dry before subsequent operations; for example, buttoning, bagging, etc.

5.7. Final Checking

The following aspects of garments should be checked at this stage:

5.7.1. Correct dimensions;

5.7.2. Seam pucker, seam allowance and sewing faults;

5.7.3. Garment symmetry;

5.7.4. Pressing/fusing defects;

5.7.5. Cleanliness;

5.7.6. Loose threads;

5.7.7. Correct matching of fabrics and trimmings;

5.7.8. Shade variation;

5.7.9. Correct fitting and alignment of closures; and

5.7.10. Correct placing of labels.

5.7.11. A reference sample and complete specification of garment should be available at the inspection point which should have proper lighting conditions. As far as possible, all garments should be checked.

5.8. Labeling

5.8.1. The garments should be properly labeled.

5.8.2. 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:

5.8.2.1. Fiber content;

5.8.2.2. After-care instructions;

5.8.2.3. Size designation;

5.8.2.4. Manufacturer's name, initials or trademark; and

5.8.2.5. Country of origin.

5.9. Packaging

5.9.1. Garment packages should be so designed as to ensure that the garments reach the consumer in satisfactory condition.

5.9.2. 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.

6. Guide Lines for Garment machinery and equipment's Maintenance

6.1. General

Maintenance is a set of organized activities that are carried out in order to keep an item in its best operational condition with minimum cost acquired. It also the combination of all technical and administrative actions, including

supervision actions, intended to retain an item in, or restore it to, a state in which it can perform a required function.

6.2. Types of maintenance system

In order to keep an item in its best operational condition with minimum cost acquired, it should be follow one or more than one of the following types of maintenance systems

6.2.1. Run to Failure Maintenance (RTF): Should be required repair, replacement, or restore action performed on a machine or a facility after the occurrence of a failure in order to bring this machine or facility to at least its minimum acceptable condition.

6.2.2. Corrective Maintenance (CM): Corrective or Breakdown maintenance should be implies that repairs are made after the equipment is failed and cannot perform its normal function anymore or the maintenance carried out after recognition and intended to put an item into a state in which it can perform a required function.

6.2.3. Preventive Maintenance (PM):Set of activities should be performed on plant equipment, machinery, and systems before the occurrence of a failure in order to protect them and to prevent or eliminate any degradation in their operating conditions.

6.2.4. Scheduling maintenance (SM):Scheduled maintenance is a stitch-in-time procedure and should be incorporates

- a) Inspection
- b) Cleaning
- c) Lubrication
- d) Repair and overhaul of equipment's

6.2.5. Predictive Maintenance (PDM): Machinery conditions should be periodically monitored and this enables the maintenance crews to take timely actions, such as machine adjustment, repair or overhaul. It should be using human sense and other sensitive instruments, such as:

- a) Audio gauge
- b) Vibration analyzer
- c) Amplitude meter
- d) Pressure
- e) Temperature and resistance strain gauges etc.

6.2.6. Yearly preventive maintenance plan and schedule should be prepared for each machine considering the following main factors and has to be followed strictly:

6.2.6.1. Manufacturer's Recommendations.

6.2.6.2. Quality level required.

6.2.6.3. Condition of the Machines – Technology & Age

6.2.6.4. Type of raw material used.

6.2.6.5. Process parameters Maintained.

6.2.6.6. Atmospheric conditions.

- 6.2.7.** Working procedures/standard operating procedures should be prepared for preventive maintenance, corrective maintenance, operator care and lubrication so as to have repeatable process, capture knowledge, train new employees, and reduce self-induced failures.
- 6.2.8.** Root cause analysis should be done in the garment industry.
- 6.2.9.** Minimum stock of critical spares should be identified and maintained based on the machinery manufacturer's recommendation and the factory's actual performance and experience for the sake of effectiveness the management should be proactive to deliver the spares in time.
- 6.2.10.** Basic setting of machineries should be checked and ensured periodically as per the schedules.
- 6.2.11.** Machine history record card should be maintained for each and every machine.
- 6.2.12.** Machine audit should be done during schedule cleaning to keep up the machine for better quality and performance.
- 6.2.13.** Machineries should be prioritized according to equipment condition, consequence and risk to the business.
- 6.2.14.** Total Productive Maintenance (TPM) should be implemented.
- 6.2.15.** Consumable spares should be replaced in time as per manufacturer's recommendation and the factory's standard to avoid production loss.
- 6.2.16.** Locks should be provided and the machineries doors should be kept in locked condition for safety and good performance.
- 6.2.17.** Every break down, stoppage or Failure data should be record machine and reason wise for Failure Reporting, Analysis, Corrective Action System
- 6.2.18.** System of periodical checking should be in place to functioning of photo cells, stop motions, door safety, metal detector, fire detectors and housekeeping, etc
- 6.2.19.** Suitable lubricant recommended by the manufacturer should be selected and the frequency of applying should be review and optimize according to the existing situation of the company.

Annex A

(Normative)

Sample Cut Plan

[illegible]

Operator wise quality performance sheet

Operator's Quality Performance Sheet																			
Standard Sample Size 10 PCs																			
Defect Code		System		Found no defects		Action													
1	Broken Stitch	6	Pleat	Green															
2	Skw. Stitch	7	Shading/ Unmatching	Yellow	If found one defect	Supervisor to analyse root cause and rectify same.													
3	Coen Seam	8	Collar flaws	Red	If found two or more defects	Supervisor to analyse root cause and rectify same.													
4	CHDRT Stain	9	Up-Down Parts																
5	Uneven Stitch	10	Others																
		Month																	
		Line																	
		Process																	
		Permanent Operator																	
Time / Date		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
8:00 - 10:00	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6		
	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7		
	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8		
	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9		
	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10		
10:00 - 12:00	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6		
	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7		
	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8		
	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9		
	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10		
12:30 - 2:30	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6		
	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7		
	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8		
	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9		
	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10		
2:30 - 4:30	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6		
	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7	2/7		
	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8		
	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9	4/9		
	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10	5/10		
Root Cause																			
Operation/Process																			
DC Stn																			

Off Standard Time and Hourly Production cum Sheet

Off Standard Time and Hourly Production cum Sheet																	
Hour	Production	A (No Breakdown)			Duration	B (No cut piece)			Duration	C (No trim)			Duration	D (No WIP)			Duration
		Start	End			Start	End			Start	End			Start	End		
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	

Annex B

(Normative)

Daily inspection report

a. In-line inspection report

DAILY IN - LINE INSPECTION REPORT											
Date.....				Buyer.....				Style #			
PO No.				Sewing line				Process.....			
Defects/hours	1st hr	2nd hr	3rd hr	4th hr	5th hr	6th hr	7th hr	8th hr	Overtime	Total	
Broken Stitch											
Skip Stitch											
Raw Edge											
Join Stitch											
Roping											
Thread Tension											
Puckering											
Uneven Stitch											
Up & Down parts											
Wrong Measurement											
Wrong Size											
Shading											
Fabric Fault											
Hole/Damage											
Stain/Oil											
Bartacking											
Misaligned parts											
Missing parts											
Misplaced											
Button											
Hook and Bar											
Ironing stain											
Total Defects Found											
Total Piece Checked											
Repaired / Rejected											
Inspector -	Line supervisor						QAM sign				

b. end line inspection report

DAILY END-LINE INSPECTION REPORT																							
Date:		Buyer:		Style:		PO No.		Sewing line										Inspector					
Hours	Total piece check	No. of piece pass	Defective pc/rectified pc	Total pc rejected	Section	Broken Stitch	Skip Stitch	Raw Edge	Join Stitch	Puckering	Up & Down Parts	Uneven Stitch	Shape out	Wrong size	Twisting	Measurement Out	Fabric Fault	Hole / Damage	Stain/Oil	Bartack	Hook & Bar/ Button	Iron Mark	Defects Total
1					Front																		
					Back																		
2					Front																		
					Back																		
3					Front																		
					Back																		
4					Front																		
					Back																		
5					Front																		
					Back																		
6					Front																		
					Back																		
7					Front																		
					Back																		
8					Front																		
					Back																		
Overtime					Front																		
					Back																		

% Defective = (Total No of Defective Pieces/ Total No of pieces Inspected)*100 =

DHU = (Total No of Defects/ Total NO of pieces checked)*100 =

Sign of Checker: _____ Sign of QC: _____ Sign of Supervisor: _____ Sign of QC In charge: _____ Sign of QAM: _____

c. Measurement checking report

Measurement Checking Report																										
Date:		Buyer:		Style #		Product																				
Name of Checker:		Color:		Status: Before Wash / After wash / After Iron		Comment:																				
S.N	POM	Tol (+/-)	Size Req'd Specs	Variation			Size Req'd Specs	Variation			Size Req'd Specs	Variation			Size Req'd Specs	Variation			Size Req'd Specs	Variation			Size Req'd Specs	Variation		
				1	2	3		1	2	3		1	2	3		1	2	3		1	2	3				
1	CHEST																									
2	WAIST																									
3	BOTTOM																									
4	CB LENGTH																									
5	CF LENGTH																									
6	SLV LENGTH																									
7	ACROSS FRONT																									
8	ACROSS BACK																									
9																										

Action Taken : _____

Quality Checker: _____ Quality Incharge: _____ QAM: _____

Annex C

(Normative)

Finishing Output Summary

Unit -		FINISHING OUTPUT SUMMARY								
Date	Day	Table 1	Table 2	Table 3	Table 4	Table 5	Total output	Washing sent	Washing recieved	Finishing WIP
1-Sep	Mon									
2-Sep	Tue									
3-Sep	Wed									
4-Sep	Thu									
5-Sep	Fri									
6-Sep	Sat									
7-Sep	Sun									
8-Sep	Mon									
9-Sep	Tue									
10-Sep	Wed									
11-Sep	Thu									
12-Sep	Fri									
13-Sep	Sat									
14-Sep	Sun									
15-Sep	Mon									
16-Sep	Tue									
17-Sep	Wed									
18-Sep	Thu									
19-Sep	Fri									
20-Sep	Sat									
21-Sep	Sun									
22-Sep	Mon									
23-Sep	Tue									
24-Sep	Wed									
25-Sep	Thu									
26-Sep	Fri									
27-Sep	Sat									
28-Sep	Sun									
29-Sep	Mon									
30-Sep	Tue									

Annex D (Normative)

Style wise costing sheet

STYLEWISE PROPOSED VS ACTUAL COSTING				
PO # / Client				
Order Qty				
Cut Qty				
Shipped Qty				
Rejected Qty				
Style #				
Line No				
Production Period				
SMV				
Efficiency(Proposed)				
Efficiency(Achieved))				
Target per Day(Proposed)				
Target per Day(Achieved)				
Sr No	Head			
1	Total Monthly Expenditure			
b	Commercial cost(Telephone/Internet/Stationary)			
c	Electricity bill			
d	Water bill			
e	Transportation			
f	Maintenance			
g	Worker wages & Benefits			
h	Staff wages & Benefits			
i	Miscellaneous			
2	Ttl Running Machines in Factory			
3	Number of machines used in the particular style			
4	Production target/capacity per hr excl alter & reject			
5	Total working days			
6	Ttl working Hours Per Day			
7	Per day cost for running machines			
8	Per hour cost for running machines			
9	Total time taken to complete Style #			
10	Days	10		
11	Hours	0		
12	Total cost to complete Style #			
13	Per pc Cost of production			
14	Rate given by Client in Dozens ?	Y		
	(Dollar conversion Rate) (\$1 equals Birr)			
15	CM in US\$ (dollar) (Per Dozen)			
16	CM in US\$ (dollar) (Per Unit)			
17	Difference In Actual Vs Proposed Costing(Per Dz)			
18	Profit/Loss Per Unit(in Dollars)			
19	Profit/Loss Per Unit(in Birrs)			
20	Net Profit/Loss for the style (In Dollars)			
21	Net Profit/Loss for the style (In Birrs)			

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).

More Information?

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