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उत्पाद मानुयल
Cotton Cellular Shirting
IS 1144:1980 के अनुसार

PRODUCT MANUAL For
Cotton Cellular Shirting
ACCORDING TO IS 1144:1980

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम की स्कीम-I के तहत यह उत्पाद मानुयल प्रमाणीकरण के प्रचलन में रीति और पारदर्शिता के सुसंगत सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेन्स धारियों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेन्स/प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2008 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	उत्पाद Product	:	IS 1144:1980
	शीर्षक Title	:	Specification for Cotton Cellular Shirting
	संशोधन संख्या No. of amendments	:	02
2.	नमूनाकरण दिशा निर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	The cotton yarn used in the manufacture of the cloth shall be satisfactory in evenness and reasonably free from neps and other spinning defects._ The cloth manufactured shall satisfy clause 2 of IS 1140: 1980.
b)	समूहिकरण दिशा निर्देश Grouping Guidelines	:	Please refer Annex-A
c)	नमूने का परिमाण Sample Size	:	6 m x Full width.
3.	परीक्षण उपकरणों की सूची	:	Please refer Annex –B

	List of Test Equipment		
4.	निरीक्षण व परीक्षण स्कीम Scheme of Inspection and Testing	:	Please refer Annex - C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	:	(i) Ends and Picks (ii) Mass (oven – dry method) (iii) Weave (iv) Scouring loss (v) pH value
6.	लाइसेन्स का कार्यक्षेत्र/Scope of the Licence:		
	IS 1144:1980 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है Licence is granted to use Standard Mark as per IS 1144:1980 with the following scope:		
	Name of the product	Cotton Cellular Shirting	
	Type	Shade/s - Olivegreen or Khaki or Other Shades (to be specified)	
	Any other aspect required as per the Standard	Composition of fabric (Blend composition for blended fabrics)	

ANNEX-A
GROUPING GUIDELINES

IS 1144 classifies cotton cellular shirting into 2 groups based on shades: Olivegreen and Khaki shades and All other shades. Further, the product is also classified on the basis of blend composition of the fabric

Accordingly, For the purpose of grant of licence and change in scope of licence, the following grouping guidelines shall be followed

Group	Shade	Samples to be drawn/tested
I	Olivegreen and Khaki shades	One sample of any of the shades in this group and of each blend composition of fabric, shall be tested
II	All other shades	-do-

However, scope of the licence shall be restricted based on the manufacturing and testing facilities available.

During the operation of licence, samples of all shades and blend compositions covered in the licence shall be tested in rotation.

ANNEX-B
LIST OF TEST EQUIPMENTS

Major test equipment required to test the requirements of the Indian Standard.

Cl. No and Parameter	Test Equipment Required	Chemicals/ Standards Required
Ends / cm Col. 3 Table 1	Method A : a. Thread counter with magnifying glass and pointer which traverses along a graduated(in mm) base, b. Flat table Method B : a. Type ' B ' Clamp: A Clamp with two parallel pins with their points 20 mm apart, b. Forceps	
Picks / cm Col. 4 Table 1	Method A : a. Thread counter with magnifying glass and pointer which traverses along a graduated(in mm) base, b. Flat table Method B : a. Type "A" clamp: A Clamp with two parallel pins with their points 50 mm apart, b. Forceps	
Mass Col. 5 Table 1	Method A : Oven dry method a. Horizont Flat smooth table b. Graduated Steel Scale c. Drying Oven d. T Square e. Cutter/razor blade f. Weighing balance Method B : Constant Mass Method a. Horizontal Flat smooth table b. Graduated Steel Scale c. Balance d. T Square e. Cutter/razor blade	Graduated Steel Scale Drying Oven T Square Cutter/razor blade Weighing balance
Breaking Load On 5.0 × 20 cm Strips (Ravelled Strip Method), Warp and Weft, Col. 6,7 Table 1	a. Constant rate of extension testing machine b. Cutter c. Steel scale d. Vernier Calliper	
Length and Width Col. 8,9 Table 1	a. Horizontal Flat smooth table b. Graduated Steel Scale c. Measuring Tape	

Weave Col. 10 Table 1	Visual Inspection	
Color fastness to light Table 2,Sr.No.i).a	a. Cutter b. Steel Scale c. Light Source(Xenon Arc lamp) d. Light Filter(transmission of at least 90 percent between 380 and 750 nm, falling to zero percent between 310 and 320 nm) e. Thin Opaque Material as covers f. Grey Scale g. Heat Filters h. Black -Standard /Black- Panel Thermometer i. Standard patterns of blue wool cloth ranging in light fastness from rating No. 1 to rating No. 8 j. humidity test control fabric (red azoic dyed cotton cloth of known sensitivity to humidity and light) k. Colour matching lamps l. Assessment cabinet m. sample mounting card n. Assessment mask o. Humidity Chamber	
Color fastness to Washing Table 2,Sr.No.i).b	a. A mechanical laundering device (satisfying the requirements of clause 4.1 of IS/ISO105-CI0:2006) b. Balance c. Mechanical stirrer (Min. speed 1000r/min) d. 6 mm dia non corrodible steel balls e. Hot plate f. Grey scales / Spectrophotometer	Soap (satisfying the requirements of clause 5.1 of IS/ISO105-CI0:2006) Sodium carbonate Grade 3 Water Adjacent fabrics Non Dyeable Fabric
Color fastness to Perspiration Table 2,Sr.No.i).c	a. Test device satisfying the requirements of clause 4.1 of IS/ISO105-E04:2008 b. Oven (37+- 2 C) c. pH meter d. Grey scale for assessing change in colour, complying with ISO 105-A02. e. Greyscale for assessing staining, complying with ISO 105-A03 or spectrophotometer or colorimeter in place of 'd' and 'e'. f. Sewing tools	L-histidine monohydrochloride monohydrate NaCl disodium hydrogen orthophosphate dodecahydrate/ dihydrate NaOH sodium dihydrogen orthophosphate dihydrate Adjacent fabrics Non Dyeable Fabric
Color fastness to Rubbing Table 2,Sr.No.i).d	a. A Suitable testing device using a reciprocating straight-line rubbing motion and two alternative sizes of rubbing fingers as per clause 4.1 of IS/ISO 105-X12 : 2016 ISO 105-X12:2016 b. Cotton rubbing cloth c. Soft-back waterproof abrasive paper or grating of SS wire d. Grey scale	Distilled water
Color fastness	a. Heating press (4+- 1 Kpa)	

to hot pressing Table 2,Sr.No.i).e	b. padding, wool flannel of mass per unit area approximately 260 g/m ² . c. Undyed, bleached and unmercerized cotton cloth, of mass per unit area 100 g/m ² to 130 g/m ² d. Cotton adjacent fabric, e. Grey scales for assessing Change in colour and staining f. Grade 3 water g. Smooth heat-resistant sheet, of thickness 3mm to 6mm.	
Scouring loss Table 2,Sr.No.ii)	a. Soxhlet apparatus b. Drying Oven (105±3°C) c. Weighing balance (LC 1 mg) d. Weighing bottles e. Cutters/Scissor f. Hot plate g. Conical flasks	Distilled Water Desizing Enzyme Sodium Chloride Chloroform
pH Value Table 2,Sr.No.iii)	a. Distillation apparatus (if Grade 3 water not available/ if pH is not in range) b. Heating mantle c. Glasswares such as conical flasks, beakers, measuring cylinders etc d. Stoppered Glass/PP flasks e. Mechanical shaker f. Rods g. pH meter (LC 0.1 pH) h. Balance (LC 0.1 g) i. Grade A quality Volumetric Flasks	Grade 3 Distilled water KMnO ₄ NaOH H ₂ SO ₄ KCl Buffer solutions (4,7,9 pH)
Shrinkage or elongation Table 2 Sr. no iv)	a. Watertight Tray or Container with a glass cover and draining arrangement b. Steel scale c. Means of Marking Reference Points d. Min. dimension 0.6*0.6 m Plate glass (2nos) e. Sewing tools	Sodium Hexametaphosphate An Efficient Wetting Agent Distilled water
Blend Composition	Relevant Indian standards to be referred	

- AC, Hygrometer, thermometer , humidifier and dehumidifier are required for maintaining the standard atmospheric conditions required for conditioning.

The above list is indicative only and may not be treated as exhaustive.

ANNEX – C

SCHEME OF INSPECTION AND TESTING

1. **LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.
 - 1.1 The manufacturer shall prepare a calibration plan for the test equipment.
2. **TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.
3. **PACKING AND MARKING** – The Standard Mark as given in the Schedule of the license shall be incorporated on the cuts as well as on bale/case of cotton cellular shirting fabric provided always that the said fabric to which the mark is thus applied conforms to every requirement of the specification
 - 3.1 Marking and packing shall be done as per the provisions of the Indian Standard. In addition, the following information shall be given on each cut as well as bale/case:
 - a) Control Unit (or Batch) Number.
 - b) BIS website details i.e.–“For details of BIS certification please visit www.bis.gov.in”
4. **CONTROL UNIT** – For the purpose of this scheme a control unit is defined as the entire quantity of Cellular Shirting fabric, processed under similar conditions in a day.
5. **LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.
 - 5.1 All the production which conforms to the Indian Standard and covered by the licence should be marked with Standard Mark.
6. **REJECTIONS**—Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act,2016.

TABLE 1
LEVELS OF CONTROL

(1)				(2)	(3)			
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control			
Cl.	Requirement	Test Method			No. of Sample/s	Frequency	Remarks	
		Clause	Reference					
2.2, 2.2.1, 2.2.2 and 2.2.3	Cloth Manufacture (Visual inspection)	2.2, 2.2.1, .2.2 and 2.2.3	IS: 1144	R	Entire production	-	-	
3.1 & Table 1	Ends & Picks	-	IS 1963	R	2	Each control unit	-	
3.1 & Table 1	Mass	-	IS 1964	R	2	Each control unit		
3.1 & Table 1	Breaking load, Warp & Weft	-	IS 1969	R	1	Each control unit	See Note 3	
3.1 & Table 1	Length and Width	-	IS 1954	R	1	Each control unit		
3.1 & Table 1	Weave	-	IS 1144	R	1	Each control unit		
3.2 & Table 2	Colour fastness to a) Light	-	IS/ISO B02	S	2	Once a year	See Note 4	
3.2 & Table 2	Colour fastness to b) Washing: Test 5	-	IS/ISO 105-C10	R	2	Once a week	See Note 5	
3.2 & Table 2	Colour fastness to c) Perspiration	-	IS/ISO 105 E04	R	2	Once a week	-do-	
3.2 & Table 2	Colour fastness to d) rubbing Dry and wet both	-	IS/ISO 105 Part X12	R	2	Once a week	-do-	
3.2 & Table 2	Colour fastness to e) Hot pressing i) Change in colour ii) Staining of adjacent fabric	-	IS/ISO 105-X11	R	2	Once a week	-do-	
3.2 & Table 2	Scouring loss	-	IS 1383	R	1	Each control unit		

3.2 & Table 2	pH Value	-	IS 1390	R	1	Each control unit	
3.2 & Table 2	Shrinkage or elongation	-	IS 2977	R	1	Each control unit	
3.2 & Table 2	Blend composition (For blended fabrics)	-	Relevant Indian Standards	S	1	Once a month	

Note-1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empaneled by the Bureau

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.

Note-3: In case, the sample fails in respect to breaking load requirement, two more samples shall be drawn and tested for that requirement. The control unit shall be marked only if both the samples conform to the requirements specified. In case of any failure, the control unit represented by these samples shall be rejected and not marked. Further, after such a failure, breaking load testing would be done in every control unit. Original frequency shall be restored only after 3 consecutive control units pass.

Note 4: In the first instance samples for each colour and shade shall be drawn and tested in an independent laboratory or in their own laboratory in case facilities exist. Those colours and shades only shall be marked which conform to the relevant requirement of the specification. Afterwards an undertaking to the effect that there shall be no change in brand, colour, shade and processing conditions may be obtained. However 2 samples drawn from each colour and shade shall be got tested once a year in an independent laboratory or in their own laboratory in case facilities exist.

Note 5: This frequency is to be followed in case the dyeing and printing processes are continuous. otherwise, for batch process the requirements must be tested twice a week for each of the colour and shade.