PRODUCT MANUAL
FOR TEXTILES-POLYESTER BLENDED WOVEN SUITING FOR UNIFORMS
ACCORDING TO IS 15853:2009

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, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	**Product**	:	IS 15853:2009
	Title	:	TEXTILES - POLYESTER BLENDED WOVEN SUITING FOR UNIFORMS
	No. of Amendments	:	2
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	Not Applicable.
b)	**Grouping guidelines**	:	Not Applicable.
c)	**Sample Size**	:	1 Cut Piece, at least 3 meter in length and with Original Width
3.	**List of Test Equipment**	:	Please refer ANNEX –A
4.	**Scheme of Inspection and Testing**	:	Please refer ANNEX –B
5.	**Possible tests in a day**	:	Please refer ANNEX – C
6.	**Scope of the Licence:**		
	“Licence is granted to use Standard Mark as per IS 15853:2009 with the following scope:		
	Name of the product	POLYESTER BLENDED WOVEN SUITING FOR UNIFORMS	

ANNEX A

List of Test Equipment

Major test equipment required to test as per the Indian Standard

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Nominal Count of Warp and Weft Yarns (Clause 3.1, Table 1, Sl. No. (i))	• Conditioning Chamber • Thermometer • RH meter • Graduated Scale • Pair of Scissor • Weighing Scale **Test method reference: IS 3442:1980**
2	Length & Width (Clause 3.1, Table 1, Sl. No. (ii)& Sl. No. (iii))	• Conditioning Chamber • Flat Measuring Table • Measuring Tape **Test method reference: IS 1954:1990**
3	Threads/Dm (Warp & Weft) (Clause 3.1, Table 1, Sl. No. (iv))	• Conditioning Chamber • Ordinary Counting Glass • Flat Table **Test method reference: IS 1963:2004**
4	Mass of base fabric without finishes (Clause 3.1, Table 1, Sl. No. (v))	• Conditioning Chamber • Weighing Scale • Graduated Scale • Pair of Scissor • Flat Table **Test method reference: IS 1964:2001**
5	Fibre Composition (Clause 3.1, Table 1, Sl. No. (vi))	• Analytical balance 0.2mg • Sintered Glass Crucible • Ventilated Oven • Conical Flask Fitted with Ground Glass Stopper • Filter Flask with Filtration arrangement and Filter Pump • Desiccator Containing Self indicating Silica Gel • Mechanical Shaker • Distilled Water • Sulphuric Acid • Concentrated Ammonia • Weighing Bottles

		Test method reference: IS 3416:1988
6	Breaking Strength Warp & Weft (Clause 3.1, Table 1, Sl. No. (vii))	• Conditioning Chamber • Tensile Testing Machine • Pair of Scissor • Graduated Scale **Test method reference: IS 1969(Part 1):2018**
7	Tear Strength Warp & Weft (Clause 3.1, Table 1, Sl. No. (viii))	• Conditioning Chamber • Tear Testing Machine with Pendulum as per Clause 5.1.1 of IS 6489 • Cutting Template as per Fig. 1 of IS 6489 • Graduated Scale • Pair of Scissor **Test method reference: IS 6489 (Part 1): 2011**
8	Dimensional Stability to Dry Heat (Clause 3.1, Table 1, Sl. No. (ix))	• Conditioning Chamber • Graduated Scale • Flat Smooth Surface Table • Pair of Scissor • Marker Pen • Press as per Clause 7.1 od IS 12170 • Stop Watch **Test method reference: IS 12170:1987**
9	Crease Recovery Angle (Clause 3.1, Table 1, Sl. No. (xi))	• Conditioning Chamber • Crease Recovery Tester as per Clause no. 8.1 & Fig.2 of IS 4681 • Loading Arrangement as per Clause no. 8.2 of IS 4681 • Pair of Scissor • Graduated Scale • Stop Watch • Tweezers **Test method reference: IS 4681:1981**
10	Pilling Resistance (Clause 3.1, Table 1, Sl. No. (xii))	• Conditioning Chamber • Pill Testing Box as per Cl.5.1 of IS 10971 • Polyurethane Specimen Tubes 4 no., Length: (140±1) mm, OD: (31.5±1) mm, Wall thickness: (3.2±0.5) mm & Mass: (52.25±1) grams • Mounting Jig • Self-Adhesive PVC tape, 19 mm wide • Sewing Machine • Viewing Cabinet as per CL. 5.6 of IS 10971 **Test method reference: IS 10971 (Part 1):2011**

11	Dimension Change on Washing (Clause 3.1, Table 1, Sl. No. (xiii))	• Conditioning Chamber • Ruler, at least in 750 mm in Length, preferably with an engraved, bevelled edge, marked in mm. • Flexible Steel Rule or Fibre-Glass Tape • Suitable means of Marking Reference Points • Flat Table • Reference Detergent s as mentioned in Cl. 4 of IS 15370:2005 • Automatic Washing Machine as per Cl. 5.1 of IS 15370:2005 • Dryer of the Rotary Tumble Type with requirements mentioned in Clause 5.2 of IS 15370:2005 • Ballast • Electrically heated Flat-bed press • Facilities for Line Drying or Drip Drying • Screen Drying Racks **Test method reference: Annex D of Amendment No.1 to IS 15853:2009**
12	pH Value of Aqueous Extract (Clause 3.1, Table 1, Sl. No. (xiv))	• Conditioning Chamber • Mechanical Shaker • pH meter with Glass Electrode • Weighing Scale • Distilled or Deionized Water • Potassium Chloride Solution • Buffer Solutions • Stoppered Glass or Polypropylene Flasks • Beakers • Rods • 1 litre Volumetric Flasks **Test method reference: IS 1390:2019**
13	Colour Fastness to Light (Clause 3.1, Table 1, Sl. No. (xv(a)))	Daylight Method **- IS 686 (Withdrawn)- - which is Superseded By: IS/ISO 105 B01: 2014** • **Blue wool reference, Exposure rack, grey scale, opaque cardboard** ORXenon Lamp method - **IS 2454:1985(Withdrawn**) –**Which is Superseded By: IS/ISO 105B02: 2014** • Blue wool reference, • Exposure device with Xenon Arc Lamp • Temperature and irradiance sensor • Colour matching lamps

		• Grey scale • Assessment mask • Assessment cabinet
14	Colour Fastness to Washing (Clause 3.1, Table 1, Sl. No. (xv(b)))	• Suitable Mechanical Laundering Device • Weighing Balance with LC 0.01 grams • Mechanical Stirrer • Non-Corrodible (Stainless Steel) Balls, 6 mm dia • Hot plate • Polyester & Cotton Fabric • Standard Soap & Anhydrous Sodium Carbonate • Soap Solution • Grade 3 Water • Adjacent Fabric (Multifibre and Two Single Fibre) • Non-Dyeable Fabric • Sewing Machine • Grey Scale for Colour & Staining • Viewing Cabinet **Test method reference: IS/ISO 105-C10: 2006**
15	Colour Fastness to Dry Cleaning (Clause 3.1, Table 1, Sl. No. (xv(c)))	• Suitable Mechanical Device as per Cl. 5.1 of IS 4802 • Glass or Stainless-Steel Containers • Non-Corrodible (Stainless) Steel Discs • Undyed Cotton 'Twill' Cloth • Grey Scales for Colour & Staining • Glass Tubes, Día 25mm • Perchloroethylene or other solvent used for dry cleaning **Test method reference: IS 4802: 1988**
16	Colour Fastness to Dry Heat (Clause 3.1, Table 1, Sl. No. (xv(d)))	• Conditioning Chamber • Aluminium Foil, Thickness 0.001 to 0.002cm • Two Adjacent Fabric • Grey Scale for Colour & Staining • Graduated Scale • Hot pressing Machine • Loading Arrangement as per Fig 2 of IS 4636 **Test method reference: IS 4636: 1988**
17	Colour Fastness to Perspiration (Clause 3.1, Table 1, Sl. No. (xv(e)))	• Test Devices as per Clause 4.1 of IS/ISO 105-E04 • Oven maintained at (37±2) ºC • Alkaline Solution as per Clause 4.3 of IS/ISO 105-E04 • Acid Solution as per Clause 4.4 of IS/ISO 105-E04 • Adjacent Fabrics as per Clause 4.5 of IS/ISO 105-E04

		• Non-Dyeable Fabric • Grey Scale for Assessing Change in Colour & Staining • Spectrophotometer or Colorimeter • Sewing Machine • Glass Rods • Viewing Cabinet **Test method reference:IS/ISO 105 E04: 2008**
18	Colour Fastness to Rubbing (Clause 3.1, Table 1, Sl. No. (xv(f)))	• Suitable Testing Device as per Clause 4.1 of IS/ISO 105 X12 • Cotton Rubbing Cloth • Soft-back waterproof abrasive paper • Grey Scale for Staining **Test method reference: IS 766:1988(Withdrawn) which is Superseded By: IS/ISO 105 X12: 2016**
19	Colour Fastness to Hot Pressing (Clause 3.1, Table 1, Sl. No. (xv(g)))	• Heating Device as per Clause 4.1 of IS/ISO 105 X11 • Smooth Heat-resistant Sheet, thickness 3mm to 6mm. • Padding, wool flannel of mass per unit area approximately 260 g/m² • Undyed, bleached and Un-mercerized cotton cloth • Cotton Adjacent Fabric • Grey scales for assessing Change in Colour& Staining • Grade 3 water **Test method reference: IS 689:1988(Withdrawn) which is Superseded By: IS/ISO 105 X11: 1994**
20	Soil Release Efficiency (Clause 4.2)	• Conditioning Chamber • White Blotting Paper • Corn Oil • Glassine Paper or Equivalent • Timer • Weight (Cylinder 6.4 cm Diameter ,2.268±0.045 kg stainless preferable) • Amber Bottle with Medicine Dropper • Washer, automatic as specified in IS 15370 • Dryer, automatic as specified in IS 15370 • Granular commercial detergent, home wash as specified in IS 15370. • Ballast of (92 x 92) ± 3 cm hemmed pieces of bleached cotton sheeting (Ballast wash load Type 1) or 50 / 50 polyester / cotton bleached mercerized

		plain weave (Ballast wash load Type 3). • Lighting and Evaluation Area • Table with non-glare black top 61 × 92 cm and 89 ± 3 cm high. • Stain Release Replica • Thermometer, 0 to 100°C, Least count - 1°C • Weighing Balance (least count of 0.01 g) **Test method reference: Annex C of Amendment No.1 to IS 15853:2009**
21	Anti-Bacterial Activity Value (Clause 4.3)	• Spectrophotometer • Incubator • Two Water Bath with Heater and Temperature Indicator up to 90ºC • Mixer • Stomacher, Capable of Speeds of 6 blows per second to 8 blows per second. • Clean Bench • Washing Machine • Humidity Chamber • Luminescence Photometer • Printing Apparatus • Refrigerator • Freezers • Weighing Balance, LC 0.01 g • Filtering Apparatus • Pipette • Vials, 30 ml glass bottles, with screw openings • Petri Dishes • Glass Rod, Dia. 18 mm Approx. • Anti-Bumping Granules (Glass beads) with Dia. of 3-4mm • Erlenmeyer Flask, 100 ml • Cutting Template as per Cl.5.21 • Disposable Plastic Bags • Tweezers • Stainless steel cylinder • Metal wire Basket for Autoclaving • Aluminium Foil • Reciprocal incubation Shaker • Autoclave, Capable of Sterilizing at 121ºC±2ºC and

		103 kPa ± 5 kPa. • Reagents and Culture Media as per Clause 6 of IS/ISO 20743 **Test method reference: IS/ISO 20743: 2013 & C-5.1 of Amendment No.1 to IS 15852:2009**

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

ANNEX B

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 equipments.

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 and Licence Number (i.e. CM/L……..) shall be stamped or stenciled on face plaint of each piece/cutoff fabric as also, at every meter near one of the selvedges of the fabric and also on bales/case of fabric as the case may be provided always that the said fabric to which the Mark is thus applied conforms to every requirement of the specification.

3.1 Packing and marking shall be done as per the provisions of the Indian Standard. In addition, BIS Licence No. and details of BIS website shall be marked on each piece of woven suiting fabric and/or the packaging and/or the attached label as follows:"For details of BIS certification please visit www.bis.gov.in".

4. CONTROL UNIT – For the purpose of this scheme, the entire quantity of Polyester blended woven suiting for uniform processed under similar conditions in single dayshall constitute a control unit.

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 Standards 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**	**Frequency**	**Remarks**
		Clause	**Reference**				
3.1	Yarn	**3.1 Table 1**	**15853:2009**	**R**	One	Each Consignment	No testing is required if the material is ISI marked or else accompanied by a test certificate from the manufacturer.
Table 1(i)	Nominal count of warp and weft yarns (For Guidance only)		**IS 3442**	**R**	One	Every Control Unit	
(ii)	Length		**IS 1954**	**R**	Each Cut	Every Control Unit	
(iii)	Overall Width		**IS 1954**	**R**	One	Every Control Unit	
(iv)	Threads/dm a) Warp b) Weft		**IS 1963**	**R**	Two	Every Control Unit	
(v)	Mass of Base Fabric without Finishing (g/m^2)		**IS 1964**	**R**	Two	Every Control Unit	
(vi)	Fibre Composition % a) Polyester b) Viscose/Cotton		**IS 3416**	**R**	2 Bobbins of Yarn	Once a week or earlier, wherever there is a mixing change, if the blending is done at Blow Room stage. If the blending is done at Draw Frame stage, this requirement has to be tested	Fibre composites shall be tested at yarn stage. In case yarn is bought from outside for fibreComposition the acceptance of yarn for further processing shall be on the basis of sampling and criteria for conformity.

						every day.	
(vii)	Breaking Strength in a) Warpway and b) Weftway		**IS 1969 (Part 1)**	**R**	1	Every Control Unit	If sample fails, two more samples for the same control unit drawn and tested. Both samples should pass the test otherwise the control unit is rejected.
(viii)	Tear Strength		**IS 6489 (Part 1)**	**R**	1	Every Control Unit	
(ix)	Dimensional Stability to Dry Heat a) warpway b) weftway		**IS 12170**	**R**	1	Once a Week	
(xi)	Crease Recovery Angle		**IS 4681**	**R**	1	Once a Week	
(xii)	Pilling Resistance		**IS 10971 (Part 1)**	**R**	2	Once a Week	
(xiii)	Dimensional Change on Washing % in a) Warp-way b) Weft-way		**Annex D**	**R**	1	Once a Week	
(xiv)	pH value of aqueous extract		**IS 1390**	**R**	1	Once a Week	
(xv)	**Maximum Colour Fastness Ratings to**						
	a)Light		**IS 2454 Superseded By: IS/ISO B02: 2014 or IS 686 Superseded By: IS/ISO 105-B01: 2014**	**S**	2	Once in a year* (See Note-3)	
	b) Washing test (i) Change in Colour (ii) Staining of Adjacent Fabric		**IS/ISO 105-C10**	**R**	2	Once a week	
	c) Dry Cleaning (i) Change in Colour		**IS 4802**	**R**	2	Once a Week	

	(ii) Staining of Solvent						
	d) Dry Heat at 150±2 ºC (Change in Colour)		**IS 4636**	**R**	2	Once a Week	
	e) Perspiration (i) Change in Colour (ii) Staining of Adjacent Fabrics		**IS/ISO 105 E04**	**R**	2	Once a Week	
	e) Rubbing (i) Dry (ii) Wet		**IS 766** **Superseded By: IS/ISO 105 Part X12: 2016**	**R**	2	Once a Week	
	f) Hot Pressing (i) Change in Colour (ii) Staining of Adjacent		**IS 689** **Superseded By: IS/ISO 105-X11: 1994**	**R**	4	Once a Week	
3.2	Woven Suiting Fabric	**3.2**	**IS 15853**	**R**	2	Every Control Unit	
4.2	Soil Release Efficiency (Optional)	**4.2 Annex C**	**IS 15853**	**S**	1	-	If agreed between the buyer and the seller
4.3	Anti-Bacterial Activity Value (Optional)	**4.3**	**IS 15853** **IS/SO 20743**	**S**	1	-	If agreed between the buyer and the seller

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 to BO head.

*Note-3:In the first instance, samples for each colour and shade shall be drawn and tested either in laboratory recognized by the Bureau or Government laboratories empaneled by the Bureau or in the in-house lab of manufacturer, in case if facility exists. Those colours and shades shall be marked only if they 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 shall be obtained from the manufacturer. However, two samples drawn from each colour & shade shall be got tested once a year in an independent laboratory or in laboratory of manufacturer, in case if facility exists.

ANNEX C

Possible Tests in a day

1. Visible inspection Yarn – Clause 3.1
2. Nominal Count of Warp & Weft Yarn - Table 1, Sl. No. (i)
3. Length - Table 1, Sl. No. (ii)
4. Overall Width - Table 1, Sl. No. (iii)
5. Threads/Dm - Table 1, Sl. No. (iv)
6. Mass - Table 1, Sl. No. (v)
7. Breaking Strength Warp & Weft - Table 1, Sl. No. (vii)
8. Tear Strength Warp & Weft - - Table 1, Sl. No. (viii)
9. Woven Suiting Fabric – Clause 3.2