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उत्पाद मैन्युअल
Textiles — Synthetic Hook and Loop Tape Fasteners for Consumer Goods — Specification
IS 8156: 2024 के अनुसार

PRODUCT MANUAL
Textiles — Synthetic Hook and Loop Tape Fasteners for Consumer Goods — Specification
According to Is 8156: 2024

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity 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.

1.	**मानक संख्या** **IS No.**	:	IS 8156: 2024
	शीर्षक **Title**	:	Textiles — Synthetic Hook and Loop Tape Fasteners for Consumer Goods — Specification
	संशोधनों की संख्या **No. of amendments**	:	01
2.	**नमूना दिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	**Raw material shall be conforming to the requirements specified in clause 5 of ISS.** Note: This section indicates the requirements for raw material(if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance.

b)	**समूहीकरण दिशानिर्देश** **Grouping Guidelines**	:	Please refer to Annex-A
c)	**नमूने का परिमाण** **Sample Quantity**	:	25 m Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market)
d)	**परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर** Parameters to be Declared in Test Request	:	i Class ii Nominal Width iii Length iv Coating v Optional Requirement vi Flame Time (if applicable) Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.
3.	**परीक्षण उपकरणों की सूची** **List of Test Equipment**	:	Please refer to Annex-B
4.	**निरीक्षण और परीक्षण की स्कीम** **Scheme of Inspection and Testing**	:	Please refer to Annex-C
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day**		
	(i) Material (Cl 5.1) (ii) Dimensions (Cl 6) (iii) Manufacture (Cl 7) (iv) Initial shear strength (Cl 8.1 & Table 4) (v) Initial peel strength (Cl 8.1 & Table 4) (vi) Dot Tear Test (Cl 8.1 & Table 4) (vii) Fray Resistance (Cl. 8.3) Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies(OSAs) during factory inspection to provide ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.		

6.	**लाइसेंस का दायरा/Scope of the Licence:**	
	"Licence is granted to use Standard Mark as per IS 8156: 2024 with the following scope:	
	उत्पाद का नाम Name of the product	Fasteners for Consumer Goods - Synthetic Hook and Loop Tape
	Class	Class 1/Class 2/Class 3/Class 4/Class 5
	Nominal Width	Group 1- 12mm to 25mm/Group 2- 30mm to 38mm/Group 3- 50mm to 75mm/Group 4- 80mm to 175mm/ as agreed
	Length	25, 50, 100 or as agreed
	Coating	Polyurethane based elastomeric coating/Flame retardant
	Optional Requirement	Flammability: - Vertical Flammability (Ignition Time- 12s/60s) - Horizontal Flammability

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NEW DELHI-110002

ANNEX A
Grouping Guidelines

1. Synthetic Hook and Loop Tape Fasteners are classified in 5 classes based on the type of material used for manufacturing as below:
   i. Class 1
   ii. Class 2
   iii. Class 3
   iv. Class 4
   v. Class 5
2. Further, following different nominal widths & lengths have been defined in the standard:

Nominal Width	i. Group 1- 12mm to 25mm ii. Group 2- 30mm to 38mm iii. Group 3- 50mm to 75mm iv. Group 4- 80mm to 175mm
Length	25m, 50m & 100 m

3. Furthermore, optional requirement of Flammability has been defined in the standard, as specified below:
   i. Vertical flammability- ignition Time (12s/60s)
   ii. Horizontal flammability
4. Apart from above, 2 different type of coatings have been defined in the standard as follows:
   i. Polyurethane based elastomeric coating
   ii. Flame retardant Coating
5. Considering the above, following grouping guidelines have been developed for GOL/CSOL:
   i. Sample of Synthetic Hook and Loop Tape of each class to be drawn and tested to include in the scope of licence.
   ii. Sample of maximum Nominal width of any length from a particular group may be tested to cover that particular group of Nominal width and all the lengths defined in ISS in the scope of licence. In case, the nominal width and length other than those given above is intended to be covered in the scope of licence, the same shall be declared & tested.
   iii. Sample of each type of coating (Polyurethane based elastomeric coating/Flame retardant) to be drawn and tested to include in the scope of licence.
   iv. If optional property of Flammability is intended to be covered in the scope of licence, the same shall be tested additionally (Vertical flammability and/or horizontal flammability) on the sample. The Ignition Time (12s/60s) shall be declared by the manufacturer for vertical flammability.
   v. Scope of licence shall be restricted based on the manufacturing and testing facilities available.
   vi. During operation of licence, samples of each variety covered in the scope of licence, shall be tested in rotation, to the extent possible

ANNEX B

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	Materials, Clause 5	– Concentrated formic acid (98 percent) Trifluoroacetic acid (TFA) at temperatures of 70 °C – m-Cresol at temperatures of 80 °C Concentrated formic acid (90 percent) at temperatures of 70 °C – Concentrated 'sulfuric acid at temperatures of 100 °C – Solution of crystallized trichloroacetic acid/chloroform reagent, prepared at a mass ratio 1 : 1 – Benzyl alcohol at temperatures of 150 °C – m-Cresol at boil – Boiling xylene at temperatures of 145 °C – Dial gauge
2.	Nominal Width, Clause 6.1	– Flat Table – Steel Scale with graduation up to 0.5 mm
3.	Length, Clause 6.1	– Flat table marked with 5 m of length – Steel Scale
4.	Hoop & Loop Density, Clause 6.2	– Magnifying Glass
5.	Manufacture, Clause 7	Vernier Calliper
6.	Initial Sheer Strength & Initial Peel Strength, Clause 8.1 & Table 4	– A pendulum type tester with cam drive – A constant power-driven tensile testing machine having a constant rate of traverse (with a jaw separation speed of 300 mm/min ± 5 mm/min.) – A steel roller having a diameter of 121 mm and 57 mm wide weighing 5 kg
7.	Endurance Strength, Clause 8.1 & Table 4	– Endurance tester in accordance with Annex-G of IS 8156.
8.	Dot Tear Test, Clause 8.1 & Table 4	– Tensile testing machine (capable of maintaining a rate of extension- 300 ± 15 mm/min)

9.	Shrinkage (longitudinal), Clause 8.1 & Table 4	– A suitable washing machine with a cylinder 535 mm in diameter rotating at 60 rev/min shall be used – Electric pad for maintaining temperature at 70 °C ± 2 °C in washing machine
10.	Colour Fastness, Clause 8.1 & Table 4	**Colour Fastness to Light as per IS/ISO 105-B01** - Source of Daylight - Reference materials - Exposure Rack - Opaque Cardboard - Grey Scale for Measuring change in Colour **For Colour Fastness to artificial light as per IS/ISO 105-B02** - Reference materials - Humidity test control fabric - Light Source (xenon arc lamp) - black-standard thermometer or a black-panel thermometer - Humidity chamber - Covers - Colour matching lamps - Assessment cabinet - Sample mounting card - Assessment mask **Colour Fastness to Crocking** - Crock Meter - 50 mm × 50 mm square of bleached, unsized cotton fabric piece - Rubber band - Distilled water **For Colour Fastness to Washing as per IS/ISO 105-C10** - 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 **Colour Fastness to Sea Water as per IS/ISO E-02** - Test device (As per Cl. 4.1 of ISO E-02) - Oven - Sodium chloride

		- Adjacent fabrics - a non-dyeable fabric - Spectrophotometer or colorimeter for assessing change in colour and staining - A set of 11 glass or acrylic resin plates - Flat-bottomed dish made of inert materials - Grey scale for assessing change in colour - Grey scale for assessing staining
11.	Flammability (Optional Requirement), Clause 8.2 & Table 5	**Vertical flammability test** - Test Cabinet (An incombustible box 305 mm × 305 mm × 760 mm open at the top, and provided with a vertical transparent front) - Clip - Bunsen burner about 150 mm high with an internal diameter of 9 mm - Specimen Holder - Clamps - Stenter Pin Plates - Stopwatch (calibrated to the nearest 0.1 s) - Ruler - dry soft cloth or tissue, or a soft cloth or tissue dampened with a moderate solvent, such as methyl, ethyl, or isopropyl alcohol **Horizontal flammability test** - Combustion chamber as per clasue A-2.1 of IS 15061. - Sample holder, consisting of two U-shaped metal plates or frames of corrosion-proof material of dimension as specified in clause A-2.2 of IS 15061. - Gas Burner as specified in clause A-2.3 of IS 15061. - Test Gas have a calorific value near 38 MJ/m3 (for example, natural gas). - Metal Comb of at least 110 mm in length, with seven to eight smooth rounded teeth per 25 mm. - Stop-watch with an accuracy of 0.5 s - Fume Cupboard as specified in clause A-2.7 of IS 15061.
12.	Fray Resistance, Clause 8.3	- Front loading type horizontal axis automatic washing machine (Type A of IS 15370) - 20 g ± 1 g of Reference detergent 2 (IS 15370)
13.	Toxicity, Clause 11 & Table 6	**Allergenic and carcinogenic disperse dye as per IS 16914 (Part 2):** - Standard laboratory equipment - Analytical balance, resolution at 0,01 g - Glass vials (20 ml to 40 ml), with tight

		closure - Heating source that generates heat at a temperature of (100 ± 2)°C (thermal block or laboratory sand-bath, controllable) - Autosampler glass vials, with tight closure - Thermo-sensing device, e.g. thermocouple, to measure at 100 °C with a resolution of 0,1 °C - Chromatographic equipment (selected from the following): 1) Equipment for LC/DAD - High performance liquid chromatograph (HPLC), - DAD detector, - separating column, - guard column 2) Equipment for LC/MS - High performance liquid chromatograph (HPLC), - electrospray ion source, - MS detector, - separating column, - guard column **Allergenic and carcinogenic disperse dye as per IS 16914 (Part 3):** - Ultrasonic bath - Coil condenser - Vacuum rotary evaporator, capable of operating at water evaporation capacity of a maximum of 25 ml/min, or equivalent - Round bottom flask, of 200 ml in capacity - Pipettes, of 1 ml and 10 ml in capacity - Volumetric flask, of 10 ml, 100 ml and 1 l in capacity - High-performance liquid chromatography (HPLC) system and diode array detector (DAD) or mass spectroscope (MSD) - Test tube, of 100 ml in capacity, with a silicone plug - Analytical balance of 0.001 g in resolution - Reagents: - Acetonitrile - Methanol - Hexane - 0.25% tri-ethylamine methanol solution - 10 mmol/l ammonium acetate aqueous solution

		- Carcinogenic dyestuffs - Standard solution of carcinogenic dyestuffs **Aromatic amines released from Azo dyes as per IS 15570:** - Methanol (HPLC Grade) - Diethylether (HPLC Grade) - Citrate-sodium Hydroxide Buffer Solution, pH = 6 Preheated to 70°C (see Annex A) - Aqueous Sodium Dithionite Solution, 200 mg/1, freshly prepared - Standard Amines of Highest Available Purity - Standard Amine Solutions - Calibration Solutions, 15 ppm - Sodium Dithionite (Purified/LR) - Sodium Sulphate (LR) - High Performance Thin Layer chromatograph (HPTLC) - High Performance Liquid Chromatograph (HPLC) with Diode Array Detector (DAD) - Gas Chromatograph-Mass (GC-MS) - 30 ml Reaction Vessel - Water Bath Shaker Spectrometer - Centrifugal Evaporator (Turbo Evaporator) - 10, 5, 2 and 1 ml pipettes (Class A) - 60 ml Separating Funnel - 100 ml Beaker - 25 ml, 50 ml Burette (Class A) - Amber Coloured Bottles for Reference Standard Solution - Test Tubes **Aromatic amines released from Azo dyes as per IS 582 (Part 5/Sec 1):** - Suitable reaction vessel, of temperature-resistant glass with a gas-tight closure - Suitable heating system, at (70 ± 2) °C - Polypropylene or glass column, inside diameter 25 mm to 30 mm, length 130 mm to 150 mm, packed with 20 g of diatomaceous earth, fitted with glass fibre filter at the outlet - Vacuum rotary evaporator with vacuum control and water bath - Pipettes, in required sizes or variables pipettes - Ultrasonic bath with thermostat - Chromatographic equipment (any of the following): i. High-performance liquid

		chromatography (HPLC) and DAD or MS. ii. Capillary gas chromatography (GC), with MS. iii. Capillary electrophoresis (CE), with DAD. iv. Thin layer chromatography (TLC) or high-performance thin layer chromatography (HPTLC). - n-hexane - Citrate buffer solution, 0,06 mol/l, pH = 6, preheated to (70 ± 2) °C - Aqueous sodium dithionite solution - Sodium hydroxide aqueous solution - t-butyl methyl ether - Methanol - Acetonitrile - Amines - Standard solutions - Stock solution of the amines - Internal standard in solution - Water, Grade 3 **Aromatic amines released from Azo dyes as per IS 582 (Part 5/Sec 2):** - Suitable reaction vessel, of temperature-resistant glass with a gastight closure - Heating source, that generates a temperature of (40 ± 2) °C - Separator, with a revolution speed of more than 3 000 r/min - Vacuum rotary evaporator - Pipettes - Ultrasonic bath, at least 160 W, with controllable heating - Horizontal shaker - Polypropylene or polyethylene syringe, 2 ml - Instrumental equipment Gas chromatography (GC) - High-performance liquid chromatography (HPLC) - Thin-layer chromatography (TLC), or high-performance thin-layer chromatography (HPTLC) - Capillary electrophoresis (CE) with DAD - Sodium hydroxide - Aqueous sodium dithionite solution - Sodium hydroxide solution, w = 2 %2) - n-Hexane - tert-Butyl methyl ether - Sodium chloride - 4-Aminoazobenzene - Internal standards for gas

		chromatography (IS) such as: – IS1: naphthalene-d8 (CAS No.: 1146-65-2); – IS2: 2,4,5-trichloroaniline (CAS No.: 636-30-6); – IS3: benzidine-d8 (CAS No.: 92890-63-6); – IS4: anthracene-d10 (CAS No.: 1719-06-8). - Standard solutions - Internal standard solution (IS) - 4-Aminoazobenzene calibration solution **Dimethyl fumarate (DMFU) as per IS 16991:** - Analytical balance, with a precision of at least 0,1 mg - Glass vial that can be tightly sealed, 40 ml - Ultrasonic bath with adjustable temperature - PTFE membrane filter with a pore width of 0,45 µm - Sample vials of 1 ml and PTFE-capped - GC-MS (gas chromatograph-mass spectroscopy) - Dimethyl fumarate - Dimethyl maleate - d2-DMFU Dimethyl fumarate - Acetone - Stock solutions and working solutions **Formaldehyde as per IS 14563 (Part 1):** - Stoppered volumetric flasks, 50 ml, 250 ml, 500 ml and 1 000 ml - Flask, 250 ml, with a stopper - Pipettes, 1 ml, 5 ml, 10 ml and 25 ml and graduated at intervals of 5 ml - Burettes, 10 ml and 50 ml - Spectrophotometer, capable of reading absorbance to a minimum of 3 decimal places at a wavelength of 412 nm - Test tubes or spectrophotometer tubes - Water bath, capable of maintaining a temperature of (40 ± 2) °C - Filters, made from heat-resistant glass having a pore size between 40 µm and 100 µm - Balance, accurate to 0.2 mg - Distilled water or grade 3 water - Acetylacetone reagent - Formaldehyde solution, approximately 37 % (M/V or M/m) - Ethanolic solution of dimedone

		Organotin compounds as per IS 16981: - GC-MS gas chromatograph - Analytical balance, capable of measuring mass to an accuracy of 0.1mg - Glove bag, box or isolation chamber with built-in gloves that enables work to be carried out in a totally isolated and controlled environment and has side and front openings and means of sealing the openings, such as tape - Sample tubes of polypropylene, with screw tops and a volume of 50 ml - Micropipettes, 10 µl to 500 µl range, with disposable tips - Pipette, 1 ml to 10 ml capacity - Calibrated pH-meter with a glass combination electrode and range of 0 to 14 - Volumetric flasks of 10 ml, 25 ml and 100 ml - Ultrasonic bath with adjustable temperature - Disposable glass Pasteur pipettes - Glass beaker - Centrifuge - Mechanical shaker, adjusted to a minimum frequency of 50 min−1 - Water, grade 3 - Ethanol, GPR grade or industrial methylated spirit (IMS), - Glacial acetic acid - Sodium tetraethylborate - Tetrahydrofuran - n-heptyltin trichloride - Di-n-heptyltin dichloride - Tri-n-propyltin monochloride - Tetra-n-propyltin - Isooctane, - Inert gas - Tropolone - Methanol - Sodium acetate - Organotin compounds listed in Table 1 of IS 16981 **pH as per IS 1390:** - Distilled or deionized water, of at least grade 3 as defined in ISO 3696, having a pH between 5.0 and 7.5 - Potassium chloride solution, 0.1 mol/l - Buffer solutions - Stoppered glass or polypropylene flasks - Mechanical shaker - Beakers - Rods

		- pH-meter - Balance, with a resolution of at least 0.01 g - 1 l volumetric flasks, of grade A quality **Phthalates as per IS 16915 (Part 1):** - Analytical balance, with a precision of at least 0,1 mg - Flask with Teflon stopper - Ultrasonic bath with adjustable temperature, suitable for operation at 60 °C - PTFE-membrane filter, pore width 0,45 µm - Volumetric flasks of suitable volume - GC vials - Gas chromatograph with mass-selective detector (GC-MS) - Toluene - Internal standard: — Bis (2-Ethylhexyl) phtalates-3,4,5,6-D4 or — Diphenylphthalate - Phthalates - Acetone - Methanol - Cyclohexane - Tetrahydrofurane (THF) - n-hexane - Standard solutions as specified in Clause 5.2 of IS **16915 (Part 1)**

ANNEX C

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 **RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT**:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: The quantity of the synthetic loop and hook tape of a particular class (Class 1/Class 2/Class 3/Class 4/Class 5), nominal width, type of coating (Polyurethane based elastomeric coating/Flame retardant) & Flame Time (12s/60s) (if applicable) manufactured in a day under similar condition from the same consignment of the raw material.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities

or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 **Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as "R" in Column 2 of Table 1)**, where different tests given in the specification shall be carried out in accordance with the method given in the specification**.** They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 **TEST RECORDS**- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on each roll of tape & each package of roll(s) of the tapes, provided always that the material so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 **Additional Marking requirements**: The material shall also be marked with the following additional requirement on on each roll of tape & each package of roll(s) of the tapes:

a) "For BIS certification details please visit www.bis.gov.in"

4. REJECTION - All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. 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

(ONLY FOR GUIDANCE PURPOSE)

	(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**				
5	Materials	5.1, 5.3 Annex B	IS 8156	R	01	Each consignment	
6.1	Determination of Width	Annex C	IS 8156	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
	Determination of Length	Annex D	IS 8156	R			
6.2	Density	Annex E	IS 8156	R			
7	Manufacture	7	IS 8156	R			
8.1 & Table 4	**Requirement for Hooks and Loops Tape Fasteners**						
-do-	Initial shear strength: a) Lengthwise b)Widthwise	Annex F	IS 8156	R	01	Each Control Unit	
-do-	Initial peel strength	Annex F	IS 8156	R	01	Each Control Unit	
-do-	Endurance strength	Annex G	IS 8156	R	01	Each Control Unit	
-do-	Dot tear test	Annex H	IS 8156	R	01	Each Control Unit	

-do-	Shrinkage (longitudinal), a) For hooks Shrinkage (longitudinal) a) For hooks b) For loops	Annex J	IS 8156	R	01	Each Control Unit	
-do-	Colour fastness to light (grey scale)	--	IS/ISO 105- B01 or IS/ISO 105-B02	S	01	Once in 6 months Or Whenever there is change in raw material	
-do-	Colour fastness to crocking (grey scale) 1. Dry crocking 2. Wet crocking	Annex K	IS 8156	R	01	Each Control Unit	
-do-	Colour fastness to washing (grey scale)	--	IS/ISO 105-C10	R	01	Each Control Unit	
-do-	Colour fastness to sea water (grey scale)	--	IS/ISO 105-E02	R	01	Each Control Unit	
8.2 & Table 5	**Requirement for Flame Resistance of Hooks and Loops Tapes**						
-do-	Vertical flammability test (optional) a) Flame time b) Drip flame time c) Burn length vertical	Annex L	IS 8156	R	01	Each Control Unit	
-do-	Horizontal flammability test (optional) a) Burn rate	Annex A	IS 15061	R	01	Once in a week	
8.3	Fray Resistance	Annex M	IS 8156	R	01	Each Control Unit	
9	Dyeing	9	IS 8156	R	Firm to have adequate in-process controls to check		

10	Coating	10	IS 8156	R	compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
11 & Table 6	**Toxic Chemicals**						
-do-	Allergenic and carcinogenic disperse dye	--	IS 16914 (Part 2) and IS 16914 (Part 3)	S	01	Once in 6 months Or Whenever there is change in raw material	
-do-	Aromatic amines released from Azo dyes	--	IS 15570 and IS 582 (Part 5/Sec 1) And IS 582 (Part 5/Sec 2)	S	01		
-do-	Dimethyl fumarate (DMFU)	--	IS 16991	S	01		
-do-	Formaldehyde	--	IS 14563 (Part 1)	S	01		
-do-	Organotin compounds	--	IS 16981	S	01		
-do-	pH	--	IS 1390	S	01		
-do-	Phthalates	--	IS 16915 (Part 1)	S	01		