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उत्पाद मैनुअल

वस्त्रादि — पालिएस्टर सतत तंतु पूर्ण आहत धागे — विशिष्टि

IS 17261: 2022 के अनुसार

PRODUCT MANUAL FOR

Textiles — Polyester Continuous Filament Fully Drawn Yarns — Specification

According to IS 17261: 2022

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 17261: 2022
	शीर्षक Title	:	Textiles — Polyester Continuous Filament Fully Drawn Yarns— Specification
	संशोधनों की संख्या No. of amendments	:	07
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific requirement 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 Size	:	05kg approx. in 03 bobbins 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) Number of twists ii) Finish oil pick-up iii) Type of yarn based on twists iv) Type of yarn Based on Cross-Section/Construction v) Type of Yarn Based on Lustre vi) Type of Yarn Based on Dyeing Method vii) Linear density viii) Optional/Additional requirements 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		
	1) Identification and description 2) Cross-section of yarn 3) No. of Filaments in Multifilament Yarn 4) Yarn Breaking tenacity and Yarn Elongation at Break 5) Moisture Regain 6) Shrinkage in boiling water 7) Water Soluble Matter 8) Colour Strength for Dope Dyed Yarn 9) Freedom from yarn defects 10) Commercial Mass 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 17261: 2022 with the following scope:		
	उत्पाद का नाम Name of the product		Textiles — Polyester Continuous Filament Fully Drawn Yarns
	Type of yarn based on twists		Twisted/Untwisted
	Type of yarn Based on Cross-Section/Construction		– Cross sectional view - Circular, Profiled i.e. Triangular, Lobal (Trilobal), Serrated, Oval (bean shaped), Ribbon Like etc. – Cross Sectional Area - Solid or Hollow etc. – Multi Component Fibres – Concentric Cover-Core, Matrix, Sheath-Core etc.

	Type of Yarn Based on Lustre	– Full Dull (FD); – Semi Dull (SD)/Semi Dull Optically Bright (SDOB) – Bright (BRT)/Optically White (OW) – Super Bright (SBR);
	Type of Yarn Based on Dyeing Method	– Disperse Dyeable [Conventional Dyeable (COD)/Stock Dyeable (STD/Easy Dyeable (ED)] – Cationic Dyeable (CD)/Easy Dyeable Cationic (EDCD); – Dope Dyed (DD) /Optically White (OW);
	Declared values (range) of	– Linear density – Number of Twists
	Optional/Additional requirements	– Flame Retardant/Non-Flame Retardant; – Anti-Microbial/Non Anti-Microbial; – Ultra Violet light Resistant/Non-Ultra Violet light Resistant; – High oriented yarn/Non High Oriented Yarn – Special cross section (Profile hollow/mixed cross sections)/Without special cross section – Thick and thin yarn/Not Thick and Thin Yarn – Bi-shrinkage yarn/Not Bi-shrinkage Yarn – High shrinkage yarn/Not High Shrinkage yarn – Recycled yarn /Virgin yarn – Mother yarn/Not Mother yarn – Mono/Multifilament yarn – With or Without Colour Fastness to Rubbing – With or without Colour fastness to perspiration (acidic and alkaline)

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ANNEX-A

GROUPING GUIDELINES

1. Based on the classification and identification of FDY, the following grouping guidelines shall apply for Grant of Licence and Change in Scope of Licence.
 - a) The range of values of linear density of polyester fully drawn yarn (FDY) intended to be covered in the scope of licence shall be declared by the manufacturer within the specified range. One Sample of FDY of any declared value of Linear Density shall be drawn and tested to cover the entire range of linear density values intended to be covered in the scope of licence.
 - b) The range of values of Twists of polyester fully drawn yarn (FDY) intended to be covered in the scope of licence shall be declared by the manufacturer. Samples of FDY with highest number of twists and lowest number of twists shall be drawn, and tested to cover the entire range of twists intended to be covered in the scope of licence.
 - c) One sample of FDY of any type of yarn based on cross section/construction (Cross sectional view, Cross Sectional Area, Multi Component Fibres) shall be tested to cover all types of yarn based on cross section/construction intended to be covered in the licence.
 - d) However, samples of each type of yarn based on lustre, dyeing method and optional/additional requirements shall be tested to cover the respective types.
2. The firm shall declare the types of FDY intended to be covered within the scope of their licence. The scope of the Licence may be restricted based on the Manufacturing capability and Testing facilities of the manufacturer.
3. 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)

Sr. No.	Tests used in with Clause Reference	Test Equipment/Chemical
1.	Identification and Cross Section, Clause 5.2	<u>Microscopic and dissolution test given in IS 667</u> – Compound Microscope (100X-500X) – Dissecting Needles – Glass slides – Cover glasses and cross sectioning device and laboratory reagents as per IS 667 or <u>Staining Test as per IS 667</u> – Mixture of dyestuffs (e.g. Shirlastain A, Detex, Fibre Stain etc.) – Known Dyed Samples Or <u>Determination of Melting Temperature as per Annex H of IS 16481</u> – Differential Scanning Colorimeter (DSC) – Balance – capable of weighing to $\pm 10 \mu\text{g}$
2.	Linear Density, Clause 6.1 & Table 3	– Conditioning Chamber – Weighing Balance (L.C.- 0.1 mg) – Drying Oven ($>110^{\circ}\text{C}$, L.C. 1°C) – Desiccator with a suitable desiccant – Sealed Containers – Wrap reel
3.	Tenacity and Elongation at Break, Clause 6.1 & Table 3	Tensile Strength Testing Machine either of CRT, CRL or CRE type, with clamps to grip the sample and means for adjusting the distance between the clamps and for application of pre-tension.
4.	Finish Oil Pick up, Clause 6.1 & Table 3	– Precision Balance (L.C.- 0.1mg) – Stainless Steel Vessels – Conical Flasks – Forceps – Petroleum Ether – Soxhlet Apparatus – Bowls
5.	Interlace as Nips per Metre , Clause 6.1, & Table 3, Note 2)	<u>DETERMINATION OF INTERLACE IN FILAMENT YARN BY NEEDLE INSERTION METHOD</u> – Automatic needle pull entanglement tester, Rapid Automatic Pin Insertion Detector and automatic yarn

		entanglement tester – Conditioning Chamber – Standard Laboratory weights Or <u>OPTICAL SCANNING PRINCIPLE</u> - Nips Stability Tester Or <u>DETERMINATION OF INTERLACE OF FILAMENT YARN IN NIPS PER METRE BY WATER BATH METHOD</u> – Water bath with hooks at both ends for tying the yarn. – One metre stainless steel – scale with 1 mm least count
6.	Unevenness, Clause 6.1 & Table 3	– Capacitance type Unevenness testing Instrument (such as Uster unevenness tester) with packing holders, guides, tension devices and take up mechanism, Recorder. – Conditioning Chamber
7.	Number of Twists, Table 3 & Note 4	– Twist counter – Dissecting needle – Means for magnifying the specimen being tested – Equipment for reeling laboratory sample skeins (optional)
8.	Moisture regain, Clause 6.2 & Table 4	– Precision Balance(L.C 0.1mg) – Stainless Steel Vessels – Hot Air Oven Capable of Maintaining at $110 \pm 5^{\circ}\text{C}$ – Forceps – Wrap Reel
9.	Shrinkage in Boiling Water, Clause 6.1 & Table 3	– Skein Winding Reel – Automatic Shrinkage Tester – Boiling Water Container – Ventilated Oven – Distilled Water Or – Hot Water Bath with capacity to completely immerse the magazine. – Magazine to hold the hanks/skeins – Weights of 50 g to 500 g. – Stainless Steel Scale of one metre length Wrap reel to prepare skein. – Metal hooks to take lengths L1 and L2 readings.
10.	Phosphorus Content (for flame retardant Yarn Only), Clause 6.2 & Table 4	– Sulphuric Acid – 2000ml Beaker – Demineralized Water – 1000ml flask – Ammonium Molybdate – 500ml and 100ml Volumetric Flask – Hydroquinone – Sodium Sulphite – Zinc Oxide – Whatman Filter Paper No. 1

		– Di-sodium Hydrogen Ortho Phosphate Dihydrate – Weighing Balance (LC- 1mg) – Hot Plate – Silica Crucible – Muffle Furnace – Pipettes-10ml and 05ml – UV Spectro-photometer
11.	UV Resistance(For UV Resistance Yarn Only), Clause 6.2 & Table 4	– Conditioning Chamber – Xenon Arc Type Apparatus equipped with inner and outer borosilicate filter glass – Tensile Testing m/c
12.	Anti-Microbial Activity Value (For anti-microbial yarn only), Clause 6.2 & Table 4	– Spectrophotometer – Incubator – Water baths – Mixer – Stomacher – Clean Bench – Washing Machine – Humidity chamber – Luminescence Photometer – Printing Apparatus – Refrigerator – Freezer – Balance – Filtering Apparatus – Pipette, Vials, Glass Bottles – Petri Dishes – Glass Rod – Anti Bumping Granules – Erlenmeyer Flask – Cutting template – Disposable Plastic Bag – Tweezers – Stainless Steel Cylinders – Metal Wire Basket – Aluminium Foil – Reciprocal Incubation Shaker – Autoclave – Reagents and Culture media as per clause 6 – Reference Strains as per clause 7
13.	Water Soluble Matter, Clause 6.2 & Table 4	– Distilled Water – Water Cooled Condenser – Hot Air Oven – Flat Bottom Flasks – Weighing Balance, with a resolution of 0.1 mg
14.	Colour strength with reference to standard yarn, percent (For dope dyed yarns only), Colour difference with reference to standard yarn, measured as ΔE, Max (for	– Card Winding Machine with uniform tension control system – Scanning Spectrometer – Card(Aluminium)

	dope dyed yarns only), Clause 6.2 & Table 4	– Clean Cotton Cloth
15.	Isophthalic acid content, Clause 6.2 & Table 4	– PPE's like safety goggles, apron, surgical hand gloves – Gas chromatograph, – capillary column – Dispensette or pipette – Volumetric Flask – Beaker, Funnel, 50ml flask, – Heating Mantle – AR grade Dimethyl Isophthalate, Benzyl Alcohol, Chloroform, Isopropyl Titrate, Dimethyl Suberate
16.	Freedom from Yarn Defects, Clause 6.3	– Packing Table UV Light – Vernier Calliper – Eye Piece Lens – Bottom weights(1g to 15g) – Stop watch
17.	Lustre/Brightness, Clause 6.4	– PPE like Safety Goggles – Nose Mask and Apron – Analytical Balance(LC-.1mg) – Perkin Elmer – I-12, UV Visible Spectrophotometer – Sili Volumetric-100ml, 500ml, 1000ml – Muffle furnace – Tongs – Hot Plate – Measuring cylinder – Glass beakers – Reagents- Hydrogen Peroxide – Sulphuric Acid – Nitric Acid – Ammonium Sulphate – Titanium Dioxide
18.	Colour Fastness Properties of Dyed FDY, Clause 6.5	<u>For Colour Fastness to Daylight (as per IS/ISO 105-B01 : 2014(Superseding IS 686 : 1985)</u> – Source of Daylight – Reference materials – Exposure Rack – Opaque Cardboard – Grey Scale for Measuring change in colour Or <u>For Colour Fastness to artificial light (as per IS/ISO 105-B02 : 2014(Superseding IS 2454 : 1985)</u> – 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 <u>For Colour Fastness to Washing (as per IS/ISO 105-C10 : 2006 superseding IS 3361)</u> – 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 <u>For Colour Fastness to Dry heat treatments as per IS 4636</u> – 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 <u>For Colour Fastness to perspiration as per IS/ISO 105-E04:2008(superseding IS 971) (optional)</u> – Test Devices as per Clause 4.1 of IS/ISO 105-E04 – Oven maintained at (37±2) °C – 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 <u>For Colour Fastness to Rubbing as per IS/ISO 105-X12:2016 superseding IS 766 (optional)</u> – 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
19.	Commercial Mass, Clause 6.6	– Balance/Weighing Instruments(LC-.1mg) – Air tight vessels/Desiccator – Hot air oven/Ventilated air oven – Laboratory reagents for Cleaning Specimens

20.	General Lab Conditions	– AC – Thermometer-Hygrometer(optional) – Humidity chamber with provisions to control temperature and relative humidity – Other required glasswares and accessories
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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 entire quantity of Polyester Continuous Filament Fully Drawn yarn, of each type and variety manufactured under similar conditions in a single day.

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 carton/pallet of polyester fully drawn yarn (FDY) 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 each carton/pallet of polyester fully drawn yarn (FDY):

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

Note — The yarn manufacturer shall mark on the pallets/cartons whether the yarn is Disperse Dyeable/Conventional Dyeable (COD)/Stock Dyeable(STD)/Easy Dyeable (ED)/Cationic Dyeable or Easy Dyeable Cationic Dyeable (EDCD) for the guidance of the multifold yarns or fabric manufacturers.

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				
4	Cross Section/Construction	4.1.1, 4.1.2, 4.1.3	IS 17261	R	One	After each scheduled Spinneret change	Samples of each type and variety to be drawn and tested.
5.2	Identification and Description	5.2	IS 17261/ IS 667/ IS 16481	S	One	Each month	In addition, each consignment of raw material shall be accompanied by test certificate of supplier
6.1	Physical Requirements						
6.1, 6.2.1, 8.3 & Table 3	Linear density	6.1	IS 7703 (Part 1)	R	One	Each Control Unit	Samples of each type and variety to be drawn and tested.
-do-	Unevenness U Percent	-do-	IS 7703(Part 5)	R	One	Each Control Unit	-do-
-do-	Tenacity	-do-	IS 7703(Part 2)	R	One	Each Control Unit	-do-
-do-	Elongation	-do-	-do-	R	One	Each Control Unit	-do-
-do	Boiling Water Shrinkage	-do-	IS 17087 or Annex G of IS	R	One	Each Control Unit	-do-

			17261:2022				
-do-	Interlace as Nips Per metre	-do-	Annex B of IS 17262	R	One	Each Control Unit	-do-
-do-	No. of Filaments in Multifilament yarn	-do-	IS 17261	R	One	After each scheduled Spinnerette change	-do-
--	Number of Twists	--	IS 832 (Part 1)	R	One	Each Control Unit	If applicable
6.2	Chemical requirements						
6.2 Table 4	Moisture Regain	6.2	Annex B of IS 17261	R	One	Each Control Unit	-do-
-do-	Isophthalic acid content a) Virgin polyester yarn b) Dope Dyed/White Yarn c) Recycled polyester yarn	do-	Annex C of IS 16481	S	One	Each month	-do-
-do-	Water Soluble Matter	do-	IS 3456	R	One	Each Control Unit	Sample of each type and variety to be drawn and tested
-do-	Finish Oil Pick Up	do-	Annex C of IS 17261	R	One	Each Control Unit	-do-
-do-	Phosphorus Content	do-	Annex D of IS 17261	R	One	Each Control Unit	Sample of each type and variety to be drawn and tested (APPLICABLE FOR FLAME RETARDANT YARN ONLY)

i)	Light Change in colour		IS/ISO 105-B01 or IS/ISO 105- B02	S	One	Once in a Year	Sample of each type and variety to be drawn and tested
ii)	Washing Test 2 a) Change in colour b) Staining (optional)		IS/ISO 105-C10	S	One	As agreed between purchase and supplier	
iii)	Rubbing (optional) a) Dry b) Wet (optional)		IS/ISO 105-X12	S	One	As agreed between purchaser and supplier	
iv)	Perspiration (acidic and alkaline) (optional) a) Change in colour b) Staining		IS/ISO 105-E04	S	One	As agreed between purchaser and supplier	
6.6	Commercial Mass	6.6	IS 17261:2022	R	One	Each consignment of material	