www.bis.gov.in

उत्पाद मैन्युअल
FOR Textiles — Tarpaulins Made from High Density Polyethylene (HDPE) Woven Fabrics — Specification
IS 7903: 2017 के अनुसार

PRODUCT MANUAL FOR
Textiles — Tarpaulins Made from High Density Polyethylene (HDPE) Woven Fabrics — Specification
ACCORDING to IS 7903: 2017

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 7903: 2017
	शीर्षक **Title**	:	Textiles — Tarpaulins Made from High Density Polyethylene (HDPE) Woven Fabrics - Specification
	संशोधनों की संख्या **No. of amendments**	:	02
2.	**नमूना दिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	HDPE Tapes, HDPE Fabric, Eyelets, Line/Cord Beading shall conform to the requirements given in Cl. 3 of IS 7903: 2017. Lamination shall also conform to the requirements given in clause 5.1.1 of IS 7903: 2017. Conformity of materials to the above may be established through either of the following or a combination of the same (No testing is required if the material is ISI marked):

			Test report from a laboratory recognized by the Bureau/ Government laboratories empanelled by the Bureau/NABL accredited laboratories; Material supplier's test certificate; In-house factory test report. 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**	:	Sample of each type to be tested to cover the same in the scope of licence. If sample of coloured tarpaulin is tested, the addition of black tarpaulins (without colour) in the scope may also be considered.
c)	**नमूने का परिमाण** **Sample Size**	:	One complete sheet (For mechanical testing) + 2 in. x 2 in. cut piece (for chemical testing) 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 Type ii Colour 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**	:	कृपया Annex- A देखें Please refer to Annex- A
4.	**निरीक्षण और परीक्षण की स्कीम** **Scheme of Inspection and Testing**	:	कृपया Annex- B देखें Please refer to Annex -B
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day**		
	The following tests are possible to be carried out in a day, provided the conditioned samples are available, where applicable: i. Carbon black content ii. Dimensions iii. Mass of finished and laminated fabric iv. Breaking strength before UV exposure v. Elongation at break vi. Welded seam strength before UV exposure vii. Trapozoid tear strength test		

	viii. Puncture resistance test ix. Impact failure load x. Ash content 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 7903: 2017 with the following scope:	
	उत्पाद का नाम **Name of the product**	Textiles — Tarpaulins Made from High Density Polyethylene (HDPE) Woven Fabrics - Specification
	Type	Type I/II/III/IV/V/VI/VII
	Colour	Coloured/Black (without colour)

ANNEX A

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sr. No.	Tests used in with Clause Reference	Test Equipment/Chemical
1.	Construction, Clause 5.2	Steel Scale
2.	Mass of finished tarpaulin & Mass of laminated fabric, Clause 3.2 & 5.1	Flat Table, Weighing Balance with GSM cutter for mass
3.	Breaking strength before UV exposure & Elongation at Break, Clause 6.1 & Table 1	Constant-rate-of-extension (CRE) Tensile testing machine capable of constant rates of extension of 20 mm/min and 100 mm/min, with an accuracy of ± 10 %, equipment for cutting samples
4.	Retention of breaking strength after UV exposure of 144 h (warp and weft), Clause 6.1 & Table 1	Test Chamber with Fluorescent UV- lamps Type B with irradiance level 0.63W/m2 with facility for heating and condensation, Tensile testing machine CRE type
5.	Welded seam strength before UV exposure (weft), Clause 6.1 & Table 1	Constant-rate-of-extension (CRE) Tensile testing machine capable of constant rates of extension of 20 mm/min and 100 mm/min, with an accuracy of ± 10 %, equipment for cutting samples
6.	Retention of welded seam strength after UV exposure of 144 h (weft), Clause 6.1 & Table 1	Test Chamber with Fluorescent UV- lamps Type B with irradiance level 0.63W/m2 with facility for heating and condensation, Tensile testing machine CRE type
7.	Trapozoid tear strength, Clause 6.1 & Table 1	Tensile testing machine with template as per Fig.1 of IS 14293 and vessel
8.	Puncture resistance, Clause 6.1 & Table 1	Constant-rate-of-extension (CRE) Tensile testing machine with attachment for puncture (Ring Clamp Attachment and Solid Steel Rod) test as per Fig. 1 & 2 of Annex-D of IS 7903
9.	Impact failure load, at 1 524 mm drop, Clause 6.1 & Table 1	Impact resistance apparatus consisting of a two-piece Annular Specimen Clamp, Adapter, Dart, Masses of SS, positioning devices and Cushioning and shielding devices as per Annex-E of IS 7903
10.	Colour fastness to light (for coloured tarpaulines),6.1 & Table 1	blue wool references (References 1 to 8 & References L2 and L4) Exposure apparatus consists essentially of a climatic test chamber made of a corrosion-resistant material and containing the optical light source, a filter system and holders for the test specimens. Optical light source and filter system as per clause 5.2.2 of IS/ISO 105-B06 Radiometer for monitoring the exposure

		conditions Temperature Sensors Black-standard thermometer (BST) Black-panel thermometer (BPT) Opaque cardboard Grey scale for assessing change in colour Computerized spectral colour-measuring instrument Polyester (PES) nonwoven fabric
11.	Ash content,6.1 & Table 1	Weighing Balance 1mg accuracy, Silica crucible, Bunsen Burner, Silica Triangle and Tripod, Muffle furnace(capable of being controlled thermostatically at 590 ± 10°C), Desiccator, Gloves, Crucible holder
12.	Water Proofness, Clause 6.3	Static hydro pressure test apparatus as per fig 1 of IS 7940, Cone test apparatus consisting of glass or conical funnel, wire cone, glass rod, conical flask, A stand, measuring flask and distilled water as per IS 7941, Hot air oven for Ageing test of least count 1Deg C, Balance, capable of weighing to an accuracy of 1 mg, Ruler with accuracy ±0.5 mm, Desiccator
13.	Conditioning of samples	Humidity chamber

ANNEX B

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: all tarpaulins of a particular type and colour, made from same batch of laminated HDPE woven fabric (using same variety of basic fabric) manufactured under similar condition in a 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 tarpaulin or on a label or tag affixed, 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 tarpaulin or on a label or tag affixed:

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)		(4)
TEST DETAILS				**Test equipment requirement R: required (or) S: Subcontracting permitted**	**LEVELS OF CONTROL**		**REMARKS**
Clause.	**Requirement**	**Test Method**			**No. of Sample**	**Frequency**	
		Clause	**Reference**				
3.1	HDPE tape	3.1	IS 2530	S	01	Each Control Unit	Conformity of materials may be established through either of the following or a combination of the same (No testing is required if the material is ISI marked):
3.2	HDPE fabric	3.2	IS 7903	S	01	Each Control Unit	Test report from a laboratory recognized by the Bureau/ Government laboratories empanelled by the Bureau/NABL accredited laboratories; Material supplier's test certificate; In-house factory test report.
3.3	Eyelets	3.3	IS 4084	R	01	Each consignment	
3.4	Line/Cord Beading	3.4	IS7903	R	Firm to have adequate in-process controls to check compliance of this parameter as per the requirements given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
5	**Manufacture**						
5.1	Lamination	5.1.1	IS 2530, IS	R	Firm to have adequate in-process controls to check compliance of this		

			13162 (Part 3)		parameter as per the requirements given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
5.2	Construction	--	IS 7903	R			
5.3	Joints/ Seams	--	-do-	R			
5.4	Fixing of Eyelets	--	-do-	R			
6.1 & Table 1	**Requirement of Tarpaulins Made from HDPE Woven Fabrics**						
i)	No. of HDPE fabric layers	--	IS 7903	R	Firm to have adequate in-process controls to check compliance of this parameter as per the requirements given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
ii)	No. of lamination layers	--	-do-	R			
iii	Total number of layers in the finished tarpaulin	--	-do-	R			
iv	Mass of finished tarpaulin	Annex B	-do-	R	01	Each Control Unit	
v	Mass of laminated fabric	Annex C	-do-	R	01	Each Control Unit	
vi	Breaking strength before UV exposure	--	IS 1969 (Part 1)	R	01	Each Control Unit	
vii	Elongation at break, percent (warp and weft)	--	IS 1969 (Part 1)	R	01	Each Control Unit	
viii	Retention of breaking strength after UV exposure of 144 h (warp and weft), percent , N	Annex F	IS 16703	S	01	Once in 3 months	
ix	Welded seam strength before UV exposure (weft), N,	--	IS 1969 (Part 1)	R	01	Each Control Unit	

x	Retention of welded seam strength after UV exposure of 144 h (weft), percent, N,	Annex F	IS 16703	S	01	Once in 3 months	
xi	Trapozoid tear strength, N,	--	IS 14293	R	01	Each Control Unit	
xii	Puncture resistance, N,	Annex D	IS 7903	R	01	Each Control Unit	
xiii	Impact failure load, at 1524 mm drop, min, gram force at 50 percent failure	Annex E	IS 7903	R	01	Each Control Unit	
xiv	Colour fastness to light (for coloured tarpaulins)	--	IS/ISO 105-B06	S	01	Once in 6 months	
xv	Ash content	Annex F	IS 7903	R	01	Each Control Unit	
6.2	Dimensions	6.2	-do-	R	01	Each Control Unit	
6.3	Water Proofness	--	IS 7940, IS 7941 & IS 7016 (Part 8)	R	01	Once in a Month	