



**PRODUCT MANUAL FOR
AGRO TEXTILES – SHADE NETS FOR AGRICULTURE AND HORTICULTURE PURPOSES
PART 2 SHADE NETS MADE FROM MONO FILAMENT YARN
According to IS 16008 (Part 2):2016**

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 16008 (Part 2):2016
	Title	:	Agro Textiles – Shade Nets For Agriculture And Horticulture Purposes Part 2 Shade Nets Made From Mono Filament Yarn
	No. of Amendments	:	0
2.	Sampling Guidelines:		
a)	Raw material	:	HDPE Monofilament Yarn/Fabric shall conform to Cl. 4 of IS 16008 (Part 2)
b)	Grouping guidelines	:	NA - Each Type to be tested
c)	Sample Size	:	Full width X 3 meters, HDPE Monofilament Yarn (3 bobbins of 100 m each)
3.	List of Test Equipment	:	Please refer ANNEX – <u>A</u>
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – <u>B</u>
5.	Possible tests in a day : Dimensions and Mass as per Cl 6.1, Breaking Strength, Bursting Pressure		
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 16008 (Part 2): 2016 with the following scope:		
	Name of the product	Agro Textiles – Shade Nets for Agriculture and Horticulture Purposes – Part 2 – Shade Nets Made From Mono Filament Yarn	
	Type	Type I/Type II/ Type III/Type IV	

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.	Materials, Cl. 4.1	Wrap Reel , Weighing Balance,
2.	Materials, Clause 4.1.1	Air Circulating Oven, Water Bath, Stop Watch, Vertical Scale
3.	Fabric, Clause 4.2	Measuring Tape, Vernier Calliper
4.	Clause 4.3, Colour	Shade Card,
5.	Clause 6.1 Dimensions and Mass	A) Counter Meter, B) Measuring Tape C) Digital Weighing Balance
6.	Clause 6.2 Mass g/m ² Table 1 (i)	A) Digital Weighing Balance B) Humidity Chamber with a) Temperature controller and Digital Indicator b) Humidity controller and digital indicator C) Steel Scale D) Measuring Tape & Digital Vernier Caliper E) Oven F) Metal Template G) Heat Cutter
7.	Average Breaking Strength of Fabric Cl 6.2, Table 1 (ii)	Tensile testing machine CRE with facility to record/indicate force and separation
8.	Retention in Breaking Strength after UV exposure, Cl 6.2 Table 1 (iii)	Test Chamber with Fluorescent UV lamps Type B with irradiance level 0.63W/m ² with facility for heating and condensation, Tensile testing machine CRE type

9.	Colour fastness to artificial light CI 6,2, Table 1 (iv)	Xenon Arc lamp test apparatus, Geometric grey scale
10.	Bursting strength, CI 6.2, Table 1 (v)	Bursting Strength tester
11.	Shading Percentage, CI 6.2, Table 1 (vi)	Shade-O-Meter consisting a chamber with arrangement of light source, Filters, Sample Holder and sensor

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

ANNEXURE-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 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 licence, shall be marked on the shade nets rolls/bundles or on a label attached to each shade net roll/bundle, provided always that material so marked conform to requirements of the specification.

3.1 Packing and Marking shall be done as per the provisions of the Indian Standard. In addition, the following shall be incorporated on each net roll/bundle or on a label attached to each shade net roll/bundle:

i) BIS Licence Number CM/Land

ii) 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, all the shade nets rolls/bundles of same type having the same manufacturing parameters and manufactured under similar conditions in a day shall 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

TEST DETAILS (1)				(2)		LEVEL OF CONTROL (3)	
		Test Method		Test equipment requirement R:required(o r) S:Sub- contracting permitted	No. of samples	Frequency	Remark
Cl.	Requirements	Cl.	Ref.				
4.1	HDPE Monofilament	4.1	IS 16008(Pa rt 2)	R	Four samples	Every 8 hours of production or part thereof	Samples from different machines are to be taken (see note 3)
	Linear Density						
4.1.1	Heat Shrinkage at 60 C	4.1.1		R	Four samples	Do	Samples from different machines are to be taken
	Heat Shrinkage at 95 C						
4.2	Fabric	4.2		R	One sample	Do	Samples from different knitting machine are to be taken
4.3	Colour	4.3		R	Each roll/bun dle	Each roll/bundle	
6.1	Dimensions	6.1	IS 16008(Pa rt 2) IS 1954	R	Do	Do	
6.2 and Table 1	Requirements						
	i)Mass		IS 1964	R	Two samples	Each control unit	
	ii)Average breaking strength • Warpway • Weftway		IS 1969 (Part 1)	R	Two samples each of warp and weft way	Do	
	iii)Retention of breaking strength after UV exposure	Annex B	IS 16008 (Part 2) IS 1969 (Part 1)	R	Two samples	Once in 15 days	A sample each of all types covered in the scope of licence and produced during the period has to be tested
iv) Colour fastness to artificial light		IS 2454	S	Do	Once in a month	Applicable to coloured shade nets only	

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	v)Bursting Pressure		1966 (Part 1) or IS 1966(Par t 2)	R	Do	Every control unit	
	vi)Shading Percentage	Annex C	IS 16008 (Part 2)	R	Do	do	

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: If material is purchased, conformity of purchased lot (consignment) to IS 16008 (Part 2) shall be established either by supplier test certificate/test report issued by laboratory recognized by the Bureau or Government laboratories empaneled by the Bureau/ in-house testing of each lot. Record(s) of such certificate(s)/test reports/in-house tests shall be maintained.