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उत्पाद मैनुअल

**Agro-Textiles Hail Protection Nets for Agriculture and
Horticulture Purposes Specification Part 2 Woven Hail Protection Nets**

IS 17730 (Part 2) : 2021 के अनुसार

**PRODUCT MANUAL
FOR Agro-Textiles Hail Protection Nets for Agriculture and
Horticulture Purposes Specification Part 2 Woven Hail Protection Nets
ACCORDING TO IS 17730 (Part 2) : 2021**

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 17730 (Part 2) : 2021
	शीर्षक Title	:	Agro-Textiles Hail Protection Nets for Agriculture and Horticulture Purposes Specification Part 2 Woven Hail Protection Nets
	संशोधनों की संख्या No. of amendments	:	02
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Material i.e. HDPE monofilament yarn shall conform to the requirements of Cl. 4 of IS 17730 (Part 2):2021. Yarn used for stitching shall conform to the requirements of Cl. 6.4 of IS 17730 (Part 2) : 2021 Conformity of the material may be established through supplier test certificate/test report from BIS recognized lab/empanelled lab or any other lab having accreditation

		as per IS/ISO/IEC17025 or in-house testing/combination thereof. 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	: NA (each type to be tested)
c)	नमूने का परिमाण Sample Quantity	: Net of Length- Finished 3 meters (minimum) and Width as per the product manufactured with reinforcement and joint 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)
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer to Annex-A
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer to Annex-B
5.	एक दिन में संभावित परीक्षण Possible tests in a day	
	i) Dimensions and Mass ii) Breaking Strength before UV iii) Bursting Pressure iv) Shading Percentage v) Cold Crack Resistance vi) Seam(joint) Strength 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 17730 (Part 2) : 2021 with the following scope:	
	Name of the product	Agro-Textiles Hail Protection Nets for Agriculture and Horticulture Purposes Specification - Woven Hail Protection Nets
	Types	Type I/Type II

PM/17730 (Part 2)/3
August 2024

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9, BAHADURSHAH ZAFAR MARG,
NEW DELHI-110002

ANNEX-B

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause reference	Test Equipment/Chemical
1	Colour, Cl. 6.5	Standard Colour Sample as received from the customer
2	Dimensions (Length and Width), Cl. 7.1	a) Flat Horizontal Table b) Measuring Tape
3	Mass, g/m ² , Sr no 1 Cl. 7.2, Table 1.	A) Digital Weighing Balance (L.C. – 0.005g) B) Conditioning Chamber C) Graduated Steel Scale or Measuring Tape & Digital Vernier Calliper. D) Flat Horizontal Table
4	Average breaking strength of woven hail protection fabric, Cl. 7.2, Table 1 (ii)	Constant rate of extension Tensile testing machine with attachments
5	Retention of breaking strength after UV exposure of 144 h, Cl. 7.2, Table 1 (iii)	Constant rate of extension Tensile testing machine and AC drive for variable speed, Xenon-arc apparatus as per IS 2454 (May be subcontracted)
6	Colour fastness to artificial light, Cl. 7.2, Table 1 (iv)	For Colour Fastness to artificial light (as per - IS/ISO 105-B02 : 2014(Superseding IS 2454 :1985)) - Reference materials - Humidity test control fabric - Light Source (xenon arc lamp) - black-standard thermometer or a blackpanel thermometer - Humidity chamber - Covers - Colour matching lamps - Assessment cabinet - Sample mounting card - Assessment mask
7	Bursting pressure, Cl. 7.2, Table 1 (v)	Bursting Strength tester
8	Shading percentage, Cl. 7.2, Table 1 (vi)	Shade-O-Meter
9	Porosity Cl. 7.2, Table 1 (vii)	Low power microscope or counting glass .Dial Thickness Gauge, Conditioning Chamber
10.	Cold cracking resistance, Cl. 7.2, Table 1 (viii)	Cold Crack resistance with Impact Tester
11.	Seam (joint) strength, Cl. 7.2, Table 1 (ix)	Constant rate of extension Tensile testing machine with attachments

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 : all the hail protection nets rolls/bundles of same type, having the same manufacturing parameters and manufactured under similar conditions 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 the Hail protection nets rolls/bundles or on a label attached to each hail protection net roll/bundle, 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 the Hail protection nets rolls/bundles or on a label attached to each hail protection net roll/bundle:

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 Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
4	Material HDPE Monofilament yarn (Linear Density, heat shrinkage at 60°C and 95 °C)	4.1	IS 17730 (Part 2)	S	Four (from each knitting machine) Every 8 hours production or part thereof	Every 8 hours production or part thereof	No testing is required in case material is accompanied by supplier's test certificate, or test report issued by BIS recognized/empaneled lab or other accredited lab
6.1	Fabric	6.1	IS 17730 (Part 2)	R	Manufacturer shall put in place adequate in-process controls and inspections to ensure conformity to the specified requirement		
6.2	Reinforcement	6.2	IS 17730 (Part 2)	R	Manufacturer shall put in place adequate in-process controls and inspections to ensure conformity to the specified requirement		

6.3	Joints	6.3	IS 17730 (Part 2)	R	Manufacturer shall put in place adequate in-process controls and inspections to ensure conformity to the specified requirement		
6.4	Stitching	6.4	IS 17730 (Part 2)	R	Manufacturer shall put in place adequate in-process controls and inspections to ensure conformity to the specified requirement		
6.5	Colour	6.5	IS 17730 (Part 2)	R	Manufacturer shall put in place adequate in-process controls and inspections to ensure conformity to the specified requirement		As per agreement between buyer and the seller
7.1	Dimensions (Length and Width)	Cl. 7.1	IS1954	R	Manufacturer shall put in place adequate in-process controls and inspections to ensure conformity to the specified requirement		At least one sample to be taken at the beginning of the process
7.2 and Table 1	Requirements						
(i)	Mass	--	IS 1964	R	Two Samples	Each Control Unit	At least one sample to be taken at the beginning of the process
(ii)	Average breaking strength of woven hail protection fabric, Warpway Wreftway	--	IS 1969 (Part 1)	R	One sample	Each Control Unit	--
(iii)	Retention of breaking strength after UV exposure	Annex B	IS 17730 (Part 2)	S	One sample	Six Months	Also to be tested whenever source or nature of material changes

(iv)	Color fastness to artificial light	-	IS/ISO 105-B02	S	One sample	Six Months	Applicable for coloured hail protection nets only. Also to be tested whenever source or nature of material changes
(v)	Bursting pressure	-	IS 1966 (Part 1) or IS 1966 (Part 2)	R	One sample	Each Control Unit	--
(vi)	Shading percentage	Annex C	IS 17730 (Part 2)	R	One sample	Each Control Unit	--
(vii)	Porosity	Annex-D	IS 17730 (Part 2)	R	One sample	Each Control Unit	--
(viii)	Cold cracking resistance	Annex E	IS 17730 (Part 2)	R	One sample	Each Control Unit	--
(ix)	Seam (joint) strength		IS/ISO 13935-1	R	One sample	Each Control Unit	--