



उत्पाद मैनुअल

**AGRO TEXTILES-HAIL PROTECTION NETS FOR AGRICULTURE AND HORTICULTURE
PURPOSES PART 1 WARP KNITTED HAIL PROTECTION NETS**

IS 17730 (Part 1) : 2021 के अनुसार

**PRODUCT MANUAL
FOR AGRO TEXTILES-HAIL PROTECTION NETS FOR AGRICULTURE AND HORTICULTURE
PURPOSES PART 1 WARP KNITTED HAIL PROTECTION NETS
ACCORDING TO IS 17730 (Part 1) : 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 1):2021
	शीर्षक Title	:	Agro Textiles-Hail Protection Nets For Agriculture And Horticulture Purposes Part 1 Warp Knitted Hail Protection Nets
	संशोधनों की संख्या No. of amendments	:	03
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 1):2021. Yarn used for stitching shall conform to the requirements of Cl. 6.4 of IS 17730 (Part 1):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	:	Not applicable (Each type shall 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)
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	:	i) Type 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-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 1):2021 with the following scope:		
	Name of the product	AGRO TEXTILES-HAIL PROTECTION NETS FOR AGRICULTURE AND HORTICULTURE PURPOSES -	

		WARP KNITTED HAIL PROTECTION NETS
	Type	Type I or Type II

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ANNEX-A

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 Caliper. D) Flat Horizontal Table
4.	Average breaking strength of wrap knitted 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
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-B

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence, manufacturers will implement a Quality Assurance Plan (QAP) 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 (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or subcontracting/sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

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**. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

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.

2. ENSURING COMPLIANCE THROUGH TESTING- manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred :

- i) Shared testing resources like common facility,
- ii) Cluster based testing facility,
- iii) Sub-contracting to outside laboratories which may either be:
 - a) BIS recognised/empanelled laboratories, or
 - b) Any accredited laboratory as per ISO/IEC 17025

2.1 TEST RECORDS- The manufacturers shall maintain test records for the tests carried out (either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made 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:** Additionally, the following shall also be marked 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 - 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
(Recommended Levels of Control by BIS- For Guidance Only)

(1)				(2)		
Test Details				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 1)	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 1)	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 1)	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 1)	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 1)	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 1)	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	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 of Knitted Hail protection Nets					
(i)	Mass	IS 1964	IS 1964	Two Samples	Each Control Unit	At least one sample to be taken at the beginning of the process
(ii)	Average breaking strength of Knitted hail protection fabric, a) Wales direction b) Course direction	--	IS 1969 (Part 1)	One sample	Each Control Unit	--
(iii)	Retention of breaking strength after UV exposure	Annex B	IS 17730 (Part 1)	One sample	Six Months	Also to be tested whenever source or nature of material changes
(iv)	Colour fastness to artificial light	--	IS/ISO 105-B02	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)	One sample	Each Control Unit	--
(vi)	Shading percentage	Annex C	IS 17730 (Part 1)	One sample	Each Control Unit	--
(viii)	Cold cracking resistance	Annex E	IS 17730 (Part 1)	One sample	Each Control Unit	--

(ix)	Seam (joint) strength	--	IS/ISO 13935-1	One sample	Each Control Unit	--
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