



**उत्पाद मैनुअल**  
**कृषि वस्त्रादी - कृषि और बागवानी अनुप्रयोगों के लिए पोली प्रोपाइलीन स्पन बॉण्डेड**  
**बिना बुने हुए कपड़े के फसल कवर और फल झालर बैग - विशिष्टि**  
**IS 16718:2021 के अनुसार**

**PRODUCT MANUAL FOR**  
**Agro Textiles — Polypropylene Spun Bonded Non-Woven Crop Covers and Fruit Skirting Bags for**  
**Agricultural and Horticultural Applications — Specification**  
**as per IS 16718:2021**

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 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. | मानक संख्या<br>IS No.                                                        | : | IS 16718:2021                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|    | शीर्षक<br>Title                                                              | : | AGRO TEXTILES — POLYPROPYLENE SPUN BONDED NON-WOVEN CROP COVERS AND FRUIT SKIRTING BAGS FOR AGRICULTURAL AND HORTICULTURAL APPLICATIONS                                                                                                                                                                                                                                                                                                                       |
|    | संशोधन की संख्या<br>No. of amendments                                        | : | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 2. | नमूना दिशानिर्देश<br>Sampling Guidelines                                     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| a) | कच्चा माल<br>Raw material                                                    | : | Raw material shall be conforming to the requirements specified in clause 5.1 of IS 16718.<br><br>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<br>Grouping Guidelines                                  | : | Sample of each type to be tested.                                                                                                                                                                                                                                                                                                                                                                                                                             |
| c) | नमूने का परिमाण<br>Sample Size                                               | : | 10m length<br><br>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<br>Parameters to be Declared | : | i) Variety<br>ii) Type<br><br>Note: Apart from the above, any other requirements/parameters may                                                                                                                                                                                                                                                                                                                                                               |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                          |                                                      |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
|    | <b>in Test Request</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                          | also be declared as per the standard, as applicable. |
| 3. | <b>परीक्षण उपकरणों की सूची<br/>List of Test Equipment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | :                                                                                                                                        | Please refer Annex – A                               |
| 4. | <b>निरीक्षण और परीक्षण की स्कीम<br/>Scheme of Inspection and Testing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | :                                                                                                                                        | Please refer Annex – B                               |
| 5. | <b>एक दिन में संभावित परीक्षण<br/>Possible tests in a day</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                          |                                                      |
|    | a) Thickness<br>b) Fabric mass<br>c) Breaking Strength, Machine direction & Cross direction<br>d) Elongation at break, Machine direction & Cross direction<br>e) Trapezoid tear strength, Machine direction & Cross direction<br>f) Air permeability<br>g) Colour<br><br>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. | <b>लाइसेंस का दायरा /Scope of the Licence:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                          |                                                      |
|    | <b>Licence is granted to use Standard Mark as per IS 16718:2021 with the following scope:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                          |                                                      |
|    | <b>उत्पाद का नाम<br/>Name of the product</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Agro Textiles — Polypropylene Spun Bonded Non- Woven Crop Covers and Fruit Skirting Bags for Agricultural and Horticultural Applications |                                                      |
|    | <b>Variety</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Crop Covers / Fruit Skirting Bags                                                                                                        |                                                      |
|    | <b>Type</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Type I / Type II                                                                                                                         |                                                      |

**BUREAU OF INDIAN STANDARDS**  
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**ANNEX-A**  
**Test Equipment List**

**Major test equipment essentially required to test as per requirements of Indian Standard.**

| <b>S. No.</b> | <b>Test used in with Clause Reference</b>                                       | <b>Test Equipment/Chemical</b>                                                                                                                                                                                                                                                                                                                                            |
|---------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.            | Thickness, Cl. 7.1 & Table-2                                                    | Presser-foot, Reference plate having a plane surface of diameter at least 50mm greater than Presser foot, Measuring device with 0.01mm graduations                                                                                                                                                                                                                        |
| 2.            | Fabric mass, Cl. 7.1 & Table-2                                                  | Die of an area of atleast 50000mm <sup>2</sup> , Template with an area of atleast 50000mm <sup>2</sup> , Steel rule, Razor blade, Balance with an accuracy of $\pm 0.1\%$ of the determined mass                                                                                                                                                                          |
| 3.            | Breaking strength, Machine direction & Cross direction, Cl. 7.1 & Table-2       | Tensile testing machine, Clamps                                                                                                                                                                                                                                                                                                                                           |
| 4.            | Elongation at Break, Machine direction & Cross direction, Cl. 7.1 & Table-2     | Tensile testing machine, Clamps                                                                                                                                                                                                                                                                                                                                           |
| 5.            | Trapezoid tear strength, Machine direction & Cross direction, Cl. 7.1 & Table-2 | Tensile testing machine, Clamps, Template as per Fig. 1 of IS 15891 (Part 4)                                                                                                                                                                                                                                                                                              |
| 6.            | Air Permeability, Cl. 7.1 & Table-2                                             | Test head, Clamping system, Vacuum pump, Pressure sensors or manometer, Flowmeter or variable orifice, Calibration plate, Cutting dies or templates                                                                                                                                                                                                                       |
| 7.            | Water vapour permeability, Cl. 7.1 & Table-2                                    | Conditioning chamber to maintain Relative humidity of $65 \pm 2\%$ and temperature of $27 \pm 2$ deg C, Burette, Triangular sample support, Dish, Adhesive, Turn table, Weighing balance to measure accuracy of 0.001g                                                                                                                                                    |
| 8.            | UV Stability test in Machine direction and Cross direction, Cl. 7.1 & Table-2   | Fluorescent UV-B lamp (313 nanometer or its equivalent), Tensile testing machine, clamps                                                                                                                                                                                                                                                                                  |
| 9.            | Ash content, Cl. 7.1 & Table-2                                                  | Weighing balance accuracy of weighing 0.001g, Silica crucibles, Bunsen burner, Silica triangle and tripod, Muffle furnace, Desiccator, Gloves and Crucible holder                                                                                                                                                                                                         |
| 10.           | Index Puncture resistance, Cl. 7.1 & Table-2                                    | Tensile/Compression testing machine of the Constant-Rate- of-Extension (CRE) Type, Ring clamp attachment consisting of concentric plates with an open internal diameter of $45 \pm 0.025$ mm capable of clamping the test specimen without slippage, Solid Steel Rod, with a diameter of $8 \pm 0.01$ mm having a flat end with a $45^\circ \times 0.8$ mm chamfered edge |
| 11.           | Water absorption capacity, Cl. 7.1 & Table-2                                    | Cylindrical wire basket, Container for liquid, Stop watch, specified liquid, Weighing balance of accuracy 0.1g                                                                                                                                                                                                                                                            |
| 12.           | Colour, Cl. 7.1 & Table-2                                                       | Visual observation                                                                                                                                                                                                                                                                                                                                                        |

## 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:

4. For the guidance of manufacturers, the recommended definition of control unit is: Each Type of Crop Covers/Fruit Skirting bags manufactured under similar conditions of production using same raw material in a day.

1.3.1 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.2 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

1.3.3 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/empaneled 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](http://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 Crop Covers/Fruit Skirting bags, 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 Crop Covers/Fruit Skirting bags.

a) “For BIS certification details please visit [www.bis.gov.in](http://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)**

| TEST DETAILS  |                                                              |              |                    | Test equipment requirement<br>R: required (or)<br>S: Sub-contracting permitted | LEVELS OF CONTROL                                                                                                                                                                                                                          |                    |         |
|---------------|--------------------------------------------------------------|--------------|--------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------|
| Clause        | Requirement                                                  | Test Methods |                    |                                                                                | No. of samples                                                                                                                                                                                                                             | Frequency          | Remarks |
|               |                                                              | Clause       | Reference          |                                                                                |                                                                                                                                                                                                                                            |                    |         |
| 7.1 & Table 2 | Thickness                                                    | 7.1          | IS 15891 (Part 2)  | R                                                                              | Firm to have adequate in-process controls to check compliance of this parameter as per the requirements specified in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity. |                    |         |
| -do-          | Fabric mass                                                  | -do-         | IS 15891 (Part 1)  | R                                                                              |                                                                                                                                                                                                                                            |                    |         |
| -do-          | Breaking strength, Machine direction & Cross direction       | -do-         | IS 15891 (Part 3)  | R                                                                              | 1                                                                                                                                                                                                                                          | Every control unit |         |
| -do-          | Elongation at Break, Machine direction & Cross direction     | -do-         | IS 15891 (Part 3)  | R                                                                              | 1                                                                                                                                                                                                                                          | Every control unit |         |
| -do-          | Trapezoid Tear Strength, Machine direction & Cross direction | -do-         | IS 15891 (Part 4)  | R                                                                              | 1                                                                                                                                                                                                                                          | Every control unit |         |
| -do-          | Air Permeability                                             | -do-         | IS 15891 (Part 15) | R                                                                              | 1                                                                                                                                                                                                                                          | Every control unit |         |
| -do-          | Water vapour permeability                                    | -do-         | Annex-B            | S                                                                              | 1                                                                                                                                                                                                                                          | Once in a month    |         |
| -do-          | UV Stability test, Machine direction & Cross direction       | -do-         | Annex-C            | S                                                                              | 1                                                                                                                                                                                                                                          | Once in 6 months   |         |
| -do-          | Ash content                                                  | -do-         | Annex-D            | S                                                                              | 1                                                                                                                                                                                                                                          | Once in 6 months   |         |
| -do-          | Index Puncture resistance                                    | -do-         | Annex-E            | S                                                                              | 1                                                                                                                                                                                                                                          | Once in a month    |         |
| -do-          | Water absorption capacity                                    | -do-         | IS 15891 (Part 6)  | S                                                                              | 1                                                                                                                                                                                                                                          | Once in a month    |         |
| -do-          | Colour                                                       | -do-         | Visual             | R                                                                              | Firm to have adequate in-process controls to check compliance of this parameter as per the requirements specified in the Indian Standard. However, appropriate records shall be maintained by the                                          |                    |         |

|  |  |  |  |  |                                          |
|--|--|--|--|--|------------------------------------------|
|  |  |  |  |  | manufacturer for evidence of conformity. |
|--|--|--|--|--|------------------------------------------|