



www.bis.gov.in

उत्पाद मैनुअल
सेलूलोज़ फिल्म) — विशिष्टि
5012: 2024 के अनुसार

PRODUCT MANUAL FOR
CELLULOSE FILM — SPECIFICATION
ACCORDING TO IS 5012: 2024

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 5012: 2024
	शीर्षक Title	:	Cellulose Film सेलूलोज़ फिल्म)
	संशोधनों की संख्या No. of amendments	:	Nil
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	coloured cellulose film if intended to be used for food packaging, shall use food grade dyes/colours. (test certificate from supplier to be obtained) 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	:	Please see Annex - A

c)	नमूने का परिमाण Sample Quantity	:	20 Meters 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	:	1. Grade 2. Plain/Coated 3. Colour 4. Food contact Note: This section indicates declared values to be specified against a parameter (to be specified in Test Requests) to enable testing of sample against the requirement and determine its conformity. 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 – B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer to Annex – C
5.	एक दिन में संभावित परीक्षण Possible tests in a day		
	1. Substances (Weight in g/m²) 2. Colour 3. Flexibility 4. Heat Seal 5. Coating Continuity 6. Moisture content 7. Tensile Strength and Elongation at Break 8. Bursting Strength, 9. pH 10. Water Soluble Chlorides as (NaCl) and Water Soluble sulphates as (Na₂SO₄) 11. Limits of Contaminants in Paper 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:		

	IS 5012:2024 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेंस निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है “Licence is granted to use Standard Mark as per IS 5012: 2024 with the following scope:	
	Name of the product	Cellulose Film
	Grade	200 and/or 240 and/or 260 and/or 300 and/or 400 and/or 600
	Plain/Coated	Plain and/or coated (single or both sides)
	Food contact	for packaging of food materials/ not for packaging of food materials

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

ANNEX – A
GROUPING GUIDELINES

1. Cellulose film has been classified into the following grades:
 - a) 200
 - b) 240
 - c) 260
 - d) 300
 - e) 400
 - f) 600
2. Cellulose film may be with following coating
 - a) plain or
 - b) coated (single or both sides)
3. Cellulose film may be used
 - a) For packaging of food materials
 - b) not for packaging of food materials
4. Considering the above, the following grouping guidelines for GoL/ CSoL shall be followed:
 - a) Sample of each grade shall be tested to be covered in the scope of Licence.
 - b) If coated Cellulose film (both side) of any grade is tested, coated Cellulose film (of single and both sides), and plain Cellulose film for all applicable grades may be covered in the scope of Licence. Similarly, if coated Cellulose film (single side) of any grade is tested, coated Cellulose film (of single side), and plain Cellulose film for all applicable grades may be covered in the scope of Licence
 - c) Cellulose film used for packaging of food materials shall be tested for each coating type i.e., plain or coated (single or both side), and of any grade to cover Cellulose film for use in packaging of food materials, for the applicable coating type and all applicable grades.
If Cellulose film for packaging of food materials is covered in the scope, Cellulose film not for packaging of food materials may also be covered for all the applicable grades and coating type
5. However, while considering grant of licence/inclusion of additional varieties, it shall be ensured that the applicant/licensee has got the complete manufacturing and testing facilities for all the varieties intended to be covered.
6. During operation of the licence, BOs shall ensure that all the samples are tested for all applicable requirements on the product, and varieties covered in the licence are tested in rotation.

ANNEX– B
LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. no.	Test used in with clause number	Test Equipment
1	Substance, Cl 5.6	Cutting device, Weighing Balance, Conditioning chamber, Special sheet-weighing balances, arrangement to carry out test at standard atmospheric conditions
2	Flexibility, Cl 5.3	Cutting device, two parallel surfaces, 2.0 kg weight, stop watch, scale/ Vernier calliper
3	Heat Seal, Cl 5.4	Sealing machine as per ANNEX E , Cutting device, scale/ Vernier caliper, 60 g weight, thermocouple and pyrometer.
4	Coating Continuity, Cl 5.35	white background, methylene blue dye solution (1 percent)
5	Moisture, Cl 5.6 Table 2 Sl (i)	Weighing container, Thermometer, Drying oven with temp recorder, Chemical Balance, Dessicator
6	Tensile Strength and elongation, Cl 5.6 Table 2 Sl (iii) and (iv)	Tensile Testing Machine as per IS 1060 (Part 5/Sec 6), Device for cutting test pieces
7	Burst strength, Cl 5.6 Table 2 Sl (iv)	Burst factor apparatus as per Cl. 5 of IS 1060 Part 7/Sec 1, Conditioning Chamber, arrangement to carry out test at standard atmospheric conditions
8	pH, Cl 5.6 Table 2 Sl (v)	pH meter, Buffer solution of pH 4, 7 and 9, Potassium chloride solution, Distilled water, electric heater. Arrangement to carry out test at temperature between 20 °C and 25 °C, electric heater, stop watch
9	Water soluble chlorides (as NaCl) and Water soluble sulphates (as Na ₂ SO ₄), Cl 5.6 Table 2 Sl (vi) and (vii)	Analytical balance, Hot Plate, 500 ml Erlenmeyer Flask, Crucible, Buckner funnel, Hygrometer, Thermometer and other laboratory glassware <u>Chlorides</u> very dilute nitric acid, or chloride-free sodium hydroxide, potassium chromate Standard Silver Nitrate Solution, Potassium Chromate indicator, <u>Sulphates</u> Barium Chloride Solution. concentrated hydrochloric acid, hot plate
10	Water vapour permeability, Cl 5.6 Table 2 Sl (viii)	Shallow aluminium test dishes, Aluminium lids (weighing covers), Weighing balance (accurate to 0.0005 g), Humidity cabinet, Dessicant, Wax
11	Blocking Resistance, Cl 5.6 Table 2 Sl (ix)	Constant Temperature Oven, Dessicator (for use as humidity chamber), Bedplate, Pressure Blocks, Interleaving material, Hygrometer, Thermometer
12	CHROMIUM, Cl 5.8.1, table 3 Sl no i)	Spectrophotometer, Shaker, Extraction Fluid (acetic acid in distilled water), Nitric Acid, Sulphuric Acid, Diphenylcarbazide

		Solution, Stock Chromium Solution, Intermediate Chromium Solution, Standard Chromium Solution, Indicator Paper, glass fibre filter, aluminium sulphate
13	MERCURY CI 5.8.1, table 3 SI no ii)	<i>Atomic Absorption Spectrometer (AAS) and Associated Equipment, Sulphuric Acid, Nitric Acid, Stannous Chloride Solution, Sodium Chloride- hydroxylamine Sulphate Solution, Potassium Permanganate Solution, Potassium Persulphate Solution, Stock Mercury Solution (mercuric chloride), Standard Mercury Solution,</i>
14	LEAD CI 5.8.1, table 3 SI no iii)	<i>Atomic Absorption Spectrometer (with graphite oven technique), Nitric Acid, Stock Lead Solution, Intermediate Lead Solution, Standard Lead Solution, hot plate,</i>
15	CADMIUM CI 5.8.1, table 3 SI no iv)	<i>Atomic Absorption Spectrometer (with graphite oven technique), Nitric Acid, Stock Cadmium Solution, Intermediate Cadmium Solution, Standard Cadmium Solution, hot plate,</i>
16	PENTACHLORO-PHENOL (PCP) CI 5.8.1, table 3 SI no v)	Round Bottom Flask, Soxhlet Extractor, Water Bath, Separating Funnels, Injection Syringes, Gas Chromatograph with ECD, Glass Columns, Acetone, n-Hexane, Acetic Anhydride, Sodium Sulphate Anhydrous, PCP Stock Solution, PCP Standard Solution, Internal Standard Stock Solution, water bath,
17	POLYCHLORINATED BIPHENYLS (PCBs) CI 5.8.1, table 3 SI no vi)	Erlenmeyer Flask, Water Bath, Separating Funnels, Injection Syringes, Gas Chromatograph with ECD, Glass Columns, Ethanolic Potassium Hydroxide Solution, Ethanolic Potassium Hydroxide Solution (silver nitrate, ethanol, potassium hydroxide, n-Hexane, <i>Sodium Sulphate Anhydrous</i> , PCB Stock Solution, PCB Standard Solution, Internal Standard Stock Solution, Internal Standard Solution reflux condenser

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: Cellulose Film of the same variety produced from the same material (Pulp) 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 each package 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: Each package shall also be marked with the following additional requirement:

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: Subcontracting Permitted	LEVELS OF CONTROL		
Cl.	Requirement	Test methods			No. of Sample	Frequency	Remarks
		clause	Reference				
5.1	Substances (Weight in g/m2)	Table 1	IS 1060 (Part 5/Sec 5) & IS 1060 (Part 4/Sec 1)	R	One	each control unit	
5.2	Colour	-	IS 5012	R	Firm to have adequate in- process controls to check compliance of this parameter given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
5.3	Flexibility	Annex D	-do-	R	One	each control unit	
5.4	Heat Seal	Annex E	-do-	R	One	each control unit	
5.5	Coating Continuity	Annex F	-do-	R	One	each control unit	
5.5, Table 2	Requirements for Cellulose Film						
i)	Moisture content (%) by mass	-	IS 6213 Pt.-21	R	One	each control unit	
ii)	Tensile Strength Kg/cm a) MD b) CD	-	IS 1060 Pt-5/Sec 6	R	One	each control unit	
iii)	Elongation at Break (%) a) MD b) CD	-	-do-	R	One	each control unit	
iv)	Bursting Strength,	-	IS 1060 Pt-7 Sec 1	R	One	each control unit	
v)	pH	-	IS 1060 (Part 4/Sec 7)	R	One	each control unit	
vi)	Water Soluble Chlorides as (NaCl)	-	IS 1060 (Pt.2)	R	One	each control unit	

vii)	Water Soluble sulphates as (Na ₂ SO ₄)	-	-do-	R	One	each control unit	
viii)	Water Vapour Permeability a) Creased b) Uncreased	-	-do-	R	One	Once a week	for Coated Grade of Film
ix)	Blocking Resistance	-	IS 4006 (Pt. 1)	R	One	Once a week	for Coated Grade of Film
5.8.1, Table 3	Limits of Contaminants in Paper						
i)	Cadmium (Cd)	Annex C.	IS 5012	S	One	One in a month	Applicable for paper intended to come into contact with food
ii)	Chromium(Cr ⁶⁺)	-do-	-do-	S	One	One in a month	
iii)	Lead (Pb)	-do-	-do-	S	One	One in a month	
iv)	Mercury (Hg)	-do-	-do-	S	One	One in a month	
v)	Pentachlorophenol (PCP)	-do-	-do-	S	One	One in a month	
vi)	Polychlorinated biphenyls (PCBs)	-do-	-do-	S	One	One in a month	