



PM/ IS 5012 / 1  
July 2019

**PRODUCT MANUAL FOR  
CELLULOSE FILM  
According to IS 5012:1987**

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.	<b>Product</b>	:	IS 5012:1987
	<b>Title</b>	:	Cellulose Film
	<b>No. of amendments</b>	:	1
2.	<b>Sampling Guidelines</b>		
a)	<b>Raw material</b>	:	No specific requirement
b)	<b>Grouping Guidelines</b>	:	Please refer Annex – A
c)	<b>Sample Size</b>	:	20 metres
3.	<b>List of Test Equipment</b>	:	Please refer Annex – B
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer Annex – C
5.	<b>Possible tests in a day</b>	:	Please refer Annex – D
6.	<b>Scope of the Licence :</b>		
	Licence is granted to use Standard Mark as per IS 5012:1987 with the following scope:		
	<b>Name of the product</b>	Cellulose Film	
	<b>Grade</b>	Grade:300, 400,600 ,	
	<b>Plain/Coated</b>	Plain/ coated	
	<b>Optional test</b>	With/without heat seal	

**ANNEXURE –A  
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**GROUPING GUIDELINES**

1. The following grouping guidelines have been proposed based on the Grade and Coating of the cellulose film. Within a group, grade of higher tensile strength is considered as higher grade.

The following may be considered grant of Licence/ Change in scope of licence as per IS 5012:1987

<b>Group</b>	<b>Grade</b>	<b>Sampling</b>
1 (Plain)	300, 400, 600	One sample from each group of any size and any grade may be drawn for testing If sample of higher grade is tested then recommendation may include lower grades also Eg: Grade 600 is superior grade in respective groups
2 (Coated)	300, 400, 600	

2. If sample passes, licence/inclusion can be granted for all grades for that group mentioned in the specification and as applied by the applicant/licensee, provided that the firm is having all necessary manufacturing and testing facilities for manufacturing and testing of the sizes of Cellulose film proposed to be included in the licence.
3. During the operation of licence, BO shall ensure that all varieties covered in the license shall be drawn for independent testing on rotation over a period of time.

**ANNEXURE B**  
**TO PRODUCT MANUAL FOR**  
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**LIST OF TEST EQUIPMENT**

Sl. no.	Test Equipment	Test used in with clause number
1	Weighing balance, paper cutting template, paper strip cutter	Substance, Cl 4.1
2	Weighing container, Thermometer, Drying oven with temp recorder, Chemical Balance, Dessicator	Moisture, Table 1 (i)
3	Tensile Testing Machine	Tensile Strength and elongation, Table 1 (ii) and (iii)
4	Burst strength tester with pressure gauge and diaphragm	Burst strength, Table 1 (iv)
5	pH meter, Buffer solution of pH 4 and 9, Distilled water pH 6.0 to 7.2.	pH, Table 1 (v)
6	Analytical balance, Hot Plate, 500 ml Erlenmeyer Flask, Crucible, Buckner funnel, Hygrometer, Thermometer and other laboratory glassware  Standard Silver Nitrate Solution, Potassium Chromate indicator, dilute nitric acid, barium chloride solution, concentrated hydrochloric acid, No. 43 Whatman filter paper, litmus paper and other laboratory reagents	Water soluble chlorides (as NaCl) and Water soluble sulphates (as Na <sub>2</sub> SO <sub>4</sub> ), Table 1 (vi) and (vii)
7	Shallow aluminium test dishes, Aluminium lids (weighing covers), Weighing balance (accurate to 0.0005 g), Humidity cabinet, Dessicant, Wax	Water vapour permeability, Table 1 (viii)
8	Constant Temperature Oven, Dessicator (for use as humidity chamber), Bedplate, Pressure Blocks, Interleaving material, Hygrometer, Thermometer	Blocking Resistance, Table 1 (ix)
9	Conditioning Chamber	Conditioning, Cl 4.2.1
10	Strip cutter, heat source, , metal bar or Roller (for sealing), thermocouple and pyrometer/ thermometer	Heat Seal, Cl 4.4 (optional)
11	Inspection table with white background and backlighting arrangement, Methylene Blue Dye Solution (1%)	Coating continuity, Cl 4.5

Note-1: The list is indicative only and may not be taken as exhaustive.

Note-2: Least count, range, and other specifications of equipment and materials used shall be as per the standard.



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**ANNEXURE C  
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**SCHEME OF INSPECTION AND TESTING**

**1. LABORATORY**

1.1 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.

1.2 The manufacturer shall prepare a calibration plan for the test equipments.

2. **TEST RECORDS:** The manufacturer shall maintain all test records for the tests carried out to establish conformity.

3. **PACKING AND MARKING:** The Standard Mark as given in schedule of the licence shall be marked on each package provided always that the product thus marked conform to all the requirements of the specification.

3.1 Packing and Marking shall be done as per the requirements of the standard. In addition the following information shall be marked on each package:

- i) BIS Licence No i.e. CM/L –
- ii) For details of BIS certification please visit [www.bis.gov.in](http://www.bis.gov.in)

4. **LEVELS OF CONTROL** - The tests and analysis as indicated in Table 1 and the level of control specified therein, shall be carried out on the whole production covered under this scheme and appropriate records and charts maintained in accordance with paragraph 2 above. All the production which conforms to the Indian Standards and covered by the licence shall be marked with the standard mark.

4.1 **CONTROL UNIT** - For the purpose of this scheme of Inspection & Testing, the material produced from the same material (Pulp) under similar conditions produced in a day shall constitute a control unit.

4.2 On the basis of test and analysis results decision regarding conformity or otherwise of a control unit shall be made.

7. **REJECTIONS** - A separate record providing the detailed information regarding the rejected control unit and mode of their disposal shall be maintained. Such material shall in no circumstances be stored together with those conforming to the specification.

**Table 1**  
**Levels of Control**

1				2	3		4
TEST DETAILS					LEVELS OF CONTROL		REMARKS
Cl.	Requirement	Test methods		Test equipment requirement R: required (or) S: Sub-contracting Permitted	No. of Sample	Frequency	In case of failure in any of the requirement the material in the control unit shall not be marked
		clause	Reference				
4.1	Substances (Weight in g/m <sup>2</sup> )	4.1	IS 5012:1987	R	One	each control unit	
4.2, Tb 1	Moisture content (%) by mass	9	IS 1060 (Pt.1)	R	One	each control unit	
4.2, Tb 1	Tensile Strength Kg/cm MD (Machine Direction) CD (Cross Direction)	12.3	-do-	R	One	each control unit	
4.2, Tb 1	Elongation at Break (%) MD((Machine Direction) CD (Cross Direction)	-do-	-do-	R	One	each control unit	
4.2, Tb 1	Bursting Strength,	12.5	-do-	R	One	each control unit	
4.2, Tb 1	pH	10	-do-	R	One	each control unit	
4.2, Tb 1	Water Soluble Chlorides as (NaCl) % by Mass	17	IS 1060 (Pt.2)	R	One	each control unit	
4.2, Tb 1	Water Soluble Sulphates as (Na <sub>2</sub> SO <sub>4</sub> ) % by Mass	18	-do-	R	One	each control unit	

4.2, Tb 1	Water Vapour Permeability g/m <sup>2</sup> 38°C and 90±2 %RH for 24Hrs (for Coated Grade of Film) Creased Uncreased	14	-do-	R	One	each control unit
4.2, Tb 1	Blocking Resistance at 30°C and 75% RH for 24Hours (for Coated Grade of Film)	10	IS 4006 (Pt. 1)	R	One	each control unit
4.3	Flexibility	4.3	IS 5012:1987	R	One	each control unit
4.4	Heat Seal (optional)	4.4	-do-	R	As agreed between purchaser and supplier	
4.5	Coating Continuity (for Coated Grade of Film)	4.5	-do-	R	One	One sample from each control unit

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 to BO Head.

**ANNEXURE-D  
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**Possible tests in a day\***

Sl. No.	Cl.No.	Test & Cl.no	Test Method
1.	4.2, Tb 1	Moisture content (%) by mass	IS 1060:P1:1966
2.	4.2, Tb 1	Tensile Strength Kg/cm MD (Machine Direction) CD (Cross Direction)	IS 1060:P1:1966
3.	4.2, Tb 1	Elongation at Break (%) MD( CD (Cross Direction)	IS 1060:P1:1966
4.	4.2, Tb 1	Bursting Strength, Kg/cm <sup>2</sup>	IS 1060:P1:1966
5.	4.2, Tb 1	pH	IS 1060:P1:1966
6.	4.2, Tb 1	Water Soluble Chlorides as (NaCl) % by Mass	IS 1060:P2:1960
7.	4.2, Tb 1	Water Soluble Sulphates as (Na <sub>2</sub> SO <sub>4</sub> ) % by Mass	IS 1060:P2:1960
8.	4.3	Flexibility	IS 5012
10	4.3 of IS 1030:p1: 1966	Visual Examination Reeling: Count: Blemishes: Size: Thickness:	IS 1030:p1:1966

\*Note: The testing time considered does not take into account time required for conditioning of samples