



**PRODUCT MANUAL
FOR POLYETHYLENE FILMS AND SHEETS
ACCORDING TO IS 2508:2016**

1.	Product	:	IS 2508:2016
	Title:	:	Polyethylene Films and Sheets
	No. of Amendments	:	02
2.	Sampling Guidelines :		
a)	Raw material	:	Raw Material shall meet the requirements specified in Clause 4 of IS 2508:2016
b)	Grouping guidelines	:	Sample of each Type shall be tested to cover it in the scope of licence. However scope will be restricted based on the manufacturing and testing capabilities of the unit.
c)	Sample Size:	:	Minimum 5 metre
3.	List of Test Equipment	:	Please see ANNEX - A
4.	Scheme of Inspection and Testing	:	Please see ANNEX - B
5.	Possible tests in a day : All tests mentioned in the IS except Ageing test.		
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 2508:2016 with the following scope:		
	Name of the Product	Polyethylene Films and Sheets	
	Type	As applicable(Type I/Type II/Type III/Type IV)	

ANNEX - A

List of Test Equipment

Major test equipment required to test as per the Indian Standard

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	Density(Clause 5.1.4)	Pyknometer Balance Beaker Thermometer
2.	Melt Flow Index (5.1.5)	Cylinder and piston Balance Dies Temperature Control System Removable Load Thermometer
3.	Black Film (5.1.6)	
a)	Carbon Black	Furnace Combustion Tube
b)	Ash Content	Combustion Boat Gas flow meter Thermometer
c)	Dispersion of carbon Black	Hot Plate Microscope Microscope slides
4.	Dimensional Requirement (Clause 5.2)	Dead weight dial micrometer Dial Thickness gauge
5.	Tensile Strength and Tear Resistance test (Clause 6.1, Clause 7.1, Clause 8.1 and Clause 9.1)	Tensile testing machine Extensometer Grips Die
6.	Ageing test (Clause 6.1)	Air oven or Oxygen Chamber as per IS 7016 (Part 8)
7.	Puncture resistance test (Clause 8.1)	Tensile testing machine Ring clamp Attachment Steel Rod
8.	Dart Impact Strength (Clause 7.1)	Electromagnet Micrometer Dart head Specimen Clamp

The above list is indicative only and may not be treated as exhaustive.

ANNEX- B

**SCHEME OF INSPECTION AND TESTING
FOR POLYETHYLENE FILMS AND SHEETS
ACCORDING TO IS 2508:2016**

1. LABORATORY - 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 method given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipment.

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

3. PACKING AND MARKING – The Standard Mark as given in the schedule of the licence, shall be marked on the printed /stenciled on each roll or packet or label applied to it as the case may be; provided always that the material in each roll or packet to which this mark is thus applied conforms to every requirement of the specification.

3.1 Packing and Marking shall be done as per the provisions of the Indian Standard. In addition, the following shall be incorporated on each roll or packet:

- i) BIS Licence Number CM/L..... and
- ii) BIS website details i.e. For details of BIS certification please visit www.bis.gov.in

4. CONTROL UNIT - For the purpose of this scheme, the total quantity of polyethylene films and sheets of the same type produced from the same type of raw material in one day shall constitute one control unit.

5. LEVELS OF CONTROL - The tests as indicated in Table 1 to 5 and at the levels of controls specified therein, shall be carried out on the whole production of the factory which is covered by this scheme and appropriate records and charts maintained in accordance with item 2 above.

5.1 All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark.

6. REJECTIONS - 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
LEVELS OF CONTROL
Requirements for Raw Material

(1)				(2)	(3)		
TEST DETAILS				Test equipment requirement R: required (or)S: Sub-contracting permitted	LEVELS OF CONTROL		
Clause	Requirements	Test Method			No. of samples	Frequency	Remarks
		Clause	Reference				
4 4.1 4.2, 4.2.1 & 4.2.2 4.2.4	Composition Natural Compound Black compound Carbon Black Master Batch	----	IS 13360(Part 4/Sec 1) IS 13360(Part 3/Sec 1) IS 2508:2016 IS 10141 : 1982	S	One	Each Batch in a consignment	In case of test certificate for each batch is received along with the consignment of the raw material further testing is not necessary.
5.1.1	Appearance	5.1.1	IS 2508 : 2016	R	Six	Each control unit	Two samples from each shift
5.1.2	Film Form	5.1.2	-do-	R	Six	-do-	-do-
5.1.3	Odour	5.1.3	-do-	R	Six	-do-	-do-
5.1.4	Density	4.1.3, 4.1.5 & 4.2	-do-	R	Six	-do-	-do-
5.1.5	Melt Flow index	4.1.2 & 4.1.4	-do-		Six	-do-	-do-
5.1.6	Black Film a) Carbon Black b) Ash content c) Dispersion of carbon balck	10 -- 16	IS 2530 IS 13360(Part 8/Sec 8) IS 2530	R	Three	-do-	-do-
5.2	Dimensional requirements						

5.2.1.1	Nominal Thickness	(Annex A)	IS 2508 : 2016	R	Six	-do-	Two samples from each shift
5.2.1.2	Nominal Width	5.2.1.2	-do-	R	Six	-do-	-do-

TABLE 2
LEVELS OF CONTROL
Requirements for Type I Polyethylene (PE) Film/Sheet

(1)			(2)	(3)			
TEST DETAILS			Test equipment requirement R: required (or)S: Sub-contracting permitted	LEVEL OF CONTROL			
Clause	Requirements	Test Method		No. of samples	Frequency	Remarks	
		Clause	Reference				
6.1	Tensile strength at break	-		R			
	a) Machinedirection		IS 13360 (Part 5/Sec 1)		3	Each Control Unit	One sample from each shift
	b) Transversedirection		IS 13360 (Part 5/Sec 3)		3	-do-	
	Ageing test at (70 ± 1) °C for 7 days	4		IS 7016 (Part 8)	R	1	Once in month
	Elongation at break	-			R		
	a) Machine direction(MD)		IS 13360 (Part 5/Sec1)		3	Each Control Unit	One sample from each shift
	b) Cross-machine direction(TD)		IS 13360 (Part 5/Sec3)		3	-do-	
	Dart impact strength	-		R	3	Each Control Unit	One sample from each shift
			Method B of IS 13360 (Part 5/Sec 6)				

(1)			(2)	(3)		
	Tear resistance	-	Annex B of IS 2508 : 2016	R		One sample from each shift
a)	Machinedirection			3	Each Control Unit -do-	
b)	Transversedirection			3		
NOTE-Machine direction (MD) and cross-machine direction (TD) average values should be on the basis of five test specimens in each direction.						

Table 3
Requirements for Type II Polyethylene (PE) Film/Sheet

(1)			(2)	(3)		
TEST DETAILS			Test equipment requirement R: required (or)S: Sub- contracting permitted	LEVEL OF CONTROL		
Clause	Requirements	Test Method		No. of samples	Frequency	Remarks
		Clause	Reference			
7.1	Tensile strength at break	-	R		One sample from each shift	
a)	Machine direction (MD)		3	Each Control Unit -do-		
b)	Transverse direction(TD)		3			
	Ageing test at (70 ± 1) °C for 7 days	4	IS 7016 (Part 8)	R	1	Once in month
	Elongation at break	-	R		One sample from each shift	
a)	Machine direction(MD)		3	Each Control Unit -do-		
b)	Cross-machine direction(TD)		3			

Dart impact strength	-	Method A of IS 13360 (Part 5/Sec 6)	R	3	Each Control Unit	One sample from each shift
Machinedirection(MD)andcross-machinedirection(TD)averagevalueshouldbeonthebasisoffivetestspectimensineach direction.						

Table 4
Requirements for Type III Polyethylene (PE) Film/Sheet

(1)				(2)	(3)		
TEST DETAILS				Test equipment requirement R: required (or)S: Sub- contracting permitted	LEVEL OF CONTROL		
Clause	Requirement	Test methods			No. of samples	Frequency	Remarks
		Clause	Reference				
8.1	Tensile properties ¹⁾ a) Yield strength b) Breakstrength c) Yield elongation d) Breakelongation	--	IS 13360 (Part 5/Sec 1) IS 13360 (Part 5/Sec 3) Test Conditions – Specimen Type 5 and test speed 51 mm/min	R	3	Each Control Unit	One sample from each shift
	Tear resistance	Annex B	IS 2508 : 2016	R	3	Each Control Unit	One sample from each shift
	Puncture resistance	Annex C	IS 2508 : 2016	R	3	Each Control Unit	One sample from each shift

¹⁾ Machine direction(MD)and cross-machined irection(TD) average values should be on the basis of five test specimens in each direction. Yield elongation is calculated using a gauge length of 33 mm. Break elongation is calculated using a gauge length of 50mm.

Table 5
Requirements for Type IV Polyethylene (PE) Film/Sheet

(1)				(2)	(3)		
TEST DETAILS				Test equipment requirement R: required (or)S: Sub-contracting permitted	LEVEL OF CONTROL		
Clause	Requirement	Test methods			No. of samples	Frequency	Remarks
		Clause	Reference				
9.1	Tensile properties ¹⁾ a) Yield strength b) Breakstrength c) Yield elongation d) Breakelongation	--	IS 13360 (Part 5/Sec 1) IS 13360 (Part 5/Sec 3) Test Conditions – Specimen Type 5 and test speed 51 mm/min	R	3	Each Control Unit	One sample from each shift
	Tear resistance	Annex B	IS 2508 : 2016	R	3	Each Control Unit	One sample from each shift
	Puncture resistance	Annex C	IS 2508 : 2016	R	3	Each Control Unit	One sample from each shift
¹⁾ Machine direction (MD) and cross-machine direction (TD) average values should be on the basis of five test specimens in each direction. Yield elongation is calculated using a gauge length of 33 mm. Break elongation is calculated using a gauge length of 50mm.							

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 the Head BO for approval.