

**PRODUCT MANUAL FOR
Textiles - HDPE / PP Woven Sacks for Packaging of 25 kg Polymer Materials
According to IS 16703:2017**

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.	Product	:	IS 16703:2017
	Title	:	Textiles — High Density Polyethylene (HDPE)/ Polypropylene (PP) Woven Sacks for Packaging of 25 kg Polymer Materials — Specification
	No. of amendments	:	Nil
2.	Sampling Guidelines		
a)	Raw material	:	HDPE/ PP used for manufacture of tape shall be virgin and conform to IS 10146 / IS 10910 respectively, excluding overall migration. The liner if used shall be LDPE/LLDPE/HMHDPE conforming to IS 10146 excluding overall migration. Test certificate from raw material manufacturer shall be obtained for each lot of HDPE/PP Liner received indicating conformity to relevant IS. If the firm is directly purchasing HDPE/PP Fabric Tapes, they shall confirm to Clause 4.2 of IS 16703, and IS 6192 / IS 11197 respectively.
b)	Grouping Guidelines	:	Pl See Annex A
c)	Sample Size	:	10 sacks + approx 15m X 6 reels HDPE/PP tape + approx 20 m stitching thread + approx 1m X 1m un-laminated fabric + approx 1 m X 1m laminated fabric + approx 1 m X 1m liner
3.	List of Test Equipment	:	Please refer Annex - B
4.	Scheme of Inspection and Testing	:	Please refer Annex –C
5.	Possible tests in a day	:	Please refer Annex - D
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 16703:2017 with the following scope:		
	Name of the product	High Density Polyethylene (HDPE) Polypropylene (PP)WOVEN SACKS FOR PACKAGING OF 25 kg POLYMER MATERIALS	
	Material	High Density Polyethylene (HDPE) / Polypropylene (PP)	
	Type	With / without Lamination, with / without Liner, with / without UV Stabilization	

Annex A
PRODUCT MANUAL FOR
Textiles - HDPE / PP Woven Sacks for Packaging of 25 kg Polymer Materials
According to IS 16703:2017

Grouping Guidelines

Separate sample shall be tested for HDPE sacks and PP sacks. If sacks with lamination / Liner / UV Stabilization are tested, sacks without lamination / Liner / UV Stabilization respectively may also be covered in the scope.

Annex – B
PRODUCT MANUAL FOR
Textiles - HDPE / PP Woven Sacks for Packaging of 25 kg Polymer Materials
According to IS 16703:2017

List of Test Equipment

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

Sr. No.	Tests used in with Clause Reference	Test Equipment
1	Tapes – Width and Thickness (Cl. 4.2 and IS 6192/IS 11197)	Steel Rule / Vernier 0.1mm LC, Spring Loaded dial micrometer of 0.001mm LC & 140kN/m ² pressure
2	Tapes – Linear Density (Cl. 4.2 and IS 6192/IS 11197)	Weighing Balance 0.1mg accuracy, Drying Oven, Wrap Reel
3	Tapes – Tenacity (Cl. 4.2 and IS 6192/IS 11197)	Tensile testing machine with constant rate of extension, suitable clamps and facility to measure elongation
4	Tapes – Elongation at point of rupture (Cl. 4.2 and IS 6192/IS 11197)	Tensile testing machine with constant rate of extension, suitable clamps and facility to measure elongation
5	Tapes – Heat Shrinkage (HDPE) (Cl. 4.2 and IS 6192)	Heat shrinkage test apparatus with water bath, specimen holder and lead in wire
6	Tapes – Colour Fastness for pigmented tapes (Cl. 4.2 and IS 6192/IS 11197)	Xenon Arc lamp test apparatus, Geometric grey scale
7	Tapes – Dimensional stability (PP) (Cl. 4.2 and IS 11197)	Air circulating Oven
8	Unlaminated Fabric Mass (Cl. 4.2)	Weighing Balance 5mg accuracy, Steel Scale, Flat smooth table
9	Bottom seam Stitching (Cl. 4.3.1)	Steel Scale
10	Material used for stitching (If different from HDPE/PP Tape)- Breaking Load (Cl. 4.3.1)	Tensile testing machine
11	Lamination - Mass, Overhanging (Cl. 4.4)	Weighing Balance, Steel scale, Flat smooth table
12	Liner Thickness (Cl. 4.5)	Dead weight dial micrometer with flat anvil 6mm dia and spindle head flat surface dia 4.8mm & load 110g /Spring dial micrometer
13	Mass of bale (Cl. 5.1)	Weighing Scale
14	UV resistance (Cl. 5.5)	Test Chamber with Fluorescent UV- lamps Type B with irradiance level 0.63W/m ² with facility for heating and condensation, Tensile testing machine CRE type
15	Dimensions [Cl. 5.2 and Table 1 i)]	Scale, Flat table
16	Ends per dm [Cl. 5.2 and Table 1 ii)]	Pick glass
17	Picks per dm [Cl. 5.2 and Table 1 iii)]	Pick glass
18	Mass of sack, gusseted type [Cl. 5.2 and Table 1 iv]	Weighing Balance, Steel scale,

		Flat smooth table
19	Average breaking strength of fabric [Cl. 5.2 and Table 1 v)]	Tensile testing machine CRE with facility to record/indicate force and separation
20	Breaking strength of bottom seam [Cl. 5.2 and Table 1 vi)]	Tensile testing machine with suitable clamps, stop watch, scale
21	Elongation at break of fabric [Cl. 5.2 and Table 1 vii)]	Tensile testing machine CRE with facility to record/indicate force and separation
22	Drop impact strength [Cl. 5.2, 5.3 and Table 1 viii)]	Drop Impact test apparatus, filling material
23	Ash content [Cl. 5.2, 5.4 and Table 1 ix)]	Weighing Balance 1mg accuracy, Silica crucible, Bunsen Burner, Silica Triangle and Tripod, Muffle furnace, Desicator, Gloves, Crucible holder
24	Conditioning of sample (Cl. 7)	Conditioning Chamber to maintain 27±2°C, 65±2% humidity

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

Annex – C
PRODUCT MANUAL FOR
Textiles - HDPE / PP Woven Sacks for Packaging of 25 kg Polymer Materials
According to IS 16703:2017

SCHEME OF INSPECTION AND TESTING

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 methods given in the specification.

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

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

3. LABELLING AND MARKING – The Standard Mark as given in Schedule of the license and Licence Number (i.e. CM/L.....) shall be printed with indelible ink on each sack for packaging of 25 kg polymer material and Printing, packaging and marking on sacks and bales shall be done as per requirements of Cl. 6 of IS 16703:2017, provided always that sacks thus marked conforms to all the requirement of the specification. In addition, BIS Licence Number CM/L- ..., and details of BIS website shall be marked on sacks and bales as follows: “For details of BIS certification please visit www.bis.gov.in”

3.1 “FOR SACK ONLY” shall be marked on top of the standard mark printed on each sack.

4. CONTROL UNIT – All the HDPE/PP woven sacks of the same construction produced under similar conditions in a day shall constitute a control unit.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with 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. Any rejected material which is potentially resalable shall be deformed in such a manner that it cannot be used for any other purpose. A separate record shall be maintained giving information relating to all such rejections/defective/substandard material of the production not conforming to the requirements of the Specification and the method of its disposal. Such material shall in no case be stored together with that conforming to the Specification. The Standard Mark (if already applied) on rejected material should be defaced.

TABLE 1
LEVELS OF CONTROL
(Clause 5 of SCHEME OF INSPECTION AND TESTING)

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Clause	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
4.1	Raw Material (HDPE/PP granules)		IS 10146 / IS 10910	S	01	Each consignment (See note 3)	Test Certificate from manufacturer to be obtained
4.2	Fabric (HDPE/PP tapes)						
	Width and Thickness	5.2 and 5.3 Table 1	IS 6193	R	05	Each control unit(if manufactured in house) Each consignment (if procured from outside) (See note 3)	If the tapes are manufactured in house, Samples shall be drawn and tested at regular intervals to ascertain their conformity
	Linear Density		IS 7703 (Part 1)	R	05	-do-	-do-
	Tenacity	5.4	IS 6193	R	05	-do-	-do-
	Elongation at point of rupture	5.4	IS 6193	R	05	-do-	-do-
	Heat Shrinkage (HDPE)	5.5	IS 6193	R	05	-do-	-do-
	Colour Fastness for pigmented tapes		IS 2454	S	01	Once in 6 months	Also to be done when source of raw material changes
	Dimensional stability (PP)	4.7 and 5.1	IS 11197	R	05	Each control unit(if manufactured in house) Each consignment (if procured from	-do-

						outside) (See note 3)	
4.2	Un-laminated Fabric Mass	4.2	IS 16703	R	05	Each control unit	
4.3.1	Bottom seam Stitching	4.3.1	IS 16703	R	30	Each control unit	
4.3.1	Material used for stitching (If different from HDPE/PP Tape)- Breaking Load	4.3.1	IS 16703	R	01	Each consignment (See note 3)	
4.4	Lamination - Mass, Overhanging	4.4	IS 16703	R	30	Each control unit	
4.5	Liner Material		IS 10146	S	01	Each consignment (See note 3)	Test Certificate from manufacturer to be obtained
4.5	Liner Thickness	Annex A	IS 2508	R	05	Each consignment (See note 3)	Test Certificate from manufacturer to be obtained
4.6	Capacity	4.6	IS 16703	R	30	Each control unit	
5.1	Mass of bale	5.1	IS 16703	R	Each bale	Each bale packed	
5.2 and Table 1 i)	Dimensions	Annex B	IS16703	R	30	Each control unit	
5.2 and Table 1 ii)	Ends per dm	Annex B	IS 16703	R	30	Each control unit	
5.2 and Table 1 iii)	Picks per dm	Annex B	IS 16703	R	30	Each control unit	
5.2 and Table 1 iv)	Mass of sack, gusseted type		IS 1964	R	30	Each control unit	
5.2 and Table 1 v)	Average breaking strength of fabric		IS 1969 (Part 1)	R	05	Each control unit	
5.2 and Table 1 vi)	Breaking strength of bottom seam		IS 9030	R	05	Each control unit	

5.2 and Table 1 vii)	Elongation at break of fabric		IS 1969 (Part 1)	R	05	Each control unit	
5.2 and Table 1 viii)	Drop impact strength	Annex C	IS 16703	R	05	Each control unit	
5.2 and Table 1 ix)	Ash content	Annex D	IS 16703	R	01	Each control unit	
5.5	UV resistance	Annex F	IS 16703	S	01	Once in 6 months	

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled 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 for approval by BO Head.

Note 3: One consignment of material is defined as all material of one defined type and quality, delivered to the manufacturer by one supplier according to one dispatch note

Annex D

Possible tests in a day

When appropriately conditioned samples are available, the following tests can be carried out in a day:

- (i) Linear density of tape (Cl. 4.2 and IS 6192/IS 11197)
- (ii) Tenacity of tape (Cl. 4.2 and IS 6192/IS 11197)
- (iii) Elongation of tape (Cl. 4.2 and IS 6192/IS 11197)
- (iv) Thickness of tape (Cl. 4.2 and IS 6192/IS 11197)
- (v) Width of tape (Cl. 4.2 and IS 6192/IS 11197)
- (vi) Tests for Bottom Seam (Cl.4.3.1)
- (vii) Lamination Mass (Cl. 4.4)
- (viii) Lamination Overhang (Cl. 4.4)
- (ix) Liner Thickness (Cl. 4.5)
- (x) Dimensions [Cl. 5.2 and Table 1 (i)]
- (xi) Ends per dm [Cl. 5.2 and Table 1 (ii)]
- (xii) Picks per dm [Cl. 5.2 and Table 1 (iii)]
- (xiii) Mass of sack, gusseted type [Cl. 5.2 and Table 1 (iv)]
- (xiv) Breaking strength of bottom seam [Cl. 5.2 and Table 1 (vi)]
- (xv) Drop Impact Strength [Cl. 5.2 and Table 1 (viii)]