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उत्पाद मैनुअल

विस्फोटक में उपयोग हेतु अमोनियम नाइट्रेट की पैकिंग के लिए
उच्च धनत्व पोलिइथाइलीन (एचडीपीई)/ पोलिप्रोपाइलीन की बुनी हुई बोरियाँ — विशिष्टि
IS 16581: 2018 के अनुसार

**PRODUCT MANUAL FOR
HIGH DENSITY POLYETHYLENE (HDPE)/POLYPROPYLENE (PP) WOVEN SACKS
FOR PACKING OF SOLID AMMONIUM NITRATE FOR EXPLOSIVES — SPECIFICATION
as per IS 16581: 2018**

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 Product	:	IS 16581 : 2018
	शीर्षक Title	:	High Density Polyethylene (HDPE)/Polypropylene (PP) Woven Sacks for Packing of Solid Ammonium Nitrate for Explosives — Specification
	संशोधनों की संख्या No. of Amendments	:	0
2.	नमूना दिशानिर्देश Sampling Guidelines:		
a)	कच्चा माल Raw material	:	The high density polyethylene (HDPE) or polypropylene (PP) used for manufacture of tape shall conform to the requirements specified in IS 10146 or IS 10910, respectively.
b)	समूहीकरण दिशानिर्देश Grouping guidelines	:	Please refer <u>ANNEX - A</u>

c)	नमूने का परिमाण Sample Size	: 1 kg HDPE/ PP Granules, 1 metre × 1 metre Unlaminated & Laminated Fabric, Stitching thread, 10 woven sacks. Equal number of liners may be drawn if the sack is provided with liner.
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer <u>ANNEX – B</u>
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer <u>ANNEX – C</u>
5.	एक दिन में संभावित परीक्षण Possible tests in a day: All tests can be carried out in a day (on conditioned samples as applicable).	
6.	लाइसेंस का दायरा/ Scope of the Licence: IS 16581 :2018 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 16581:2018 with the following scope:	
	उत्पाद का नाम Name of the product	High Density Polyethylene (HDPE) / Polypropylene (PP) Woven Sacks for Packing of Solid Ammonium Nitrate for Explosives.
	प्रकार Type	Type 1 / Type 2
	अन्य पहलू Other Aspects	With / without Lamination
	Capacity (to be declared)	___ Kg

ANNEX A

GROUPING GUIDELINES

- 1) Separate samples of Type I and Type II Sacks of any capacity shall be tested to be covered in the scope. Both laminated and non-laminated sacks (with liner) of any size and from any type shall be tested to be covered in the scope of licence across all types.
- 2) However, it shall be ensured that the applicant/licensee has got the complete manufacturing and testing facilities for all the sizes and designs intended to be covered.
- 3) During operation of the licence, BO will ensure that all the sizes/designs covered in the licence are tested in rotation. The above guidelines may be followed for Grant of Licence as well as inclusion of new variety.

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

Sl. No.	Tests Used in with Clause Reference	Test Equipment/Chemicals and Identification Numbers (Where applicable)
1.	Tape Width (3.1)	Vernier Callipers (0.1 mm LC).
2.	Linear Density of Tape (3.1)	Calibrated Steel Scale (1 mm LC), Weighing Balance (0.1mg LC).
3.	Width of Liner, Clause 4.4	Flat Table (size greater than sacks dimension), Calibrated Steel Scale (1 mm LC).
4.	Liner Thickness, Clause 4.4	Dead weight dial micrometer with flat anvil of <i>min</i> 6 mm diameter and 4.8 mm diameter flat surface on the head of the spindle; OR Spring dial Micrometer.
5.	Bottom seam of loose liner, Clause 4.4.2	Calibrated Steel Scale (1 mm LC).
6.	Lamination coating mass, Cl 4.5	Calibrated Steel Scale (1 mm LC) or Suitable Sample cutter, Weighing Balance (0.1mg LC).
7.	Lamination overhang, Cl 4.5	Calibrated Steel Scale (1 mm LC).
8.	Seam (Cl 4.6)	Calibrated Steel Scale (1 mm LC), thickness guage
9.	Mass of sack, Liner and Bale, Cl 5.2	Weighing Balance,
10.	Length and Width of Sack, Sl no. I, Table 1	Calibrated Steel Scale (1 mm LC), conditioning chamber
11.	Ends & Picks per dm, Sl no. ii & iii of Table 1	Calibrated Steel Scale, traveling thread counter, conditioning chamber
12.	Mass of Fabric, Sl no. iv of Table 1	Horizontal Flat Smooth Table, Weighing Balance (1mg LC), Calibrated Steel Scale (1 mm LC) or Suitable Sample cutter, Scissors, Arrangement to carry out test at standard temperature (Cl. 6.2.1 of IS 1964), Conditioning chamber/Oven, T square (in case of oven method)
13.	Average Breaking Strength of Fabric, Sl no. (v) and Elongation at break of fabric, Sl no. vii of Table 1	Tensile testing machine CRE as per Cl 6.1 of IS 1963 (Part 1) with facility to record/indicate force and separation, Scissors, Calibrated Steel Scale (1 mm LC).
14.	Breaking strength of bottom seam, Sl no. vi of Table 1	Tensile testing machine (as per cl 6 of IS 9030), Scissors, Calibrated Steel Scale (1 mm LC), conditioning chamber, Arrangement to carry out test at standard temperature
15.	Conditioning of sample, Cl. 7.1	Conditioning Chamber to maintain 27 ± 2 °C and 65 ± 2 % Relative humidity.

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. For the guidance of manufacturers, the recommended definition of control unit is: All the HDPE/PP woven sacks of the same variety produced under similar conditions 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.

1.4 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 sack provided always that sack 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 Indian Standard.

3.2 Additional Marking requirements: The sacks shall also be marked with the following additional requirement

3.2.1 “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: LEVELS OF CONTROL

(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				
3.1 & 3.2	Width of tape	----	IS 6192/ IS 11197	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
3.1 & 3.2	Linear Density of Tape	----	IS 16581	R			
4.1	Raw Material of Tape	----	IS 10146 for HDPE; IS 10910 for PP	S	one	Each consignment	No testing is required if material is accompanied by manufacturer's/ supplier's test certificate indicating conformity or is ISI marked.
4.2	Fabric (HDPE / PP tapes)	---	IS 16581	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
4.3	Sack	---	IS 16581	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		
4.4	Liner						
	Material	---	IS 16581	S	one	Each consignment	No testing is required if material is accompanied by manufacturer's/ supplier's test

							certificate indicating conformity or is ISI marked.
	Width of liner	--	IS 16581	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
	Thickness of liner	Annex A	IS 2508	R			
4.4.1	Freedom from defects	--	IS 16581	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		
4.4.2	Bottom seam	--	IS 16581	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
4.5 & 4.5.1	Lamination						
	Material	--	IS 16581	S	one	Each consignment	No testing is required if material is accompanied by manufacturer's/ supplier's test certificate indicating conformity or is ISI marked.
	Thickness Mass	--	IS 16581	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
	Overlap/overhang	--	IS 16581	R			
4.6 & 4.6.1	Seam/ Stitching	---	IS 16581	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
	material of stitch	--	IS 16581	S	one	Each consignment	No testing is required if material is accompanied by manufacturer's/ supplier's test certificate indicating

							conformity or is ISI marked.
4.7	Mouth of the sack	---	IS 16581	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		
4.8	capacity	---	IS 16581	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
5.2	Mass	---	IS 16581	R			
Table 1 Sl no. (i)	Dimensions of sacks a) Length b) width	--	IS 1954	R	one	Each control unit	
Table 1 Sl no. (ii & iii)	a) Ends b) Picks	--	IS 196	R	one	Each control unit	
Table 1 Sl no. (iv)	Mass of fabric	--	IS 1964	R	one	Each control unit	
Table 1 Sl no. (v)	Breaking Strength of fabric a) Lengthwise b) widthwise	--	IS 1969 - 1	R	one	Each control unit	
Table 1 Sl no. (vi)	Breaking strength of bottom seam	--	IS 9030	R	one	Each control unit	
Table 1 Sl no. (vii)	Elongation a) Lengthwise b) widthwise	--	IS 1969 - 1	R	one	Each control unit	