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PAKISTAN STANDARD

POLYPROPYLENE WOVEN SACKS FOR PACKING AND TRANSPORTATION OF FOOD ITEMS (3RD REVISION).

PAKISTAN STANDARDS & QUALITY CONTROL AUTHORITY
Standards Development Centre,
PSQCA Complex ST 7/A, Block-3,
Scheme No. 36, Gulistan-e-Johar,
Karachi.

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FOR
SYNTHETIC TEXTILES (BAGS & CORDAGES) (TC-15)

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PAKISTAN STANDARD SPECIFICATION FOR POLYPROPYLENE WOVEN SACKS FOR THE PACKING AND TRANSPORTATION OF FOOD ITEMS

0. FOREWORD

0.1 This Pakistan Standard was adopted by the Standards Development Centre, Pakistan Standards and Quality Control Authority (PSQCA) on 21st December, 2017, endorsement by National Standards Committee for (Textile). The draft having been finalized by the Technical Committee for Synthetic Textile (Bags & Cordages) TC-15.

0.2 This standard was first established in 1992 and then in 2008 and 2014; the committee felt it necessary to revise in the light of latest development in the industry.

0.3 In drawing up this standard the views of the consumers, manufacturers, traders, and the technologists have been taken into consideration by the Technical Committee, and the need for international co-ordination of standard enforced in different countries of the world for promotion and easy flow of international trade has been kept in view. The development of standard is a continuous process therefore, it is hoped to review this standard periodical on the basis of experience gained and studies made.

0.4 In order to keep abreast of the progress in industry the Pakistan Standards are subject to periodical review; suggestions for improvement shall always be welcomed and put up to the relevant committee for its consideration.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test, shall be rounded off in accordance with PS: 103 “Methods and rules for rounding off numerical values”.

1. SCOPE

1.1 This standard specified that general characteristics, requirements and methods of test for sacks made of tubular woven polypropylene un-laminated / laminated fabrics and having a filling mass from 10 to 80 kg, intended for packing and transportation of food items such as Sugar, Wheat, Rice, Wheat flour, Suji, Maida, Choker, Pulses, Salt, and Edible, etc.

Note: *To ensure food security by minimizing over 5% of dusting of wheat flour, it is mandatory to use one side (outer) laminated and one side woven polypropylene sack to reduce the dusting up to 0.05%. However, both side lamination is optional for Wheat Flour Sack as and if required. The use of one side laminated and one side woven sacks for sugar and wheat are optional.*

2. TESTING:

2.1 Testing of all samples shall be carried out in accordance with PS: ISO 139 i.e. temperature 27 ± 2^0C.

3. MANUFACTURE:

3.1 ***Tape:*** The polypropylene tapes used shall be made by virgin food grade granules (without addition of colour giving translucent look with addition of Calcium Carbonate up to 3.0 % maximum for sugar sacks only) and shall be polypropylene tape having minimum width of 2.5 mm (± 3 %). The linear density shall not be less as described in Table – I.

3.2 ***Fabric:*** The fabric used in the manufacture of Polypropylene woven sacks shall be produced from tapes (3.1), either in shape of tube on a circular loom. The constructional details found suitable are given Table – I. The cloth shall be evenly woven and generally free from rips, tears and mispick (loose weave).

3.2.1 ***Tubular Woven:*** The sack tube is produced, in a continuous length on circular loom. The weft is passed via the shuttle through each layer, in turn; in such a way that it forms a tube in which the weft is continuous and it lies in the transverse direction of the finished sack.

3.3 ***Sacks:*** The sack shall produce from fabric woven as a tube (3.2.1) and cut to the required length or converted from woven material (3.3) and stitched accordingly.

3.4 ***Seam:*** The stitching shall be done with single / double row of either lock stitch or chain stitch. The row stitching should be approximate 8 mm (min. 5 mm) from the outer edge of the sack. Stitching should be done with fold over seam to a depth of minimum 20 mm, so that the stitching passes through a minimum of four layers of the fabric. The number of stitches per decimeter shall be 16 - 20, the lock or chain stitch may be as recommended in PS: ISO 4915 “Types of stitches”.

3.4.1 The material used for stitching shall be nylon / polyester, polypropylene filament or any other thread suitable for the purpose, compatible to the product being packed in the sack. The stitching shall uniform without any loose thread of knot.

3.5 ***Mouth of the sack:*** The mouth of the sack should be hammed or heat / cold cut, so that the tapes do not fray.

3.6 ***Capacity:*** The sack shall have a nominal capacity of holding 10 to 80 kg for transport of food items.

TABLE – I
REQUIREMENTS OF TRANSLUCENT POLYPROPYLENE WOVEN SACKS FOR THE PACKING AND TRANSPORTATION OF FOOD ITEMS

Food items	Quality No.	Kg	Dimensions in mm (inch)		Mass/ sq. Meter (gm)	Mass per bag (gm)	Density/dm (inch) (Min)		Denier of Tape (Min)
			Outside length	Outside width			Ends	Picks	
SUGAR	1.	50	950 (37)	559 (22)	94	105	43(11)	43(11)	985
WHEAT	2.	50	991(39)	584(23)	94	115	43(11)	43(11)	985
WHEAT FLOUR	3.	80	1194(47)	686(27)	58	100	40(10)	40(10)	655
	4.	40	914(36)	559(22)	58	62	40(10)	40(10)	655
	5.	20	711(28)	457(18)	58	41	40(10)	40(10)	655
	6.	10	559(22)	381(15)	64	30	40(10)	40(10)	725
SUJI	7.	50	1016(40)	559(22)	82	98	40(10)	40(10)	920
MAIDA	8.	50	991(39)	610(24)	80	102	40(10)	40(10)	900
	9.	34	1092(43)	686(27)	58	92	40(10)	40(10)	655
CHOKER	10.	24	991(39)	635(15)	58	77	40(10)	40(10)	650
	11.	20	914(36)	559(22)	59	64	40(10)	40(10)	665
RICE/ PULSES/ SALT/ EDIBLES	12.	50	940(37)	584(23)	96	111	43(11)	43(11)	1000
	13.	50	940(37)	559(22)	89	99	40(10)	40(10)	1000
	14.	20	635(25)	457(18)	67	42	40(10)	40(10)	750
	15.	10	508(20)	381(15)	67	28	40(10)	40(10)	750
Tolerance			± 15mm	±10 mm	± 5%	± 5%	xxx		± **5%**
Method of Tests			PS: ISO 22198		PS: ISO 3801		PS: ISO 7211/2		PS: ISO 7211 – 5

TABLE – II
STRENGTH REQUIREMENTS OF TRANSLUCENT POLYPROPYLENE WOVEN SACKS FOR THE PACKING AND TRANSPORTATION OF FOOD ITEMS

Food items	**Quality No.**	**Kg**	Minimum Breaking Strength of fabric on 5x20 cm strip (kg)		Minimum Breaking strength of Seam (Kg)	Minimum Bursting Strength of base fabric (kg/cm^2)
			Warp	**Weft**		
SUGAR	1.	50	80	80	30	20
WHEAT	2.	50	80	80	30	20
WHEAT FLOUR	3.	80	50	50	30	15
	4.	40	50	50	30	15
	5.	20	50	50	30	15
	6.	10	50	50	30	15
SUJI	7.	50	75	75	30	20
MAIDA	8.	50	70	70	30	20
	9.	34	50	50	30	15
CHOKER	10.	24	50	50	30	15
	11.	20	50	50	30	15
RICE/ PULSES/ SALT/ EDIBLES	12.	50	85	85	30	20
	13.	50	85	85	30	20
	14.	20	60	60	30	15
	15.	10	60	60	30	15
Method of Tests			PS ISO: 13934/1		PS ISO: 13935 – 1	PS ISO: 13938 – 1

4 REQUIREMENTS:

4.4 ***Joint Bags:*** The sacks shall not be made from joint pieces. Any glue or adhesive not allowed for pasting.

4.5 ***Mass:*** The mass of the sack as given Table – I.

4.6 ***UV – Resistance Test:*** It is desirable by buyer and seller that the sacks are stabilized for U/V light. The procedure is described in Appendix – A.

4.7 ***Drop Test:*** It is desirable by buyer and seller that the drop test shall be carried out in accordance with PS: 4879 and the related parameter is prescribed in Appendix – B.

5 PRINTING, PACKING AND MARKING:

5.1 The sacks shall be marked with information as required by the buyer using suitable inks (Food Grade), and printing should be clear without any major smudging and missed portions. Inks should be non- fading water resistance.

Note: *The common practice of marking involves the use of silk screens or stencil for printing the matter when the number of sack ordered is small. When large numbers of sacks are required, the accepted method is flex-printing. The inks found suitable for printing are those based on polyamide resin. The shade of the inks should be uniform with normal machine tolerance*.

5.1.1 100 sacks will be tied to form a bundle and these bundles will be gathered so that 500 / 1000 sacks shall be packed to constitute a bale, which shall be formed by using a sheet of HDPE or PP woven fabric or any other suitable material and suitably secured.

5.2 The polypropylene woven un-laminated / laminated sacks may also be marked with Standard PS Mark.

Note: *The use of the Standard Mark is governed by the provision of the section XIII of PSQCA Act VI of 1996 and details of conditions, under which a License for the use of Standard Mark may be granted to manufacturers or processors, may be obtained from Director (Conformity Assessment) Standard Development Centre PSQCA Karachi.*

5.2.1 Each bale shall be marked with the following:

i) Name of the inside material,
ii) Net and gross weight of the material,
iii) Name of the mill, initials or trade mark,
iv) Date of manufacture/year,
v) Date of expiry,
vi) Any other information required by the buyer or by the law enforce,

6 SAMPLING AND CRITERIA FOR CONFORMITY:

6.1 ***Lot:*** In any consignment, all the sacks of the same construction shall be grouped together to constitute a lot.

6.2 The conformity of the lot to the requirements of the standard shall be determined on the basis of the test carried out on the samples selected from it.

6.3 The number of bales to be selected depends on the size of the lot and shall be in accordance with col. 1 and col. 2 of Table – III. The number of sacks to be selected from the bales sampled shall be in accordance with col. 3 of Table – III.

TABLE – III
SAMPLE SIZE AND CRITERIA FOR CONFORMITY

Number of sacks in Lot	Number of bales to be sampled	Sample size for visual, mass of sack inspection. Dimensions, Ends, and Picks.
(1)	**(2)**	**(3)**
Up to 25000	3	13
25001 to 40000	5	20
40001 to 50000	8	32
50001 and above	12	50

6.4 ***Criteria for Conformity:*** The lot shall be considered as conforming to the requirements of this standard if the following conditions are satisfied.

a) The number of defective sacks in case of visual inspection, ends, picks and dimensions is up to 10 percent of the sample size, subject to rounding off the fraction number to next higher integer.

b) Mass of none of sacks tested shall be less than 6 percent of specified mass. However, mass of 1000 sacks constituting a bale or multiples thereof shall not be less than -3 percent of specified mass of the bale.

APPENDIX – A.

A-1 ***UV- resistance test:*** The determination of the fluorescent of UV- radiation and weathering on the breaking strength of woven polypropylene fabric shall be carried out in accordance with ASTM G 53.

A-2 ***Test procedure:*** The test shall be carried out with fluorescent UV –Lamp type – B. The duration of the test shall be 144 hours (i.e. 6 days). The test cycle shall be 8 hours at +60 ^{0}C with UV – radiation, alternating with 4 hours +50 ^{0}C with consideration.

A-3 Criteria for passing the UV-resistance test. After the test, the breaking strength of the tested material shall be at least 50% of the original breaking strength.

APPENDIX – B.

B-1. ***Drop test:*** The drop test shall be carried out on three sacks and shall comprise of following sequence.

a) Flat dropping:

B-2 Flat dropping: The sack shall be dropped from a height of 1800 mm twice on one flat face and twice on the opposite flat face.

B-3 Carried for passing the drop test: After each drop there shall be no rupture or less of contacts. A slight discharge e.g. from closures, upon impact shall not be considered a failure of the sack provided that no further leakage occurs after the sack has been raised clear of the ground.

R E F E R E N C E S

1	PS: 103	Method and rules for rounded off numerical value.
2	PS: 4879	Cotton, jute and polypropylene woven sacks-Method of Drop test.
3	PS ISO: 139	Standard atmospheres for conditioning and testing.
4	PS ISO: 3801	Determination of mass per unit length and mass per unit area.
5	PS ISO: 4915	Stitch type-Classification & terminology.
6	PS ISO: 7211 – 2	Determination of number of thread per unit length.
7	PS ISO: 7211 – 5	Determination of linear density of yarn removed from fabric.
8	PS ISO: 13934 – 1	Tensile properties of fabrics-Determination of maximum force elongation at maximum force using the strip method.
9	PS ISO: 13935 – 1	Seam Tensile properties of fabric and made-up textile article- Determination of maximum force to seam rupture using the strip method.
10	PS ISO: 13938 – 1	Bursting strength of fabrics-Hydraulic method for determination of bursting strength bursting distension.
11	PS ISO: 22198	Textile-fabric-Determination of width & length.