भारतीय मानक **IS 11324 : 2024**

Indian Standard

कार्बन ब्लैक के लिए मल्टी-वॉल पेपर के बोरे — विशिष्टि

(पहला पुनरीक्षण)

Multi-Wall Paper Sacks for Carbon Black — Specification

(First Revision)

ICS 55.080; 91.100.10

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October 2024 **Price Group 5**

Paper Based Packaging Materials Sectional Committee, CHD 16

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Paper Based Packaging Materials Sectional Committee had been approved by the Chemical Division Council.

Paper sacks are a good substitute for conventional jute bags since they are free from seepage and provide better protection from moisture and air. However, care has to be taken while handling them during filling, storage and transportation as the use of hooks is strictly prohibited in these type of sacks. Palletization of filled paper sacks during their handling and transportation gives them an added advantage over jute bags.

This standard was first published in 1985. Considering the technological advancement in the manufacture and availability of quality raw-materials, the committee decided to revise the standard.

In this revision, following modifications have been incorporated:

a) The title has been modified to align with latest practices;

b) Scope has been extended to include methods for sampling and tests; and more sack sizes;

c) The references clause has been added;

d) Dimension clause has been modified to incorporate tolerances for each sides of sacks;

e) Requirements for material and construction of sacks have also been modified to align with latest practices;

f) Marking clause has been modified; and

g) All amendments issued to the last version of the standard have been amalgamated and test methods have been updated.

A scheme for labelling environment friendly products to be known as ECO-Mark was introduced in the standard at the instance of the Ministry of Environment, Forests and Climate Change (MoEF&CC). The ECO-Mark is administered by the Bureau of Indian Standards (BIS).

This standard contains **4.1** and **10.1.1** which calls for agreement between the purchaser and the supplier.

The composition of Committee responsible for formulation of this standard is given in Annex B.

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 or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

MULTI-WALL PAPER SACKS FOR CARBON BLACK — SPECIFICATION

(First Revision)

1 SCOPE

This standard specifies requirements for materials, design and construction, methods for sampling and test for non-returnable multi-ply paper sacks intended to use for packing 10 kg, 15 kg, 20 kg and 25 kg of carbon black in powder and granule form.

2 REFERENCES

The standards listed in Annex A contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 9028 shall apply.

4 DIMENSIONS

4.1 The flat width, length and bottom dimensions of the sack shall be as agreed between the purchaser and the supplier.

4.2 The tolerance on specified value shall be ± 0.5 cm, ± 1.0 cm and ± 0.5 cm on flat sack width, length and bottom/valve/gusset width respectively.

5 MATERIAL

5.1 Sacks

5.1.1 The sacks shall be made of sack kraft papers (SKP) or extensible sack kraft papers (ESKP) conforming to IS 13012.

5.1.2 The sacks may be with/without intermediate ply of poly-extrusion coated SKP/ESKP (PEC) or poly film liner (PFL).

5.2 Adhesive

The adhesive shall be prepared through hot/cold process by mixing dextrin, modified starch with water in proper ratio to attain desirable dynamic viscosity for tubing and bottoming operations. The prepared adhesive shall be treated suitably to resist microbial growth and shall be devoid of toxicity, *p*H controlled to avoid discoloration of paper at the applied areas. The shear strength of the adhesive bond shall not be less than the tensile strength of the pasted papers. For paper to paper pasting at the bottom-ends, tube-seams, the bond shall be fiber tearing type. For spot/cross pasting (at the tube ends to facilitate easy opening prior to creasing and folding) of PEC or PFL to paper, the bond shall be of pressure sensitive type (for example, PVA based). Otherwise, the normal starch based adhesive is good enough for paper to paper application.

6 CONSTRUCTION

6.1 General

6.1.1 The sack shall comprise of two to four well nested plies of 70 g/m^2 to 90 g/m^2 (substance) of SKP/ESKP together with/without 12 micron to 20 micron thickness PEC or 15 micron to 30 micron thickness PFL.

NOTE — The air permeability of the bag (which depends on filled volume available, powder characteristics, process parameters, Gurley porosity values of the plies and micro perforations on the plies, etc) will determine the filling time of the sack at the packing machine.

6.2 Style

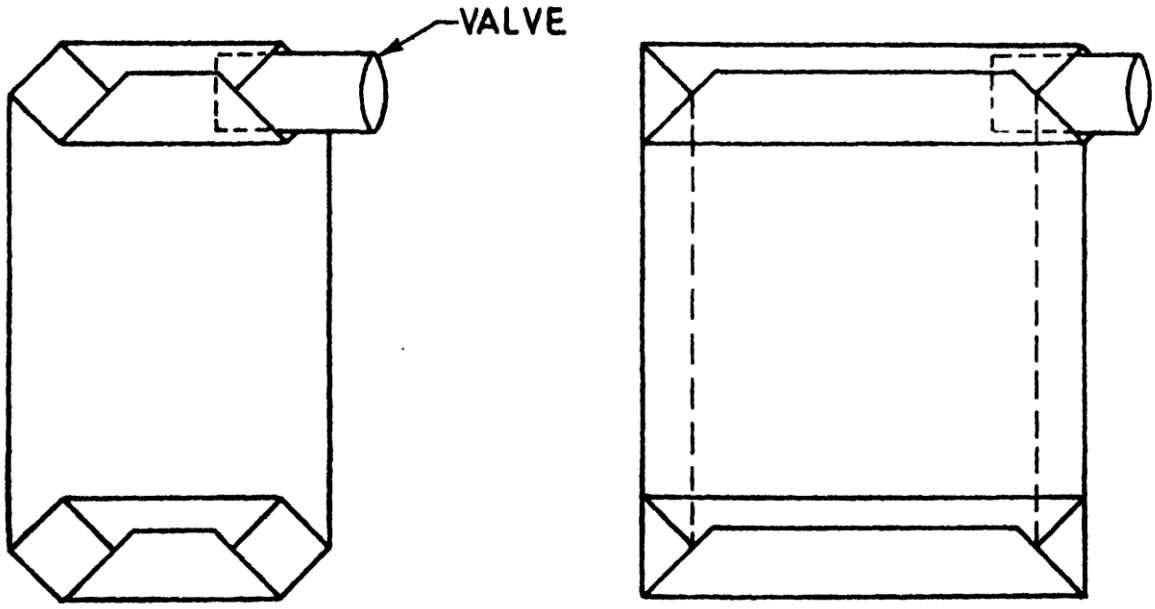
The sacks shall be of pasted valve, flat, hexagonal ends type or pasted valve, gussetted rectangular ends type as shown in Fig.1A and Fig.1B respectively. The valve shall be either external tuck in full sleeve type, made of 70 g/m^2 to 90 g/m^2 (substance) SKP/ESKP. The ultrasonically sealable plastic polymers for automatic/semi-automatic packing machine line.

6.3 Seams

The longitudinal seams shall be glued by a suitable adhesive as specified under **5.2**.

6.4 Sack Kraft Paper Requirements

The various requirements of kraft paper shall be as given in Table 1.



1 A PASTED VALVE, FLAT, HEXAGONAL ENDS TYPE SACK

IB PASTED VALVE, GUSSETTED, RECTANGULAR ENDS TYPE SACK

FIG. 1 SACK STYLE

Table 1 Requirements for 80 g/m^2 Sack Kraft Paper

(*Clauses* 6.4 *and* 6.4.1)

Sl No.	Characteristic	Requirements	Methods of Tests, Ref to
(1)	(2)	(3)	(4)
i)	Nominal grammage, g/m^2	80 ± 4	IS 1060 (Part 5/Sec 5)
ii)	Tensile strength, kN/m, *Min*		IS 1060 (Part 5/Sec 6)
	a) MD	75	
	b) CD	50	
iii)	Elongation at break, percent, *Min*		IS 1060 (Part 5/Sec 6)
	a) MD	2.5	
	b) CD	4.5	
iv)	Tear factor, mN·m^2/g, *Min*		IS 1060 (Part 6/Sec 1)
	a) MD	100	
	b) CD	120	
v)	Gurley porosity, s/100 ml, *Max*	20	IS 1060 (Part 5/Sec 14)

6.4.1 The values specified in Table 1 are for conventional type sack kraft paper. If extensible sack kraft paper is used, it is desirable to go for tensile energy absorption value of 137 J/m^2 and 68.5 J/m^2 in machine direction and cross direction respectively. The porosity value for extensible sack kraft remains the same as indicated in Table 1.

7 WORKMANSHIP

The plies shall be properly but not excessively creased. In the construction of the sack tube, the outer ply fit shall be such that at the point of manufacture, each ply shall be smaller in circumference than the next outer ply within the elongation limits of the material in order to ensure; even load distribution between the plies. Care shall be taken to ensure adequate longitudinal overlap, equal gusset formation and spot gluing quantity and line of gluing.

8 SAMPLING AND TESTING

8.1 Sampling

Sampling shall be as per procedure laid down in IS 10528.

8.2 Conditioning

The paper sack samples from the lot for testing shall be conditioned as per IS 1060 (Part 1).

8.3 Substance

The substance of sack kraft paper shall be within ± 5 percent of the specified nominal substance (grammage) when determined by the method described in IS 1060 (Part 5/Sec 5).

8.4 Drop Test

The filled sacksafter conditioning as required shall be subjected to sequential 6 drops, one each on front side, right side, back side, left side, bottom and top (*see* IS 11052 for details). The drop height shall be 0.85 m for the first four drops and 0.3 m for drop on the bottom and top sides (filling side). The sack shall not show any bursting at the end of the drop test.

9 ADDITIONAL REQUIREMENTS FOR ECO-MARK

9.1 General Requirements

9.1.1 The product shall conform to the requirements for quality and performance prescribed under **4** to **8**.

9.1.2 The manufacturer shall produce to BIS, the environmental consent clearance from the concerned State Pollution Control Board as per the provisions of *Water* (*Prevention and Control of Pollution*) *Act*, 1974 and *Air* (*Prevention and Control of Pollution*) *Act*, 1981 along with the authorization, if required under the *Environment* (*Protection*), *Act*, 1986 and the Rules made thereunder, while applying for ECO-Mark.

9.1.3 Specific Requirements

9.1.3.1 The material shall be of the following two types depending on the raw material used in the manufacture:

a) Manufactured from pulp containing not less than 60 percent by mass of pulp made from materials other than bamboo, hardwood, softwood and reed; and

b) Manufactured from pulp made from 100 percent waste paper or agricultural/industrial waste.

10 PACKING AND MARKING

10.1 Packing

10.1.1 Paper sacks shall be bundled and suitably packed in waterproof material or as agreed upon between the purchaser and the supplier, for supply.

10.1.2 The ECO-Marked packaging material/ package may be sold along with instructions for proper use and mode of safe disposal so as to maximize its performance and minimize wastage.

10.2 Marking

10.2.1 The sacks shall be printed according to the international colour coding followed by the carbon black industry. A glossy paper strip may be pasted at the ends of the bag.

10.2.2 Each sack shall be marked with the following information printed on it:

a) Relevant product details along with the name of the product manufacturer;

b) Batch number or lot number;

c) Net mass of the contents;

d) ‘Do not use hooks’, preferably showing the corresponding pictorial illustration as per IS 1260 (Part 2);

e) ‘Keep away from rain’ preferably showing the corresponding pictorial illustration as per IS 1260 (Part 2); and

f) Any other statutory marking.

10.2.3 The sacks may also be marked with the following information:

a) 'Do not drop', preferably showing the pictorial illustration; and

b) 'Do not drop on edges, corners and ends', preferably showing the corresponding pictorial illustration.

10.2.4 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed there under, and the products may be marked with the Standard Mark.

10.2.5 *Additional Requirements for ECO-Mark*

10.2.5.1 Each sack may display in brief the criteria for which the product has been labelled as environment friendly.

10.2.5.2 It shall be suitably marked on each sack that ECO-Mark label is applicable only to the packaging material/package if content is not separately covered under the ECO-Mark scheme.

NOTE — It may be stated that the ECO-Mark is applicable to the product or packaging material or both.

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS 1060	Methods of sampling and test for paper and allied products:
(Part 1) : 2022	Test methods for general purpose (*second revision*)
(Part 5)	Methods of test for paper and board,
(Sec 5) : 2021/ ISO 536 : 2019	Determination of grammage (*first revision*)
(Sec 6) : 2014/ ISO 1924-2 : 2008	Determination of tensile properties — Constant rate of elongation method (20 mm/min)
(Sec 14) : 2014/ ISO 5636-5 : 2013	Determination of air permeance and air resistance (medium range) — Gurley method
(Part 6/Sec 1) : 2014/ISO 1974 : 2012	Methods of test for paper, Section 1 Determination of tearing resistance — Elmendorf method
IS 1260 (Part 2) : 2020/ISO 780 : 2015	Packaging — Distribution packaging — Graphical symbols for handling and storage of packages: Part 2 General goods (*fourth revision*)
IS 9028 : 1978	Glossary of terms relating to paper sacks
IS 10528 : 1983	Method of sampling empty paper sacks for testing
IS 13012 : 2024	Sack kraft paper and extensible kraft paper — Specification (*first revision*)

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Paper Based Packaging Materials Sectional Committee, CHD 16

Organization	*Representative(s)*
Indian Institute of Packaging, New Delhi	PROF DR TANWEER ALAM **(*Chairperson*)**
B&A Packaging India Limited, Kolkata	SHRI AMAL KUMAR MOHANTY SHRI TAPAN KUMAR CHAND (*Alternate* I) SHRI PANKAJ KUMAR MOHAPATRA (*Alternate* II)
Central Pulp and Paper Research Institute, Saharanpur	DR SANJAY TYAGI SHRI ALOK KUMAR GOEL (*Alternate*)
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Consumer Guidance Society of India, Mumbai	DR SITARAM DIXIT DR M. S. KAMATH (*Alternate*)
Department for Promotion of Industry and Internal Trade, New Delhi	SHRI RAJESH RAWAT
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Federation of Paper Converters of India, New Delhi	SHRI MUKESH GUPTA SHRI ABHAY KUMAR SINGH (*Alternate*)
Indian Agro and Recycled Paper Mills Association, New Delhi	DR BIPIN PRAKASH THAPLIYAL DR ANIL NAITHANI (*Alternate*)
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Nestle India Limited, Gurugram	SHRI DEEPAK SINGH SHRI AJAY RAJVANSHI (*Alternate*)
Package Design Research and Test Lab, Lucknow	SHRI L. M. GUPTA SHRI MAYANK GUPTA (*Alternate*)
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Uflex Limited, Noida	SHRI ASHVANI SHARMA SHRI RAKESH SHARMA (*Alternate*)
BIS Directorate General	SHRI AJAY KUMAR LAL, SCIENTIST 'F'/SENIOR DIRECTOR AND HEAD (CHEMICAL) [REPRESENTING DIRECTOR GENERAL (*Ex-officio*)]

Member Secretary
SHRI VIRENDRA SINGH
SCIENTIST 'E'/DIRECTOR
(CHEMICAL), BIS

Bureau of Indian Standards

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Review of Indian Standards

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Amend No.	Date of Issue	Text Affected

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