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भारतीय मानक मसौदा

सामान्य प्रयोजन के लिए पॉलीइथाईलीन के थैले — विशिष्टि

(IS 9738 *का तीसरा पुनरीक्षण*)

Draft Indian Standard

POLYETHYLENE BAGS FOR GENERAL PURPOSES — SPECIFICATION

(*Third Revision of* IS 9738)

(ICS 55.080; 83.080.20)

Plastics Packaging Sectional Committee, PCD 21	Last date for receipt of comment is **24th July 2024**

FOREWORD

(*Formal clauses shall be added later*)

The polyethylene bags are most commonly used retail packs for general consumer goods, like coarse grains, pulses, household goods and dry chemicals in powder or in granular form.

Critical requirements like compatibility of the material of the bag with the product packed and the shelf-life studies of the product when packed in such bags are not covered by this standard. However, these two aspects require to be established by the packer while selecting particular grade of polyethylene material for the product to be packed.

This standard was originally published in 1981 and subsequently revised in 1990 and 2003. In the second revision, material clause was modified, more sizes of U-shaped bags were included and new variety namely, bottom seal flat bag having gusset were included. In this (*third*) revision, major modifications are:

a) requirement of material has been modified.
b) requirement on plastics in compliance with the Plastic Waste Management Rules, 2016, as amended have been included.
c) cross-references Indian Standards have been modified.
d) plastics packing used for commercial items has been removed from the scope.

All plastics materials shall comply with the stipulations of PWM Rules, 2016, as amended such as thickness, recyclability, incorporation of recycled content, etc.

Since the choice and size of a bag is not merely related to the mass of the contents going into it, an effort has been made to rationalize the sizes of these bags along with the nominal thickness of films as a guideline for the use of these bags. However, the user of these bags is required to make assessment of his requirements regarding nominal thickness and choice of the material before ordering for these bags in accordance with this standard.

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.

1 SCOPE

This standard specifies the requirements and methods of sampling and test for polyethylene bags used as carry-home bags for household items and open ended bags by nurseries.

NOTE — This standard does not cover the plastic material which comes in direct contact with food.

2 REFERENCES

The following standards 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 editions of the standards indicated below:

IS No.	*Title*
IS 2500 (Part 1) : 2000/ISO 2859-1 : 1999	Sampling procedure for inspection by attributes: Part 1 Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection (*third revision*)
IS 2508 : 2016	Polyethylene films and sheets — Specification (*third revision*)
IS 7019 : 1998	Glossary of terms in plastics and flexible packaging, excluding paper (*second revision*)
IS 7328 : 2020	Specification for polyethylene material for moulding and extrusion (*third revision*)
IS 14500 : 1998	Linear low-density polyethylene (LLDPE) films — Specification
IS 14534 : 2023	Plastics — Recovery and recycling of plastics waste — Guidelines (*second revision*)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 7019 shall apply.

4 DEFINITION AND CLASSIFICATION

4.1 Definition

Carry bag means polyethylene bags which have a self-carrying feature commonly known as vest type bag and/or D punched bags used to carry commodities. The bags shall be classified into two classes of flat bag and U-shaped bag according to structure and shape.

4.2 Classification

The bags shall be classified into two classes of flat bag and U-shaped bag according to structure and shape.

5 STRUCTURE AND SHAPE

The standard structure and shape of bags are given in Table 1, Fig. 1 and Fig. 2.

Table 1 Structure and Shape of Bags

(*Clause* 5)

Sl No. (1)	**Class** (2)	**Structure** (3)	**Shape** (4)
i)	Flat bag	Bottom seal, side seal bottom and centre seal, bottom seal and gusseted	Rectangular
ii)	U-shaped bag	Gusseted	U-Shape

6 MATERIAL

The materials used for the bags shall be polyethylene films of LDPE, LLDPE, HDPE, HMHDPE and blends thereof (*see* IS 7328, IS 2508 and IS 14500).

7 DIMENSIONS AND TOLERANCES

7.1 Recommended width (*b*), length (*l*) and nominal thickness (in μm), of bags used principally for carry-home household bags and plantation nursery bags are given in Tables 2, 3 and 4 respectively. These may be changed, depending upon the purchaser's requirement and shall be specified by him.

7.2 Tolerances of Dimensions

The tolerance on width dimensions shall be as given in Table 5 and the tolerance on length dimensions shall be ± 5 mm. The length and width dimensions of the bag shall be measured at the central part of the bag, spread out flat. In case of gusset bag the width shall be measured under a state in which the gusset is spread. Further, the length of U-shaped bag is measured at an optional end part.

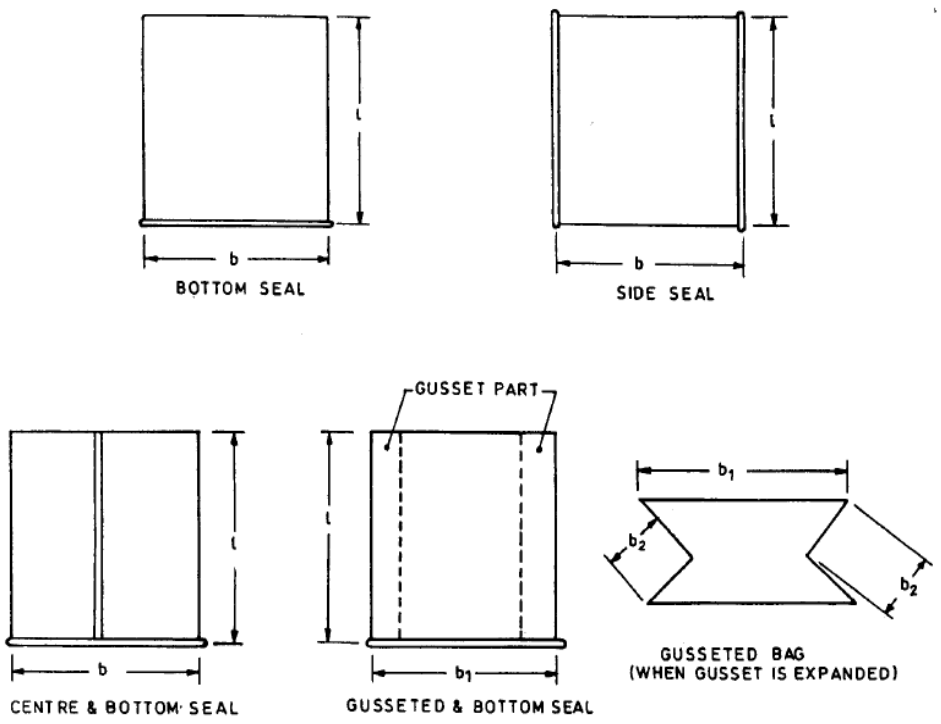

FIG. 1 FLAT TYPE BAGS

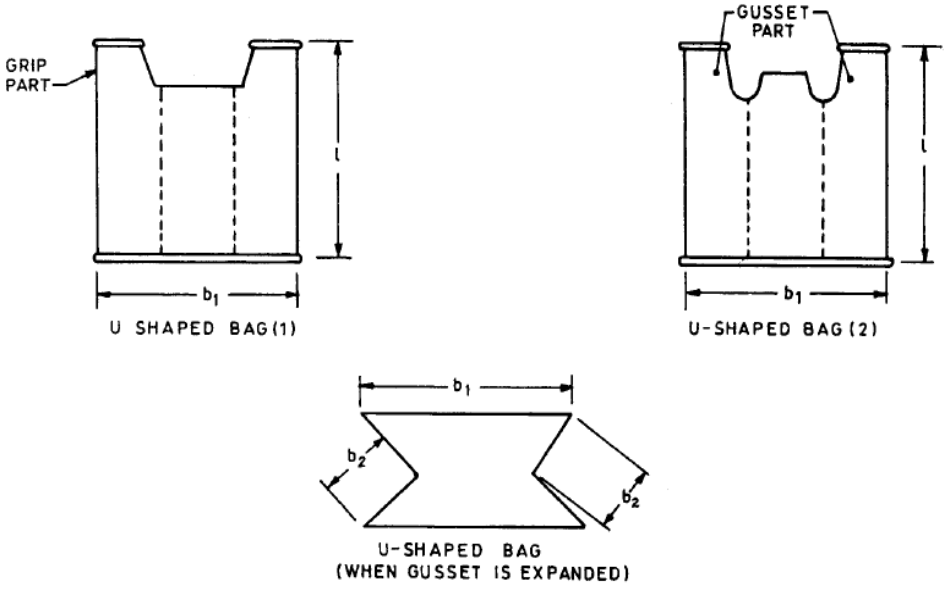

FIG. 2 U-SHAPED BAG GUSSETED TYPE

Table 2 Recommended Dimensions of Flat Bags
(*Clause* 7.1)

Sl No.	Size $b \times l$ mm	Nominal Thickness of Film, μm	
		LDPE/LLDPE/Blends	HMHDPE
(1)	(2)	(3)	(4)
i)	160 × 200	120	120
ii)	180 × 250	120	120
iii)	250 × 300	120	120
iv)	250 × 350	120	120
v)	300 × 300	120	120
vi)	300 × 400	120	120
vii)	320 × 300	120	120
viii)	320 × 320	120	120
ix)	320 × 380	120	120
x)	380 × 530	120	120
xi)	400 × 500	120	120
xii)	480 × 650	120	120
xiii)	490 × 490	120	120
xiv)	500 × 500	120	120
xv)	500 × 600	120	120
xvi)	500 × 700	120	120
xvii)	520 × 600	120	120
xviii)	560 × 700	120	120
xix)	650 × 700	120	120
xx)	650 × 750	120	120
xxi)	650 × 800	120	120
xxii)	650 × 850	120	120
xxiii)	700 × 700	120	120
xxiv)	750 × 800	120	120
xxv)	800 × 900	120	120
xxvi)	850 × 950	120	120
xxvii)	900 × 1 000	120	120
xxviii)	930 × 1 000	120	120
xxix)	1 000 × 1 050	120	120
xxx)	1 000 × 1 300	120	120

NOTE — The bag sizes given are principally used for carry-home household bags.

Table 3 Recommended Dimensions of U-Shaped Bags (Gusseted)
(*Clause* 7.1)

Sl No.	Size $b \times l$ mm	Nomination Thickness of Film, μm		Nominal Finish Width b mm
		LDPE/LLDPE/Blends	HMHDPE	
(1)	(2)	(3)	(4)	(5)
i)	250 × 350	120	120	150
ii)	300 × 400	120	120	180
iii)	350 × 450	120	120	220
iv)	400 × 500	120	120	260
v)	450 × 550	120	120	300
vi)	500 × 600	120	120	350
vii)	600 × 750	120	120	450
viii)	750 × 900	120	120	600

Table 4 Recommended Dimensions of Bottom Seal Flat Bags
(*Clause* 7.1)

Sl No.	Size $b \times l$ mm	Nomination Thickness of Film, μm	
		LDPE/LLDPE/Blends	HMHDPE
(1)	(2)	(3)	(4)
i)	120 × 250	120	120
ii)	125 × 250	120	120
iii)	200 × 300	120	120

NOTE — The bag sizes given are principally used as nursery bags.

Table 5 Tolerances of Width of Bags
(*Clause* 7.2)

Sl No.	Width b mm	Tolerance of Width b mm
(1)	(2)	(3)
i)	50 to 100	± 3
ii)	120 to 200	± 4
iii)	230 to 300	± 5
iv)	320 to 400	± 6
v)	450 to 560	± 8
vi)	650 to 800	± 12
vii)	850 to 1 000	± 12

7.3 Tolerance on Nominal Thickness

When tested in accordance with Annex A of IS 2508, tolerance on nominal thickness at any given point and the average thickness of the film shall be as follows:

Sl No.	Thickness, μm	Tolerance, Percent
(1)	(2)	(3)
i)	120	± 10
ii)	> 120	± 15

8 REQUIREMENTS

8.1 Appearance

Bags shall be homogeneous and free from defects such as foam, unevenness, crease, fish eye, mixture of foreign matter, pinhole, etc. The shape of the bags shall be uniform and the finish of cut portions shall be of good workmanship.

8.1.1 For printed bags, the printing shall be uniform and free from printing defects.

8.2 Water Leak Test

Put water into a specimen bag to a height of about one fifth of the length thereof and quietly keep it as it is for 1 min. Thereafter, confirm that no water drop falls from the bottom part of bag. In the event of a side seam bag, level of water shall be up to 50 percent height and there shall be no leakage from side seams or the bottom seam.

8.3 Printing Ink Adhesion Test

There shall be no significant removal of the print from the printed surface of a bag when tested in accordance with the method given in Annex A.

8.4 Drop Test

For bags to be used for packing of solid powder or granular products, their strength shall be determined by filling them with the actual product to be packed and subjecting them to a flat drop from a height of 1.2 m on a flat hard surface. The filling product can be the product itself or any other material simulating the actual product in density and flow. The test shall be performed on 5 bags of the same design and material and each sample shall be subjected to one drop only. If not more than one bag shows any bursting or tearing in the drop test, the consignment shall be taken as passing in the test.

9 SAMPLING

9.1 Lot

In a consignment all the polyethylene bags of the same class and size manufactured from the same material under similar conditions of production shall be grouped together to constitute a lot.

9.2 For ascertaining the conformity of the lot, the procedure for sampling and inspection as given in IS 2500 (Part 1) shall be followed. The type of sampling plan, inspection level and acceptable quality level (AQL) to be followed for various characteristics shall be as given in **9.2.1** and **9.2.2**.

9.2.1 For ascertaining the conformity for dimensional requirements and appearance, a single sampling plan with general inspection level II and AQL of 1.5 percent as given in Tables 1 and 2-A of IS 2500 (Part 1) shall be followed.

9.2.2 For all other requirements a single sampling plan with special inspection level S-4 and AQL of 1.5 percent as given in Tables 1 and 2-A of IS 2500 (Part 1) shall be followed.

10 PACKING AND MARKING

10.1 Packing

The packing packets shall be marked with the following information:

a) Dimensions of the bags;
b) Quantity;
c) Indication of the source of manufacturer;
d) Made from virgin polymers; and
e) Recycling mark as per IS 14534.

10.2 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 thereunder, and the products may be marked with the Standard Mark.

11 ORDERING DATA

The purchaser while procuring bags shall specify the following:

a) Classification structure and shape of the bag (*see* **4.2** and **5**);
b) Size and nominal thickness of the bag along with its material; and
c) Colour of the bag.

ANNEX A
(*Clause* 8.3)
TEST FOR PRINTING INK ADHESION

A-1 Apply two strips 25 mm wide transparent pressure sensitive tape or cello-tape to the printed area of the bag, one piece down the length of the bag and the other along the width.

A-2 Press the tape firmly on to the bag and leave for 15 s.

A-3 Remove the tape by pulling slowly at about 1 cm from one end at about 90 ° to the pouch surface.

A-4 There shall be no significant removal of the print from the surface of the bag and the printed material shall be still readable.