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भारतीय मानक मसौदा

2 किलोग्राम या 2 लीटर तक वनस्पति की पैकिंग के लिए नम्य थैलियाँ — विशिष्टि

(आईएस 11352 *का चौथा पुनरीक्षण*)

Draft Indian Standard

FLEXIBLE POUCHES FOR THE PACKING OF *VANASPATI* UP TO 2 KG OR 2 LITRES — SPECIFICATION

(*Fourth Revision of* IS 11352)

(ICS 55.020; 67.200)

Plastics Packaging Sectional Committee, PCD 21	Last date for comments: **19th April 2025**

FOREWORD
(*Formal clauses will be added later*)

This standard was first published in 1985 covering flexible packs for both the edible oils and *VANASPATI*. With the publication of a separate standard covering flexible packaging materials for edible materials for edible oils (*see* IS 12724: 1989 'Flexible packaging materials for packaging of refined edible oils'), this standard was revised in 1994 to cover packaging of *VANASPATI* only.

With the promulgation of the standards of Weights and Measures (Packaged Commodities) Third Amendment Rules, 1994, that edible oils, *GHEE, VANASPATI* and butter oils may be packed by weight or volume basis in sizes 50 g/50 ml, 100 g/100 ml, 200 g/200 ml, 500 g/500ml, 1 kg/1 litre, 2 kg/2 litres, 5 kg/5 litres thereafter in multiples of 5 kg/5 litres, it becomes necessary to make suitable provisions in the standard. The rule also states that in case packing has been done on mass basis, declaration of volume within brackets, and if it is done on volume basis, declaration of mass within brackets, is to be done. These changes were included in this standard through an amendment issued in January 1995.

In the second revision in 1998, requirements for 50 g or 50 ml pouches have been included. Difficulties were faced by pouch manufacturer during implementation of first revision since some of the parameters are to be controlled by film suppliers. In second revision these difficulties were removed.

The flexible material for forming the bag will have to be selected with care as given in IS 10171: 1999 ‘Guide on suitability of plastics for food packaging (*second revision*)’. It should have appropriate barrier properties to ensure adequate storage life for *VANASPATI* without significant change from the initial quality. Further, system must also have physical strength to withstand transportation and transit hazards. There must be no migration of constituents from the flexible packaging material into the product.

Hence, there can be variation in the structure and type of flexible materials available for manufacturing the *VANASPATI* bag. In general, the materials must ensure that the *VANASPATI* packed remains within the accepted quality norms. Also, the packaging material itself must not deteriorate with the passage of time and cause failure and leakage. Performance characteristics are vital in enabling a proper choice of material, but they are time consuming and expensive. Hence, these requirements need to be correlated to certain physical properties which could be determined more regularly, easily and within a shorter time span. The tests are, therefore, classified as type tests (product approval) and acceptance tests (product identification). The pouches shall be subjected to type approval tests and then shall be tested for physical characteristics like construction, thickness, etc., which would be recorded and will be the controlling specification as long as there is no change in the packaging material.

In the third revision in 2018, 5 kg/5 litres have been deleted because the Committee felt that 5 kg/5 litres pouches are not used in the market and decided to revise the standard

In this (*fourth*) revision, major modifications are as follows:

a) Cross-referred standards has been updated; and
b) Amendment has been incorporated.
c) Additional requirement of ECO mark has been deleted
d) Printing requirement has been added
e) Requirement of construction of the pouch has been added

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 covers the requirements for flexible pouches made of thermoplastics film or their combinations with other flexible materials for packing *VANASPATI* in net quantities of 50 g, 100 g, 200 g, 500 g, 1 kg and 2 kg if packed on weight basis or 50 ml, 100 ml, 200 ml, 500 ml, 1 litre and 2 litres if packed on volume basis.

2 REFERENCES

The standard listed in Annex A contains 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 agreement based on standard are encouraged to investigate the possibility of applying the most recent edition of these standards.

3 TERMINOLOGY

3.1 For the purpose of this standard, definitions given in IS 2828, IS 4261 and IS 7019 and the following shall apply.

3.1.1 Type Test — Test carried out to prove conformity with the standard. These are intended for product approval of a given type of pouches/bags.

3.1.2 Acceptance Test — Test carried out on sample taken from a lot passing type test for the purpose of acceptance of the lot on a batch basis.

3.1.3 Lot — In single consignment all the pouches/bags of the same type, same from and belonging to the same batch of manufacture grouped together shall constitute a lot.

4 TESTS

4.1 Classification of Tests

4.1.1 *Type Tests*

The following shall constitute type (product approval) tests (*see* Annex B):

a) Thickness (*see* **5.2**),
b) Vibration leakage test (*see* **5.3**),
c) Storage test (*see* **5.4**),
d) Overall migration (*see* **5.5**),
e) Stack load test (*see* **5.6**),
f) Drop test (*see* **5.7**), and
g) Specific migration (*see* **5.10**)

4.1.2 *Acceptance Tests*

The following shall constitute the acceptance (product identification) tests:

a) Thickness (*see* **5.2**),
b) Overall migration (*see* **5.5**),
c) Stack load test (*see* **5.6**),
d) Drop test (*see* **5.7**),
e) Ink adhesion test (for printed products) (*see* **5.8**),
f) Product resistance of printed pouches (*see* **5.9**), and
g) Specific migration (*see* **5.10**)

4.1.2.1 The batch shall be accepted if the pouches are found to comply with requirements of acceptance tests given in **4.1.2**.

5 REQUIREMENTS

5.1 The materials comprising the flexible packaging materials shall conform to IS 14636.

5.2 Thickness

5.2.1 The overall thickness of the pouch/bag material and the thickness of the individual layers of each ply of the flexible packaging material shall be declared by the producer.

5.2.1.1 The overall thickness and the thickness of individual layer shall be within ± 10 percent of the declared value. The overall thickness shall be checked according to method given in Annex C of IS 2508.

5.3 Vibration Leakage Test

The flexible packaging material shall be formed into pouches, filled and sealed as in the actual filling and sealing process of pouches. The filled pouches/ bags shall be subjected to vibration test as given in Annex C.

5.3.1 *Construction*

The pouches shall be formed, filled and sealed on the form, fill and sealing machine, leaving adequate head space in the pouch for filling and sealing operation. The width and length of the pouch shall be according to the dimensions of the forming and sealing system. The variation in the width and length of the flat pouch shall not be more than 3 mm of the mean dimensions.

5.4 Storage Test

5.4.1 Pouches/bags made from flexible packaging material for packing *VANASPATI*, filled with the *VANASPATI*, shall be tested for storage properties.

5.4.2 The storage test shall be carried out at (38 ± 1) °C and (90 ± 2) percent relative humidity (accelerated conditions) and (27 ± 1) °C and (65 ± 2) percent RH (standard conditions). The free fatty acid (as percentage of oleic acid), moisture content when determined as per the method given in IS 10633 and rancidity of the contents when determined as per the method given in IS 8639 shall be noted initially and at the end as per the schedule given in col (3) and col (4) of Table 1.

Table 1 Test Period for Storage Test
(*Clause* 5.4.2)

Sl No.	Shelf Life (Months) [1)]	Accelerated Conditions (Days)	Standard Conditions (Days)
(1)	(2)	(3)	(4)
i)	3	30	90
ii)	6	60	180
iii)	9	90	270
iv)	12	120	365

[1)] The period at **6.2** (d) to the date 'best before……' at **6.2** (e).

During the test period the pouches shall also be observed for any delamination, seam failure, print deformation and any oil seepage into the laminated structure. The product shall be assessed for the moisture content, free fatty acid and rancidity. The pouches shall be accepted when (a) the values of the moisture content and free fatty acid shall not exceed the stipulated limits in IS 10633, and (b) there is no delamination and no leakage during and at the end of declared shelf life.

5.5 Overall Migration

Pouch or representative sections shall be subjected to overall migration test with *n*-heptane at (27 ± 2) °C for 30 min according to the method given in IS 9845. The maximum extraction value of the material shall not exceed 10 mg/dm^2 and 60 ppm.

5.6 Stack Load Test

The unit packs when subjected to a uniformly distributed stack load for 24 h shall not show any leakage at the seam or bursting of the films. The details of stack loads and the test method are given in Annex D.

5.7 Drop Test

The filled pouches shall be subjected to a vertical drop test at ambient condition, as detailed in Annex E and shall meet the acceptance criteria there in.

5.8 Ink Adhesion of Printed Pouch/Bag

The printed matter on the pouch/bag when tested in accordance with the method given in Annex F, shall be still legible.

5.9 Product Resistance of Printed Pouch/Bags

The printed matter on the pouch/bag when tested in accordance with the method given in Annex G, shall be still legible.

5.10 Determination of Specific Migration

5.10.1 The specific migration is tested to determine the quantity of a specific substance that can migrate from a food packaging material or food container into food. Specific migration limits are usually expressed as mg/kg food.

5.10.2 The sample/simulants shall be prepared using the procedure described in IS 9845.

5.10.3 The limit of specific migration of all toxic substances when tested as prescribed in col (4) of Table 2 shall not release the substances in quantities exceeding the specific migration limits listed under Table 2.

Table 2 Specific Migration Limits
(*Clause* 5.10.3)

Sl No.	**Toxic Substances**	**Migration Limit, *Maximum*, mg/kg**	**Test Method**
(1)	(2)	(3)	(4)
i)	Barium	1.0	IS 3025 (Part 2)
ii)	Cobalt	0.05	-do-
iii)	Copper	5.0	-do-
iv)	Iron	48.0	-do-
v)	Lithium	0.6	-do-
vi)	Manganese	0.6	-do-
vii)	Zinc	25.0	-do-
viii)	Antimony	0.04	-do-
ix)	Phthalic acid, bis (2-ethylhexyl)ester (DEHP)	1.5	ISO 18856

6 PACKING AND MARKING

6.1 The filled pouches/bags shall be supplied in corrugated boxes.

6.1.1 Each box shall be marked with the following information:

a) Indication of the source of manufacture,
b) Number of pouches/ bags,
c) Mass of the box, and
d) Batch number and date of manufacture.

6.2 Flexible Pouches

Pouches/bags shall be printed with the information as required by the purchaser and the statutory requirements which *inter-alia* include the following:

a) Indication of the source of manufacture and trade-mark, if any;
b) Net quantity packed in litres or ml and within brackets the corresponding quantity in kg or g and within brackets the corresponding quantity in litres or ml;
c) Batch/Code number;
d) Date of manufacture;
e) Best before…… in line with **5.4.2**; and
f) Recycling symbol in line with IS 14534.

6.3 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.

6.4 Printing shall be neat and clean without any defects. Printing ink shall comply with IS 15495.

ANNEX A
(*Clause* 2)
LIST OF REFERRED STANDARDS

IS No./ Other Publication	*Title*
IS 2508 : 2024	Polyethylene films and sheets — Specification (*fourth revision*)
IS 2771 (Part 1) : 2022	Corrugated fibreboard boxes — Specification: Part 1 General requirements (*third revision*)
IS 2828 : 2019/ ISO 472 : 2013	Plastics — Vocabulary (*second revision*)
IS 3025 (Part 2) : 2019/ ISO 11885 : 2007	Methods of sampling and test (physical and chemical) for water and wastewater: Part 2 Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (*first revision*)
IS 4261 : 2001	Glossary of terms relating to paper and pulp based packaging materials (*first revision*)
IS 7019 : 1998	Glossary of terms in plastics and flexible packaging, excluding paper (*second revision*)
IS 7028 (Part 2) : 2002	Performance tests for complete, filled transport packages: Part 2 Vibration test at fixed low frequency (*second revision*)
IS 8639 : 1977	Code for evaluation of the effect of packaging and storage on the sensory qualities of foods and beverages
IS 9845 : 1998	Determination of overall migration of constituents of plastics materials and articles intended to come in contact with foodstuffs — Method of analysis (*second revision*)
IS 10633 : 2017	*Vanaspati* — Specification (*third revision*)
IS 14534 : 2023	Plastics — Recovery and recycling of plastics waste — Guidelines (*second revision*)

IS 14636 : 1998	Flexible packaging materials for packaging of edible oils, *ghee* and *vanaspati*
IS 15495 : 2020	Printing ink for food packaging — Code of practice (*first revision*)
ISO 18856 : 2004	Water quality — Determination of selected phthalates using gas chromatography/mass spectrometry

ANNEX B
(Clause 4.1.1 *and* 5.2.1.1*)*
PROCEDURE FOR TYPE/PRODUCT APPROVAL

B-1 The pouch/bag shall be approved if it conforms with the requirements of tests given in **4.1.1**.

B-2 Accordingly, pouch/bag shall be subjected to vibration test followed by storage tests. Besides, stack load test and drop test will also be carried out to prove pack integrity (leakers).

B-3 The pouch successfully passing these type tests shall be tested for physical characteristics like construction, thickness which would be recorded and these shall be the controlling specification, as long as there is no change in the initial quality of *VANASPATI* and also the flexible packaging materials, as fixed.

B-4 In the event of any change in the initial quality of *VANASPATI* or of the flexible packaging materials re-approval will be require and the type tests shall be carried out afresh as in **B-1** to **B-3** and the controlling specifications for acceptance test redetermined and fixed.

B-5 When the proposed changes are such that it may not be expected to significantly affect the performance (satisfactorily passing the type tests), the certifying/testing authority may at its discretion recommend waiving complete re-approval or may require only partial re-approval in order to determine the significance and acceptability of the proposed changes and to redetermine and to fix the controlling specification for acceptance tests.

B-6 If any supplier of pouches/bags wishes to obtain product/type approval for material meant for packing a type and quality of *VANASPATI* having earlier obtained approvals for other types of materials for packing the same type and quality of *VANASPATI*, he shall file a certificate stating that the product has successfully passed the type tests as given in **B-1**. The certifying/ testing authority may recommend waiving off these type tests or may require only partial approval tests for the purpose of determining the controlling specifications for acceptance tests.

B-7 In the event of material found to be failing one or more type tests, the testing authority may call for fresh samples not exceeding twice the number of original samples and subject them to all the test(s) may be considered to have been satisfied and product approval given only if the repeat test(s) show no failure.

ANNEX C
(*Clause* 5.3)

VIBRATION LEAKAGE TEST

C-1 VIBRATION TABLE

This shall be equipment conforming to IS 7028 (Part 2).

C-2 MODE OF PACKAGING

Pouches/bags shall be packed flat in a corrugated fibre board box conforming to IS 2771 (Part 1).

C-3 TEST CONDITIONS

Test shall be carried out at (43 ± 1) °C at a constant temperature room with packs filled with *VANASPATI*.

Alternately, test may be carried out at ambient temperature with the packs filled with refined edible oils. In the case of dispute, the ambient temperature shall be (27 ± 2) °C.

C-4 PROCEDURE

Four outer boxes, containing the product, shall be kept on the vibration table and vibrated at a peak acceleration of slightly above 1 g for 30 min. After the test, the pouches/bags are examined for apparent leaks and removed. The remaining are wiped clean and placed flat on blotting paper on the vibration table at 2 Hz for 10 min and the pouches/bags are examined for apparent leaks and counted and added to the leakers.

C-5 CRITERIA FOR ACCEPTANCE AND RETESTING

The lot shall be considered passing in the test, if not more than one pouch/bag shows leakages in the test. In the event of leakage of more than one pouch/bag, a retest involving the same quantities as per **C-4** shall be taken and tested for vibration test. The lot shall be considered passing in the retest if not more than one pouch/bag show leakage, otherwise the lot is rejected.

ANNEX D
(*Clause* 5.6)
STACK LOAD TEST

D-1 PROCEDURE

Four unit packs shall be selected from a lot of 100 packs filled in the usual way. The packs shall be subjected to a uniformly distributed load as given below for 24 h. The pouches/bags shall lie in a flat position.

The testing shall be at (43 ± 1) °C at constant temperature room with the pouches/bags filled with *VANASPATI*. Alternately, the test may be carried out at ambient temperature with pouches/bags

filled with refined edible oils. In the case of dispute, the ambient temperature shall be (27 ± 2) °C. The application of load shall be through a flat wooden plank which shall be placed on the unit pack in such a way that the load distribution is equal on each pack.

Pack Capacity	*Stack Load (N) for*	
	One Pouch	*Four Pouches*
50 g or 50 ml	15	60
100 g or 100 ml	20	80
200 g or 200 ml	30	120
500 g or 500 ml	40	160
1 kg or 1 litre	50	200
2 kg or 2 litres	100	400

D-2 RESULT

On completion of the test, the packs shall be examined for any leakage at the seam or bursting. No leakage or bursting is permitted.

ANNEX E
(*Clause* 5.7)
DROP TEST

E-1 SAMPLING

Ten filled unit packages from a lot of one hour production or 1 000 packs filled and sealed in the usual way. The test samples are allowed to cool to 43 ± 1°C.

E-2 METHOD

Five units shall be tested first. Each shall be subjected to a flat drop at (43 ± 1) °C on a flat hard surface. The drop height shall be as follows:

Pack Capacity	*Drop Height*
Below 1 kg or 1 litre	1.2 m
1 kg or 1 litre and 2 kg or 2 litres	0.75 m

E-3 CRITERIA FOR ACCEPTANCE AND RETESTING

Each flexible pouch/ bag shall be examined for any leakage of the contents and delamination after the test. If none of the five pouches/bags selected for test fails in drop test, the lot shall be considered as passing. If just one fails, the other set of five shall be tested in the same manner as above. If none fails, the lot shall be accepted otherwise the lot shall be rejected.

ANNEX F
(*Clause* 5.8)

TEST FOR INK ADHESION OF PRINTED POUCHES/BAGS

F-1 Apply two strips of 25 mm wide transparent pressure sensitive taps or cello-tape to the printed area of the pouch. One piece down the length of the pouch and the other along the width.

F-2 Press the tape firmly on to the pouch and leave for 15 s.

F-3 Remove the tape by pulling slowly at about 10 mm/s from one end at about 90 ° to the pouch surface.

F-4 There shall be no significant removal of the print from the surface of the pouch and the printed material shall be still legible.

ANNEX G
(*Clause* 5.9)
TEST FOR PRODUCT RESISTANCE OF PRINTED POUCHES/BAGS

G-1 Leave the pouch to stand for at least 24 h after printing.

G-2 Partially immerse the pouch, or representative sections out from the printed area, in the melted *VANASPATI* intended to be packed into the pouch at (43 ± 1) °C for 1 h. Remove the pouch or representative sections from the product and wash with cold water.

G-3 Rub each pouch or representative section firmly with paper tissue 10 times.

G-4 There shall be no significant removal of the print from the surface of the pouch and the printed material shall be still legible.