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Draft Indian Standard

POLYETHYLENE TEREPHTHALATE (PET) CONTAINERS FOR THE PACKAGING OF SOLID AND SEMI-SOLID FOODS INCLUDING VANASPATI — SPECIFICATION

(*First Revision of* IS 14764**)**

(ICS No. 83.080.20)

Plastics Packaging Sectional Committee, PCD 21	Last date for receipt of comment is 10 April 2023

FOREWORD

(Formal clause will be added later)

Poly (ethylene terephthalate) (PET) bottles / containers ease of handling, safety, light weight and superior barrier properties against water vapour, carbon-dioxide and oxygen: excellent retention of organoleptic properties and ease of recyclability made it popular for the packaging of food items. Containers/bottles produced using virgin PET are normally made without the use of any additives or plasticizers. These features provide an additional reason for the popularity of PET. Use of PET containers for packaging of *vanaspati* has been approved in the "Guide on suitability of Plastics for food packaging" IS 10171: 1999.

This Indian Standard was originally published in 2000. In view of their several advantages, PET containers are increasingly used for packaging several semi-solid fatty foods beyond *vanaspati*. Hence, in this revision the scope of this Standard has been expanded to include other edible fats and edible fat emulsions [as listed in section 2.0 of Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011], and other types of semi-solid as well as solid food items. Thus, this Standard aims to address blow moulded PET containers for a comprehensive cluster of food items. This Standard however does not address PET containers made by other formation techniques such as thermoforming.

This revision is a much-needed follow-up to incorporate emerging considerations on migration limits and recyclability of plastics, alignment with Regulations on Plastic Waste Management (PWM) Rules 2016 and with other Indian Standards on PET containers, etc. Major modifications/incorporations in this revision are:

- The title of the standard has been modified;
- limits on specific migration (as per Food Safety and Standards (Packaging) Regulation 2018 and its Amendments) have been incorporated;
- additional capacities (pack sizes) have been added, to ensure that the pack sizes are in compliance with extant Regulations in India, reference was made to Legal Metrology (Packaged Commodity) Rules, 2011;

— features for facilitating recyclability and other requirements in consonance with the Plastic Waste Management (PWM) Rules, 2016 and their Amendments;
— test for barrier properties have been incorporated; and
— test for storage stability has been incorporated.

Semi-solid fatty foods are presently packed in tin containers, laminated paper boards, blow-moulded HDPE containers and flexible pouches/packs. The Indian Standards published on the subjects are given in Annex D.

The container shall be of any nominal capacity as has been provided by applicable Regulations e.g. Legal Metrology Act (2009), Agmark. The capacity tolerances for the PET containers in this Standard are derived from the provisions in the 2 November 2021 version of the Legal Metrology (Packaged Commodity) Rules 2011.

The labelling requirements have been placed in accordance with:

— The Plastic Waste Management (PWM) Rules, 2016 and all amendments up to 2022.
— The Food Safety and Standards (Labelling and Display) Regulation, 2020 and all amendments up to 2022.

For generic and sustainability requirements, Annex B-1 and B-2 may be referred.

In reporting the result of a test or analysis made in accordance with this Standard, if the final value, observed or calculated, is to be rounded off, it shall be done 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, methods of sampling and tests for suitably blow moulded polyethylene terephthalate (PET) containers for the packaging of a variety of solid and semi-solid food items.

NOTE — Typical examples of the food items are: solid foods [such as bakery products, cereals, chips, confectionaries, dairy products (such as *khoya* and its products), dry *chutneys*, dry fruits, food grains, savouries (such as *chiwda*)] and semi-solid foods [such as *vanaspati*, fatty foods (such as butter, creams, *makkhan*, margarine, mayonnaise, peanut butter), *ghee*, gravies, honey, paste-based products, salad & sandwich spreads, sauces, syrups, traditional foods (such as batters, *chutneys*, pickles, *shrikhand*), any other non-fatty foods.]

2 NORMATIVE REFERENCES

The standards listed in Annex C 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 listed in Annex C.

3 TERMINOLOGY

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

4 REQUIREMENTS

4.1 PET Container

The PET material for the container body shall:

a) be food grade conforming to IS 13193.
b) be of virgin grade.
c) use the pigments and colourants as per the lists prescribed in IS 9833.

4.2 Handle, Closure and Other Components

Components of PET containers for semi-solid fatty foods shall be of suitable design, shape, sizes, formats, etc. as agreed to between the purchaser and the supplier. Materials for these, shall fulfil following requirements:

4.2.1 *Handle and Closure*

4.2.1.1 The material used for handles and closures shall be food grade material of High density polyethylene (HDPE) conforming to IS 7328, Polypropylene (PP) conforming to IS 10951 and Polyethylene Terephthalate (PET) conforming to IS 13193.

4.2.1.2 Other suitable materials like Steel, Mild Steel duly protected with polish or paints to avoid rust, may also be used. These materials shall not come in direct contact with the product.

4.2.2 *Sealing Wad in the Closure*

4.2.2.1 The wad shall be of natural cork board or pulp board or expanded polyethylene (EPE) or any other suitable food grade material.

NOTE — The sealing wad shall be compatible with the packed contents. PVC or PVC-aided wads shall not be used.

4.2.3 *Container Seal*

4.2.3.1 Aluminium foils complying with IS 8970 and laminated / coated with food grade polyethylene complying with IS 7328.

4.2.3.2 Diaphragm seals of plastics.

4.2.4 The pigments and colourants used for plastic components coming in contact with the contents shall comply with the list and limits of the pigments and colorants prescribed in IS 9833.

4.3 Labelling materials

4.3.1 Label material may consist of one or more of the following materials:

a) Paper labels that may optionally be
   — metallised
   — coated with finishing chemicals
   — coated with PE
   — laminated with PP
   — any combination of the above

b) Self-adhesive plastic labels may be made of transparent or coloured Polypropylene (PP) that are suitable for flexography, rotogravure or screen printing.

NOTE — The thickness of the label film should be in compliance with the stipulations placed in PWM Rules.

4.3.2 Sleeves made of plastics other than PVC may be used as alternative to labels.

4.3.3 Printing inks and coating chemicals shall comply with IS 15495.

4.3.4 Glue shall be non-toxic hot-melt or other adhesives that allows the label to be glued on the PET bottle during the entire shelf life. All glues shall be free from Bisphenol-A when tested as mentioned in ISO 18857 – 2.

NOTE — In-situ labels, inkjet printing and other related technological innovations may be adopted subject to their compliance with **4.3**.

5 WORKMANSHIP AND FINISH

5.1 Manufacture

5.1.1 The container shall be manufactured by appropriate blow moulding process, the handle and the closure shall be made by injection moulding.

5.1.2 5 kg or 5 l containers shall be provided with a handle. The container, closure and the handle shall be free from any visual defects like local thinning, warping, burning and non-uniform colour dispersion.

NOTE — 1 kg or 1 litre and 2 kg or 2 l containers may or may not be provided with the handle.

6 SHAPE AND DIMENSIONS

6.1 PET containers and components shall be of suitable design, shape, sizes, formats, etc. as agreed to between the purchaser and the supplier. The specified overall height and diameter of the container shall be measured according to the methods given in 4.1 and 4.2 of IS 2798. The tolerances on various dimensions shall be as follows:

Up to and including 100 mm	±0.5 mm
Over 100 mm and up to and including 200 mm	±1.0 mm
Over 200 mm	±1.5 mm

6.2 Wall Thickness

The wall thickness shall be measured in accordance with the method given in 4.5 of IS 2798. The minimum wall thickness at any point of the container shall be:

— not less than 0.20 mm for containers of 1 and 2 kg or 1 and 2 l capacity,
— 0.30 mm for the containers of 5 kg or 5 l.

NOTES:

1. The wall thickness can be different in different segments depending on the design of the container.
2. The wall thickness can vary within each segment of the container subject to minimum thickness mentioned above.

7 CAPACITY (PACK SIZES)

7.1 Brimful Capacity

The Brimful capacity of the container needs to be higher than the nominal capacity to ensure that no spillage occurs during filling, packing, transportation, storage, handling and usage. The brimful capacity of bottles shall be measured by method given in 5 of IS 2798. The brimful capacity shall be as agreed between buyer and supplier.

NOTE — The brimful capacity shall exceed the nominal capacity as per B-3.

8 MASS

8.1 The mass of the container shall be as agreed to between the purchaser and the supplier. The mass of the lid and handle, when provided, shall not be included in the mass of the containers.

8.2 The tolerance on the nominal mass of the container specified by the purchaser shall be as under:

Container Capacity (kg or litre)	Tolerance Nominal Mass (percent)
Up to 2.0	± 7
Above 2.0	± 4

8.3 Tolerance on the nominal specified mass of the lid and the handle checked individually shall be ± 5 percent.

9 PERFORMANCE TESTS

9.1 Closure Leakage Test

The containers filled with coloured water at ambient temperature and closed tight with the closure with inner seal heat sealed to its mouth, to be kept in an upside down on a blotting paper for 30 min as per 6.1 of IS 2798. The container shall not show any leakage on the blotting paper through the closure.

9.2 Drop Impact Test

9.2.1 The container filled with water at standard temperature of 27 ± 1 °C and closed tight with the closure with inner seal heat-sealed to its mouth shall not show any sign of rupture or leakage on the part of container body, closure, handles and the inner seal, when tested in accordance with the method prescribed in 8 of IS 2798.

9.2.2 The drop height for any container size will be as follows:

Container Capacity (kg or litre)	Drop test height (m)
Up to 5	1.20
> 5 to 10	1.00
> 10 to 12	0.80
> 12 to 15	0.50
> 15	0.50

9.2.3 The container with the cap when subjected to the drop test according to method 8 of IS 2798 shall not show any sign of cracking, nor shall it rupture, nor shall there be any leakage from the walls of the container. Slight de-shaping of the body shall not render the container unacceptable in the test.

9.3 Stack Load Test

The containers shall not show any deformation likely to reduce their strength, cause leakage or reduction in effectiveness of the closure or cause instability in stacks when tested in accordance with the method prescribed in 9 of IS 2798.

9.4 Handle Pull Test

The container provided with the handle when tested according to the method prescribed in 11 of IS 2798 shall not show any damage to the handle or the hinges.

9.5 Ink Adhesion for Printed Containers

The printed containers when tested in accordance with the method prescribed in 13 of IS 2798 shall not show any significant removal of the print from the container surface and the print shall be legible to the naked eye after the test.

9.6 Product Resistance of Printed Containers

The printed containers when tested in accordance with the method prescribed in 14 of IS 2798 shall not show any significant removal of the print from the container surface and the print shall be legible to the naked eye after the test.

9.7 Migration Test

9.7.1 *Determination of overall Migration Test*

The PET container Shall be subjected to an overall migration test as per the following requirements of IS 9845:

— The choice of simulants and test conditions (time-temperature) depends on the type of food and condition of use of food products.
— The maximum extraction values for the container material shall not exceed 60 mg/l and 10 mg/dm^2.

9.7.2 *Determination of Specific Migration*

9.7.2.1 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.

9.7.2.2 The sample/simulants shall be prepared using the procedure described in IS 9845. The testing for detection of toxic substances shall be carried out as per method given in Table 1.

9.7.2.3 The limit of specific migration of all toxic substances when tested as prescribed in column 4 of Table 1 shall not release the substances in quantities exceeding the specific migration limits listed under Table 1.

Table 1
(*Clauses* 9.7.2.2 *and* 9.7.2.3)

Specific Migration Limits

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

9.8 STORAGE STABILITY TEST

B-4.1 Storage stability test is meant to verify the suitability of the PET container for providing the desired shelf life to the content.

B-4.2 The Storage stability test shall be conducted keeping in mind the following:

— The Standard applicable for the food content stored shall be followed, if available.
— In case where Standard of type of food is not available, it is the responsibility of the supplier to ascertain that the PET container can maintain the food safety of the content as specified by the food manufacturer such as organoleptic properties, rancidity, coliform count, yeast & mould content, over its shelf life. The food safety parameters shall meet the provisions of the applicable Rules & Regulations of the Food Safety and Standards Act, 2006.

10 ADDITIONAL REQUIREMENTS

10.1 Barrier Properties

10.1.1 The additional requirement of the container will depend upon the buyer specific product composition and product expected shelf life. It can be determined based on the agreement between purchaser and supplier.

10.1.2 PET containers shall be tested for water vapour transmission rate (WVTR) as per ISO 2528, oxygen transmission rate (OTR) as per ISO 15105-2 and carbon dioxide transmission rate (COTR) as per ISO 15105-2 as agreed between purchaser and supplier.

NOTE — The duration, temperature and relative humidity conditions for testing the transmission rates shall be decided and declared by the manufacturer of PET containers in consultation with the buyer. These testing condition shall adequately reflect the desired shelf-life and the values obtained shall be used as the controlling specifications for further acceptance tests.

10.2 ECO-Mark Criteria

10.2.1 *General Requirement*

10.2.1.1 The product shall conform to the requirements for quality, safety and performance prescribed.

10.2.1.2 The manufacturer shall produce to BIS the consent clearance as per the provisions of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981 along with the authorization, if required under Environment (Protection) Act, 1986 and the Rules made thereunder while applying for the ECO-Mark. The manufacturer shall produce documentary evidence with respect to the compliance of regulation under Prevention of Food safety and Standards Act, 2005 and Drugs and Cosmetic Act, 1940 and Rules made thereunder, wherever necessary.

10.2.1.3 The product must display a list of critical ingredients in descending order of quantity present expressed as percent of the total. The list of such ingredients shall be identified by Bureau of Indian Standards.

10.2.1.4 The product packaging shall display in brief the criteria based on which the product has been labelled as 'Environment Friendly'.

10.2.1.5 The material used for product packaging shall be recyclable or biodegradable.

10.2.1.6 It shall also suitably mention that ECO-Mark label is applicable only to the packaging material that ECO-Mark label is applicable only to the packaging material/package, if content is not separately covered under ECO-Mark. It may be stated that ECO-Mark is applicable to the product or packaging material or both.

10.2.2 *Product Specific Requirements*

For the manufacture of these items one or more of the virgin material covered in following Indian Standards shall be used.

IS No.	*Title*
IS 10142 : 1999	Polystyrene (Crystal and high impact) for its safe use in contact with foodstuffs, pharmaceuticals and drinking water – Specification (*first revision*)
IS 10151 : 2019	Polyvinyl Chloride (PVC) and its copolymers for its safe use in contact with foodstuffs, pharmaceuticals and drinking water — Specification (*first revision*)
IS 10910 : 1984	Specification for polypropylene and its copolymers for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
IS 11434 : 1985	Specification for ionomer resins for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
IS 11704 : 1986	Specification for Ethylene Acrylic Acid (EAA) copolymers for their safe use in contact with foodstuffs, pharmaceuticals and drinking water
IS 12247 : 1988	Specification for Nylon 6 polymer for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
IS 12252 : 2017	Polyalkylene terephthalate (PET and PBT), their copolymers and list of constituents in raw materials and end products for their safe use in contact with foodstuffs and pharmaceuticals (*first revision*)

11 MARKING

11.1 Each container shall be marked with the indication of the source of preform/ container producer.

11.2 Each container shall be legibly marked/ labelled in English with:

a) Name of material (PET) along with recycling symbol, complying with IS 14534 (as "symbol"),

b) Nominal capacity in g/kg or ml/litre,
c) Brand owner's name and/or his registered trademark, if any,
d) Date of manufacture;
e) Batch No. or Code No. or other identifiers to enable traceability of its consignment,
f) 'Food grade',
g) The ECO Mark, if compliant,
h) Any other information required by the purchaser,
i) Any other information mandated by any other statutory authorities.

11.3 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.

12 SAMPLING

Sampling of container shall be drawn and the criteria for conformity determined as described in Annex A.

ANNEX A
(*Clause* 12)

SAMPLING

A-l SCALE OF SAMPLING

A-1.1 Lot

In any consignment all the containers of the same material, nominal capacity and drawn from a single batch of manufacture shall be grouped together to constitute a lot.

A-1.2 Scale of Sampling

For ascertaining the conformity of the lot to the requirements of this standard, tests shall be carried out for each lot separately. The number of containers to be sampled from a lot shall be in accordance with Table 2.

Table 2 Scale of Sampling and Acceptance Number
(*Clause* A-1.2)

Lot Size	**For Visual Examination** ***(Clause 5.1.2)***		**For Closure Leakage Test** ***(Clause 9.1)***		**For Wall Thickness, Ink Adhesion, Product Resistance, Migration Test and Barrier properties** ***(Clauses 6.3, 9.5, 9.6, 9.7 and 10.1)***	
	Sample Size	Acceptance Number	Sample Size	Acceptance Number	No. of Samples	Acceptance Number
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Up to 500	13	1	5	0	2	0
501 to 1000	20	2	8	0	2	0
1001 to 3000	32	3	13	0	2	0
3001 to 5000	50	5	20	1	3	0
5001 and above	80	7	32	2	5	0

NOTES —
1 "Acceptance Number" mentioned in Table 2 and in Clause A-2.1 & 2.3 refers to the number of acceptable failures for a given sample size.
2 For details on the significance of the columns and other parameters, paragraphs given in A-2 below may be referred.

A-l.3 The containers shall be selected at random from the lot. To ensure the randomness of selection, methods given in 4905 may be followed.

A-2 CRITERIA FOR CONFORMITY

A-2.1 Visual Examination

The sample containers selected as per col 2 of Table 2 shall be examined for manufacturing conditions (**5.1.2**). Any containers failing in one or more of the requirements shall be termed as defective. The lot shall be accepted under this head, if the number of defective containers in sample does not exceed the acceptance number given in col 3 of Table 2.

A-2.2 Brimful Capacity, Container Mass and Mass of Handle and Lid

For the purpose of above tests, five containers for lot size up to 5000 and 10 containers for lot size above 5000 shall be selected at random from the samples already drawn according to **A-1.3**. Each of the sample containers shall be subjected to tests for brimful capacity (**7.1**), container mass (**8.1**), and the mass of lid and handle (**8.3**). There shall be no failure if the lot is to be accepted under this clause.

A-2.3 Test for Closure Leakage

The number of sample containers to be drawn shall be in accordance with col 4 of Table 2. Each of the sample -containers shall be subjected to closure leakage test. The number of failures shall not exceed the acceptance number given in col 5 of Table 2.

A-2.4 Wall Thickness, Ink Adhesion, Product Resistance, Migration and Barrier properties

The sub-sample size as given in col 6 of Table 2 shall be subjected to tests for wall thickness, handle pull test ink adhesion, product resistance and migration tests. No failures shall occur for acceptance of the lot under this clause.

A-2.5 Drop Impact Test, Stack Load Test and Handle Pull Test

One set of sample container as given in the test methods (**9.2, 9.3** and **9.4**) shall be drawn from the lot and these shall be subjected to the respective tests. The sample shall pass the tests for acceptance of the lot in respect of drop impact and stacking requirements.

ANNEX B
(Informative)

B-1 GENERIC REQUIREMENTS

B-1.1 Material Requirements

B-1.1.1 All components of the PET containers that meet the requirements specified in the relevant section(s) of **4** at the approval stage shall be maintained in the same quality by the supplier in all subsequent supplies.

B-1.1.2 While specifications have been identified at various places, all components that come in contact with the contents of the containers, shall be in compliance with the appropriate Indian Standards for food contact materials (FCM) as available.

B-2 SUSTAINABILITY REQUIREMENTS

B-2.1 All components of the container should be in compliance with the stipulations placed in the PWM Rules, such as:

— All components of the container, singly and together, lending themselves to recycling or recovery.
— The container shall be designed to facilitate collection and/or return into the supply chain for recycling, recovery or reuse.

> NOTE — The term ‘components’ used in this Standard includes the PET container and all other associated parts such as the cap, wad, label, etc., some of which may not come in contact with the contents.

— The material for the PET container should not contain any additive for biodegradability or compostability to ensure recyclability.

B-3 BRIMFUL CAPACITY

B-3.1 The brimful capacity shall exceed the nominal capacity as follows:

a) Firstly, nominal capacity (N) shall be decided.
b) the permissible tolerance (± X) for the desired nominal capacity as laid in Table 1 of Schedule I, Rule 2(e) of Legal Metrology (Packaged Commodity) Rules 2011 shall be noted.
c) The tolerance shall be added to the nominal capacity (N + X).
d) Next, note that the brimful capacity will have its own tolerance limits (± Y)
e) Hence the minimum brimful capacity will be (N + X + Y) subject to fulfilling the requirement that, when the bottle is held by hand, the contents are still below the brim.

B-3.2 The maximum brimful capacity (Z), however, can vary depending upon the properties of the content (e.g. specific gravity) and the wide variety possible in the container design and format.

B-3.3 Hence N, Y and Z shall be agreed to between the manufacturer and the purchaser.

ANNEX C
(*Clause* 2)

IS No. / Other Publication	**Title**
IS 2798 : 1998	Method of test for plastics containers (*first 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 4905 : 2015 / ISO 24153 : 2009	Random sampling and randomization procedures (*first 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 (*second revision*)
IS 8970 : 1991	Aluminium foil laminates for packaging (*first revision*)
IS 9833 : 2018	List of colourants for use in plastics in contact with foodstuffs, pharmaceuticals (*second revision*)
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 10142 : 1999	Polystyrene (Crystal and high impact) for its safe use in contact with foodstuffs, pharmaceuticals and drinking water – Specification (*first revision*)
IS 10151 : 2019	Polyvinyl Chloride (PVC) and its copolymers for its safe use in contact with foodstuffs, pharmaceuticals and drinking water — Specification (*first revision*)

IS 10910 : 1984	Specification for polypropylene and its copolymers for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
IS 10951 : 2020	Specification for polypropylene (PP) materials for moulding and extrusion (*second revision*)
IS 11434 : 1985	Specification for ionomer resins for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
IS 11704 : 1986	Specification for Ethylene Acrylic Acid (EAA) copolymers for their safe use in contact with foodstuffs, pharmaceuticals and drinking water
IS 12247 : 1988	Specification for Nylon 6 polymer for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
IS 12252 : 2017	Polyalkylene terephthalate (PET and PBT) their copolymers and list of constituents in raw materials and end products for their safe use in contact with foodstuffs, pharmaceuticals (*second revision*)
IS 13193 : 1992	Polyalkylene terephthalate (PET and PBT) for moulding and extrusion — Specification
IS 14534 : 2016	Plastics — Guidelines for the recovery and recycling of plastics waste (*first revision*)
IS 15495 : 2020	Printing ink for food packaging — Code of practice (*first revision*)
ISO 2528 : 2017	Sheet materials — Determination of water vapour transmission rate (WVTR) — Gravimetric (dish) method
ISO 15105-2 : 2003	Plastics — Film and sheeting — Determination of gas-transmission rate — Part 2 : Equal-pressure method
ISO 18856 : 2004	Water quality — Determination of selected phthalates using gas chromatography/mass spectrometry
ISO 18857-2:2009	Water quality — Determination of selected alkylphenols — Part 2: Gas chromatographic-mass spectrometric determination of alkylphenols, their ethoxylates and bisphenol A in non-filtered samples following solid-phase extraction and derivatisation

ANNEX D
(*Foreword*)

IS No.	*Title*
IS 10325 : 2000	Square tins — 15 kg/litre for *ghee, vanaspati*, edible oils and bakery shortenings — Specification (*second revision*);
IS 10339 : 2000	*Ghee, vanaspati*, edible oils tins up to 10 kg/litre capacity — Specification (*second revision*);
IS 10840 : 1994	Blow moulded HDPE containers for packing of *vanaspati* — Specification (*second revision*);
IS 11352 : 2018	Flexible pouches for the packing of *vanaspati* up to 2 kg or 2 litres — Specification (*third revision*);
IS 14129 : 1994	Flexible packaging material for packing of *vanaspati* in 10 kg and 15 kg packs — Specification; and
IS 14319 : 1995	Laminated paper board pack for *vanaspati* — Specification.