भारतीय मानक
Indian Standard

IS 14537 : 2024

अल्कोहल के पैकेजिंग के लिए पोलीइथाइलीन टेरीफथैलेट (पीईटी) बोतलें — विशिष्टि

(पहला पुनरीक्षण)

Poly (Ethylene Terephthalate) (Pet) Bottles for Packaging of Alcoholic Beverages — Specification

(First Revision)

ICS 55.100

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
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December 2024 **Price Group 7**

Plastics Packaging Sectional Committee, PCD 21

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Plastics Packaging Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

Poly (ethylene terephthalate) (PET) bottles/containers are becoming popular on account of their appearance, safety, non-fragility, light weight and good barrier properties against water vapour, carbon dioxide and oxygen, excellent retention of organoleptic properties and ease of recyclability. IS 10106 (Part 1/Sec 1) : 1990 'Packaging code: Part 1 Product packaging, Section 1 Foodstuffs and perishables' specifies the use of PET bottles for packaging of different types of alcoholic beverages. Also, IS 10171 : 1999 'Guide on suitability of plastics for food packaging (*second revision*)' provides a comprehensive list of food items and packaging materials and formats, therefore, wherein it exclusively specifies the use of PET bottles for packaging of alcoholic beverages.

This standard was first published in 1998. This revision has been brought out to incorporate editorial alignment and compliance with various applicable regulations. The major modifications in this revision are:

a) Requirement of material has been modified;

b) Recyclability and other requirements on plastics in compliance with the *Plastic Waste Management Rules*, 2016, as amended;

c) Limits on specific migration as per *Food Safety and Standards* (*Packaging*) *Regulation*, 2018 and its Amendments have been incorporated; and

d) The marking/labelling clause has been overhauled into marking/packing clause wherein the labelling requirements have been placed in accordance with the *Food Safety and Standards (Labelling and Display) Regulation*, 2020 and its Amendments, and Part 5 (Specific Labelling Requirements for Alcoholic Beverages) of the *Food Safety and Standards* (*Alcoholic Beverages*) *Regulations*, 2018.

Methods for all relevant tests for using PET bottles for packaging of alcoholic beverages have been elucidated in IS 2798 : 1998 'Methods of test for plastics containers (*first revision*)'.

Indian Standards for glass liquor bottles as IS 1662 : 1974 'Specification for glass liquor bottles (*second revision*)' and for aluminium beverages cans as IS 14407 : 2023 'Aluminium cans for beverages — Specification (*first revision*)' have been separately published.

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

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

POLY (ETHYLENE TEREPHTHALATE) (PET) BOTTLES FOR PACKAGING OF ALCOHOLIC BEVERAGES — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for Poly (ethylene terephthalate) (PET) bottles for packaging of alcoholic beverages (distilled and non-distilled).

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 7408 (Part 1) and IS 7019 and following shall apply:

3.1 Distilled Alcoholic Beverages — Brandy or grape brandy, blended brandy, country liquor or plain country liquor, blended country liquors, cashew fenny, coconut fenny, gin, liqueur or cordial or aperitif, rum, white rum, vodka, whiskey, malt or grain whisky or single malt blended whiskey and pot distilled spirits.

3.2 Non-Distilled Alcoholic Beverages

3.2.1 *Non-Carbonated* — Wine and other fermented beverages [white grape wine, red grape wine, wine with carbon dioxide, fruit wine (other than grape wine), cider, perry, wine from other agricultural and plant sources].

3.2.2 *Carbonated* — Beers (regular beer, strong beer, regular draught beer, strong draught beer) and wines (sparkling, semi sparkling, crackling).

3.3 Formulated Alcoholic Beverages — Ready to Drink (RTD) carbonated and non-carbonated beverages.

4 MATERIAL

4.1 PET Bottles

The PET bottles shall comply with IS 12252 and IS 13193.

4.2 Closures

Closures include caps and other attachments for ensuring closing of the bottles. The bottles shall be provided with roll-on pilfer-proof (ROPP) closures which shall be made either of:

4.2.1 *Aluminium*

Aluminium closures shall be made of annealed aluminium sheets coated inside with food grade lacquering complying with IS 8970.

4.2.2 Plastic such as:

a) High-Density Polyethylene (HDPE) complying with IS 7328.

b) Polypropylene (PP) complying with IS 10951.

4.2.3 A combination of plastics and metal can also be used. In such cases, the materials shall comply with **4.2.1** and **4.2.2**.

4.3 Wads

4.3.1 The wads shall be of natural cork board or pulp board complying with IS 4664 or expanded polyethylene (EPE) or any other suitable food grade material compatible with the contents.

4.3.2 PVC or PVC-aided wads are not permitted.

4.4 Labels

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

4.4.1.1 Paper labels that may optionally be:

a) metallised;

b) coated with finishing chemicals;
c) coated with PE;
d) laminated with PP; and
e) any combination of the above.

4.4.1.2 Self-adhesive plastic labels made up of transparent or coloured polypropylene (PP) that are suitable for flexography, rotogravure or screen printing.

4.4.2 As an alternative to labels, plastic sleeves made of plastics other than PVC may be used.

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

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

4.5 Generic requirement for all materials in this standard shall comply with stipulations in Annex B.

4.6 All plastic materials shall comply with the stipulations of *PWM Rules*, 2016, as amended such as recyclability, incorporation of recycled content.

5 WORKMANSHIP AND FINISH

5.1 The bottles and closures shall be manufactured in accordance with good manufacturing practices and shall be free from undesirable odour. The bottles shall be transparent (even if coloured), free from any flash and scratches.

5.2 Secondary packaging made of either corrugated fibre-board boxes or shrink-wrap for empty PET bottles may be used to prevent any kind of scratches and contamination during handling and transportation.

6 SHAPE AND DIMENSIONS

6.1 The shape and dimensions of the bottles shall be as agreed to between the purchaser and the supplier. The specified overall height and diameter shall be measured according to the methods given in **4.1** and **4.2** of IS 2798 respectively.

6.2 Tolerance

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

6.3 Wall Thickness

The minimum wall thickness of the bottles measured at any point according to the method given in **4.5** of IS 2798 shall be 0.20 mm. Mean of the readings at any location shall be taken as the wall thickness at that point.

7 NECK FINISH

Neck finish for PET bottles with closures shall be as agreed between the purchaser and the supplier.

8 CAPACITY (PACK SIZES)

8.1 Nominal Capacity

The bottles shall be of any nominal capacities as agreed to between the purchaser and the supplier.

8.2 Brimful Capacity

8.2.1 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 shall be as agreed to between the manufacturer and the purchaser.

8.2.2 The brimful capacity of bottles shall be measured by method prescribed in **5** of IS 2798.

8.2.3 The tolerances on the brimful capacities shall be as given in Table 1.

8.2.4 The brimful capacity shall exceed the nominal capacity as given in **B-2.1**.

8.3 Fill Point Capacity

Tolerance for the fill point capacity (when determined by filling the bottles with water up to the specified depth measured from the top sealing surface) shall be as specified under **8.2**.

9 MASS

The mass of the bottles shall be as agreed to between purchaser and supplier.

10 VERTICALITY

The variation in verticality when tested according to the method given in **7** of IS 2798 shall not be more than ± 1.5 mm.

Table 1 Capacities and their Tolerances

(*Clauses* 8.2.3, [illegible].1 *and* B-2.1)

Sl No.	Nominal Capacity, ml	Tolerance on Brimful Capacity, ml
(1)	(2)	(3)
i)	Up to 200	± 3
ii)	201 to 500	± 4
iii)	501 to 600	± 5
iv)	601 to 750	± 6
v)	751 to 1 000	± 7
vi)	1 001 to 1 500	± 10
vii)	1 501 to 1 750	± 15
viii)	Above 1 750	± 20

11 PERFORMANCE TESTS

11.1 Leakage Test

11.1.1 *Closure Leakage*

The bottles shall be filled to its nominal capacity with coloured water or the actual product, if necessary. After filling, the bottles shall be closed tightly as in the final form. The closed bottles shall then be kept upside down over a white blotting paper for 30 min. After 30 min, the bottles shall be examined for any leakage which would be evident from any visible stains on the blotting paper.

11.1.2 *Vibration Leakage*

The bottles filled with water at ambient temperature and closed tightly with the closures when subjected to vibration on a vibration table as per method given in **6.2** of IS 2798, shall not show any leakage through the closure after one hour of testing.

11.2 Drop Impact Test

The bottles with the closures when subjected to the drop test as per **8** of IS 2798 shall not show any sign of cracking, nor will it rupture nor shall there be any leakage from the walls of the bottles. Slight de-shaping of the body shall not render the bottles unacceptable in the test.

11.3 Stack Load Test

11.3.1 The bottles shall be of sound construction and shall not show any cracks or permanent buckling nor cause leakage or reduction in effectiveness of the closure or cause instability in stacks, when subjected to test according to method given in **9** of IS 2798.

11.3.2 The total superimposed load along with the load of the flat surface for different sizes of bottles shall be as given in Table 2.

11.4 Storage Stability Test

11.4.1 This is a typical test for the determination of the composition of the alcoholic beverages upon storage.

11.4.2 The test conditions shall be both:

a) at (38 ± 1) °C and (90 ± 2) percent RH (accelerated conditions); and

b) at (27 ± 1) °C and (65 ± 2) percent RH (standard conditions).

11.4.3 The alcohol content and other chemicals shall be determined at the following test duration:

a) at the initial stage;

b) at the end of 3 months under accelerated conditions; and

c) at the end of 12 months when tested under standard conditions.

11.4.4 The PET bottles shall be considered to have met the requirements of the test if:

a) alcohol content is not less than the minimum permissible limits; and

b) other chemicals are not more than the maximum permissible limits prescribed in

the relevant FSSAI requirements for alcoholic beverages.

11.5 Migration Test

11.5.1 Representative samples of bottles shall be subjected to overall and specific migration tests with simulants 'C[1]' (10 percent ethanol *v*/*v*) or 'C[2]' (50 percent ethanol *v*/*v*) as specified in Table 1 of IS 9845 (**4.1** of IS 9845) as per temperature-time specified in Table 2 of IS 9845 (**4.2** of IS 9845).

11.5.2 *Determination of Overall Migration*

The limit of overall migration when tested as prescribed in IS 9845 shall not exceed overall migration limit of 60 mg/kg or 10 mg/dm^2 with no visible colour migration. In the case of coloured plastic materials, colour migrated into the simulant shall not be apparent to the naked eye (*see* IS 9833). If the colour migrated is clearly visible, such materials are not suitable, even though the extractive value is within the overall migration limit.

11.5.3 *Determination of Specific Migration*

11.5.3.1 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.

11.5.3.2 The selection of simulants and procedure for sample preparation shall be as per IS 9845.

11.5.3.3 The test methods and limits of migration in the simulant for the specified substances shall be as per Table 3 hereunder.

Table 2 Details of Minimum Stack Load

(*Clause* 11.3.2)

Sl No.	Nominal Capacity ml	Stack Load for 4 Bottles (N)	Load per Bottle (N)	Stack Load for 4 Bottles (kgf)	Load per Bottle (kgf)
(1)	(2)	(3)	(4)	(3A)	(4A)
i)	50	20	5	2.04	0.51
ii)	60	24	6	2.45	0.61
iii)	90	36	9	3.67	0.92
iv)	180	72	18	7.34	1.84
v)	250	100	25	10.20	2.55
vi)	375	150	38	15.30	3.82
vii)	500	200	50	20.39	5.10
viii)	600	240	60	24.47	6.12
ix)	750	300	75	30.59	7.65
x)	1 000	400	100	40.79	10.20
xi)	1 500	600	150	61.18	15.30
xii)	1 750	700	175	71.38	17.85
xiii)	2 000	800	200	81.58	20.39

NOTES

1 Column (3A) and (4A) are derived by using conversion factor of 1 N = 0.101 972 kgf.

2 Units of measurement (N or kgf) to be decided between manufacturer and purchaser.

Table 3 Specific Migration Limits

(*Clause* 11.5.3.3)

Sl No.	Toxic Substances	Migration Limit, *Max*, 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

12 MARKING AND PACKING

12.1 Each bottle shall be marked with:

a) an identifier of its source (producer); and

b) name of material (PET) along with its recycling symbol (as required by IS 14534).

12.2 Each plastic closure shall be marked with:

a) an identifier of its source (producer); and

b) name of material (HDPE/PP) along with its recycling symbol (as required by IS 14534).

12.3 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.

12.4 ECO-Mark

If compliant with the criteria stipulated in Annex C, the product may be marked with ECO-Mark.

12.5 Secondary Packaging for Bottles/Closures

12.5.1 Bottles, closures shall be packed in materials as agreed to between the purchaser and supplier but devoid of any component having PVC.

12.5.2 If any secondary packaging is of a plastic (non-PVC) then it shall comply with *PWM Rules*, as amended.

12.5.3 Packing slip in each consignment shall include:

a) nominal capacity (only for bottles);

b) batch no. or code no. (for bottles and closures); and

c) quantity (for bottles and closures).

13 SAMPLING

The method of drawing representative sample from a lot and the determination of its conformity with the requirements of this standard shall be as prescribed in Annex D.

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS 2798 : 1998	Methods 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 4664 : 1986	Specification for pulp board (*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 (*third revision*)
IS 7408 (Part 1) : 2000	Blow moulded polyolefin containers — Specification: Part 1 Up to 5 litres capacity (*second revision*)
IS 8970 : 1991	Aluminium foil laminate for packaging — Specification (*first revision*)
IS 9833 : 2018	List of colourants for use in plastics in contact with foodstuffs and 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 : 2023	Ionomer resins for its safe use in contact with foodstuffs, pharmaceuticals and drinking water — Specification (*first revision*)
IS 11704 : 2023	Ethylene acrylic acid (EAA) copolymers for their safe use in contact with food-stuffs, pharmaceuticals and drinking water — Specification (*first revision*)
IS 12247 : 1988	Specification for Nylon-6 polymer for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
IS 12252 : 2017	Polyalkylene terephthalates (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*)
IS 13193 : 1992	Polyalkylene terephthalate (PET and PBT) for moulding and extrusion — Specification
IS 13360 (Part 8/ Sec 8) : 2021/ISO 3451-1 : 2019	Plastics — Methods of testing: Part 8 Permanence/Chemical properties, Section 8 Determination of ash — General methods (*second revision*)
IS 14534 : 2023	Plastics — Recovery and recycling of plastics waste — Guidelines (*second revision*)

IS No.	*Title*
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
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 B

(*Clauses* 4.5 *and* 8.2.4)

GENERIC REQUIREMENTS FOR MATERIALS

B-1 GENERIC REQUIREMENTS

B-1.1 Material Requirements

B-1.1.1 All components of the PET bottles 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 bottles, shall be in compliance with the appropriate Indian Standards for food contact materials (FCM) as available.

NOTE — The term 'components' is used above to mean PET bottle or its innovations, closures, wads, labels, etc. some of which may or may not come in contact with the contents.

B-2 BRIMFUL CAPACITY

B-2.1 The brimful capacity shall exceed the nominal capacity as follows:

a) The permissible tolerance (± X) for the desired nominal capacity (N) as laid in Table 1 of Schedule I, Rule 2(e) of *Legal Metrology (Packaged Commodity) Rules*, 2011 shall be noted;

b) Next, the tolerance limits (± Y) for brimful capacity shall be noted (Table 2 in 8.2.3);

c) Thus, the minimum brimful capacity will be (N + X + Y); and

d) The final brimful capacity (B) may have additional volume to fulfil additional requirements such as, but not limited to:

i) ensuring the contents remain below the brim when the filled open bottle is held by hand;

ii) accommodating the properties of the content (for example, specific gravity); and

iii) accommodating the wide variety possible in the bottle design and format.

B-2.2 Accordingly N and B shall be agreed to between the purchaser and supplier.

ANNEX C

(*Clause* 12.4)

ADDITIONAL REQUIREMENTS FOR ECO-MARK

C-1 GENERAL REQUIREMENTS

C-1.1 All the packaging material/package manufactured shall meet relevant standards of BIS (Bureau of Indian Standards) pertaining to safety, quality, and performance wherever applicable.

C-1.2 The manufacturer of packaging material/ package must produce the consent clearance 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 authorisation, if required, under the *Environment* (*Protection*) *Act*, 1986 and the rules made thereunder to BIS while applying for ECO-Mark. Additionally, the manufacturer shall also comply with the provisions under *Prevention of Food Aduleration Act*, 1954 and Rules made thereunder, wherever necessary.

C-1.3 The packaging material/package may display in brief the criteria based on which the product has been labelled as Environment Friendly.

C-1.4 The packaging material/package may be sold along with instruction for proper use and mode of safe disposal so as to maximise product performance and minimise wastage.

C-1.5 It shall also be suitably mentioned 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 the ECO-Mark is applicable to the product or packaging

material or both.

C-2 PRODUCT SPECIFIC REQUIREMENTS

C-2.1 The plastic packaging materials/packages used for packaging of food, pharmaceutical, cosmetics and drinking water shall comply with the relevant Indian standards and shall be manufactured from the plastics which shall comply with relevant Indian Standards.

NOTE — The manufacturer shall provide documentary evidence by way of certificate or declaration to this effect to Bureau of Indian Standards while applying for ECO-Mark.

ANNEX D

(*Clause* 13)

SAMPLING

D-1 SCALE OF SAMPLING

D-1.1 Lot

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

D-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 bottles to be sampled from a lot shall be in accordance with Table 4.

D-1.3 The bottles shall be selected at random from the lot. To ensure the randomness of selection, methods given in IS 4905 may be followed.

D-2 CRITERIA FOR CONFORMITY

D-2.1 Visual Examination

The sample bottles selected as per col (3) of Table 4 shall be examined for manufacturing conditions (*see* 5). Any bottles 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 bottles in sample does not exceed the acceptance number given in col (4) of Table 4.

D-2.2 Overall Height, Diameter, Wall Thickness and Verticality

The sample size given in col (7) of Table 4 shall be used for the measurement of each parameter, namely, overall height and diameter, wall thickness and verticality. No failure shall occur for acceptance of the lot under this clause, col (8).

D-2.3 Bottles Mass, Brimful Capacity and Fill Point Capacity

For the purpose of the captioned tests, 5 bottles for lot size up to 5 000 and 10 bottles for lot size above 5 000 shall be selected at random from the samples already drawn according to **D-1.3**. Each of the sample bottle shall be subjected to tests for brimful capacity (**8.2**), fill point capacity (**8.3**) and bottle mass (**9**). There shall be no failure, if the lot is to be accepted under these clauses.

D-2.4 Closure Leakage Test and Vibration Leakage Test

The number of sample bottles to be drawn shall be in accordance with col (5) of Table 4. Each of the sample bottle shall be subjected to closure leakage and vibration leakage (**11.1.1** and **11.1.2**) respectively. The number of failures shall not exceed the acceptance number given in col (6) of Table 4.

D-2.5 Drop Impact Test and Stack Load Test

One set of sample bottles as given in the test methods (**11.2** and **11.3**) 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.

D-2.6 Storage Stability Test and Migration Test

PET bottles shall be approved after testing the storage stability test (**11.4**) and migration test (**11.5**) in the initial stage between the bottles manufacturer and the brand owner. These are type tests and are not routine tests. Thereafter these tests shall be performed every three years. This cycle of tests shall begin afresh, whenever there is a change in the material constituents of the bottles or the components thereof.

Table 4 Scale of Sampling and Acceptance Number for a few Parameters

(*Clauses* D-1.2, D-2.1, D-2.2 *and* D-2.4)

Sl No.	Lot Size (No. of bottles)	For Workmanship and Finish		For Closure Leakage Test and Vibration Leakage Test		For Overall Height, Diameter, Wall Thickness and Verticality	
		Sample Size	Acceptance Number	Sample Size	Acceptance Number	Sample Size	Acceptance Number
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	Up to 500	13	1	5	0	2	0
ii)	501 to 1 000	20	2	8	0	2	0
iii)	1 001 to 3 000	32	3	13	0	2	0
iv)	3 001 to 5 000	50	5	20	1	3	0
v)	5 001 and above	80	7	32	2	5	0

NOTES

1'Acceptance Number' mentioned in Table 4 and in **D-2.1** and **D-2.4** refers to the number of acceptable failures for a given sample size.

2For details on the significance of the columns and other parameters, paragraphs given in **D-2** below may be referred.

ANNEX E

(*Foreword*)

COMMITTEE COMPOSITION

Plastics Packaging Sectional Committee, PCD 21

Organization	*Representative*(s)
Indian Institute of Packaging, Mumbai	DR BABU RAO GUDURI **(*Chairperson*)**
All India Food Processors Association, (AIFPA), New Delhi	SHRI MOHIT CHAUDHARY
All India Plastics Manufacturers Association (AIPMA), Mumbai	SHRI KAILASH B. MURARKA SHRI KISHORE SAMPAT (*Alternate*)
Bisleri International Pvt Ltd, Delhi	SHRI K. GANESH SHRIMATI SALONI CHADHA (*Alternate*)
Central Institute of Plastics Engineering & Technology (CIPET), Chennai	DR S. N. YADAV DR SMITA MOHANTY (*Alternate*)
Chemco Plastic Industries Private Ltd, Mumbai	SHRI GAURAV SARAOGI SHRIMATI RUPANDE SAMPAT (*Alternate*)
Chemicals & Petrochemicals Manufacturers Association (CPMA), New Delhi	SHRI UDAY CHAND
Coca-Cola India, Gurugram	SHRI VIRENDRA LANDGE SHRI RAJENDRA DOBRIYAL (*Alternate*)
CSIR - Central Food Technological Research Institute (CFTRI), Mysuru	SHRI RAJESHWAR MATCHE DR ARUN KUMAR P. SELVAM (*Alternate*)
CSIR - Indian Institute of Toxicology Research, Lucknow	DR V. P. SHARMA DR A. B. PANT (*Alternate*)
Essel Propack Limited, Vasind	SHRI HARIHARAN K. DR GURUNATH (*Alternate*)
Federation of Indian Packaged Drinking Water Manufacturers Association (FIPMA), Mumbai	SHRI APURVA DOSHI
Foundation for Innovative Packaging and Sustainability (FIPS), Mumbai	SHRI M. K. BANERJEE
Gas Authority of India Ltd, Noida	SHRI MANISH KHANDELWAL, SHRI NITIN GUPTA (*Alternate*)
Haldia Petrochemicals, Kolkata	SHRI SUVOMOY GANGULY SHRI T. R. SRIKANTH RAMANI (*Alternate* I) SHRIMATI SUMAN HEMBRAM (*Alternate* II)
HPCL- MITTAL Energy Limited (HMEL), Noida	SHRI VINEET K. GUPTA SHRI ALAKESH GHOSH (*Alternate*)
Indian Centre for Plastics in the Environment (ICPE), Mumbai	SHRI T. K. BANDOPADHYAY SHRIMATI NEHA MAURYA (*Alternate*)
Indian Flexible Packaging & Folding Carton Manufacturers Association (IFCA), Mumbai	SHRI ATIN CHAUDHARY

Organization	*Representative*(*s*)
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Mother Dairy Fruit & Vegetable Pvt Ltd, Noida	SHRI KALPAM CHAUHAN
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This Indian Standard has been developed from Doc No.: PCD 21 (21920).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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Published by BIS, New Delhi