
Poly vinyl chloride (PVC) bottles for edible oils - Specification



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Poly vinyl chloride (PVC) bottles for edible oils

1 Scope

This standard specifies the requirements and the methods of sampling and test of polyvinyl chloride (PVC) bottles for packing of edible oils.

2 Normative references

The following Indian Standards are necessary adjuncts to this standard:

ISO 472, Plastics — Vocabulary

ISO 21067-1 - Packaging — Vocabulary — Part 1

ISO 24153 Random Sampling

ISO 13106(en) Plastics — Blow-moulded polypropylene containers for packaging of liquid foodstuffs

ISO 13302(en), Sensory analysis.

3 Terms, definitions and abbreviations

For the purpose of this standard, the definitions prescribed in ISO 472 and ISO 21067 shall apply.

3.1 brim-full capacity

The volume of water required to fill the container completely at $27 \pm 2^\circ\text{C}$.

Note: the container is filled to the point of overflowing while standing on a flat horizontal level with all closures removed.

4 Requirements

4.1 General Requirements

4.1.1 Materials

4.1.1.1 The bottle shall be made by blow moulding process from polyvinyl chloride (PVC) and its copolymers material conforming to the requirements of ISO 13106.

4.1.1.2 Cap

The bottles shall be provided with a cap, and if required, with an insert plug. The material for cap and plug shall be food grade HDPE injection moulding grade 45 MA or 55 MA, or any other suitable material as agreed to between the purchaser and the supplier.

4.1.1.3 Wad

The wad, if required, shall be of cork board or pulpboard or any other suitable material compatible with the contents and suitable for food contact applications.

4.1.2 Shape and Design

The shape and design shall be as agreed to between the purchaser and the supplier.

4.1.3 Workmanship and Finish

4.6.1 The bottles and closures shall be manufactured in accordance with good manufacturing practices and shall be free from any burnt, oxidised or unhomogenized particles. The bottles shall be clear and transparent, and free of any scratches.

4.2 Specific Requirements

4.2.1 Tolerances

4.2.1.1 Brim-full Capacity

Brim-full capacity shall vary depending upon the type of oil being packed and shall be specified by the purchaser. The brim-full capacity shall exceed the nominal capacity by a minimum of 15 percent when tested in accordance with ISO 13106. The tolerance on the Brim-full capacity shall be ±5 percent.

4.2.1.2 Mass Tolerance

The tolerance on the specified mass of the bottle with the cap shall be ±5 percent.

4.2.1.3 Dimensions

The tolerances on specified diameter and the overall height of the bottle shall be as under:

Table 1: Tolerance limits for Dimensions

Up to and including 100mm	±1.5mm
Over 100mm and up to and including 200mm	±2.0mm
Over 200mm	±2.5mm

4.2.1.4 Wall Thickness

The minimum wall thickness of the bottle measured at any point by a dial calliper gauge fitted with spherical anvil, vernier callipers or micrometre shall be 0.25 mm. The mean of three readings at any location shall be taken as the wall thickness at the point.

4.2.1 Migration Requirements

4.2.1.1 Overall Migration

In addition to complying with specifications of ARS 1716- Migration of constituents of plastic materials and articles intended to come into contact with foodstuffs, the following shall apply;

4.2.1.1(i) Recycled polyethylene terephthalate (rPET); intended to be brought into contact with food intended for infants and young children shall not transfer their constituents to food simulants in quantities exceeding sixty milligrams of total of constituents released per kg of food simulant (60 mg/kg).

4.2.1.2(ii) Recycled polyethylene terephthalate (rPET); shall not transfer their constituents to food simulants in quantities exceeding ten milligrams of total constituents released per dm² of food contact surface (10mg/dm²)

4.2.1.2 Specific Migration

Recycled polyethylene terephthalate (rPET); shall not release the following substances in quantities exceeding the specific migration limits below:

Table 2: Heavy metals

Sub.No	Substances	Maximum Limit mg/kg food or food simulant	Test methods
1	Aluminium	1	EN 13130/2004
2	Ammonium	-	
3	Antimony	0.04	
4	Arsenic	ND	
5	Barium	1	
6	Cadmium	ND	
7	Calcium	1	
8	Chromium	ND	
9	Cobalt	0.05	
10	Copper	5	
11	Europium	0.05	
12	Gadolinium	0.05	

Sub.No	Substances	Maximum Limit mg/kg food or food simulant	Test methods
13	<i>Iron</i>	48	
14	<i>Lanthanum</i>	0.05	
15	<i>Lead</i>	ND	
16	<i>Lithium</i>	0.6	
17	<i>Magnesium</i>	1	
18	<i>Manganese</i>	0.6	
19	<i>Mercury</i>	ND	
20	<i>Nickel</i>	0.02	
21	<i>Potassium</i>	1	
22	<i>Sodium</i>	-	
23	<i>Terbium</i>	0.05	
24	<i>Zinc</i>	5	

5 Test(s)

The bottles shall not show any leakage, cracks or permanent buckling when subjected to the following test as specified international standards or their equivalent:

Test	Test method
stacking test	ISO 2234
Drop Impact test	ASTM D2463-95

6 Labelling and Packaging

- 6.1 Batch bottle shall be indelibly and legibly marked with the following information.
- i. manufacturer's name and registered trademark, if any;
 - ii. date of manufacture;
 - iii. disposal and safety instructions;
 - iv. country of origin;
 - v. dimension and carrying capacity of the bottle;
 - vi. batch or code number.
 - vii. international code of the plastic used
 - viii. The packages shall carry the symbol for food grade (carrying spoon or fork and cup e.g. Fig. 1) or the word "for food grade" on it



6.2 The bottle immediately after manufacture shall be packed under hygienic conditions in a suitable protective covering that will preclude the ingress of dust, moisture and other foreign

7. Sampling

7.1 Sampling of bottles shall be in accordance with ISO 2415.

7.1.1 Scale of Sampling

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.

Samples shall be tested from each lot to ascertain the conformity of the lot to the requirements in clause 4.

The number of bottles shall be selected at random from a lot as specified in Table 3.

Table 3- Scale of Sampling

Number of Bottles in the lot	Number of Bottles to be Selected	Acceptance Number	Sub-sample Size
Up to 500	20	06	03
501 to 1200	32	10	03
1201 to 3200	50	14	05
3201 to 10000	80	20	08
10001 and above	125	28	13

