**IS XXXXX : 2024**

***भारतीय मानक***

***Indian Standard***

**होम्योपैथिक औषधियों के लिए प्लास्टिक कंटेनर और क्लोजर — विशिष्टि**

**Plastic Containers and Closures for Homoeopathic Pharmaceutical Preparations — Specification**

ICS 11.120.99

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भारतीय मानक ब्यूरो

BUREAU OF INDIAN STANDARDS

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**November 2024 Price Group 9**

Homoeopathy Sectional Committee, AYD 07

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards after the draft finalized by the Homoeopathy Sectional Committee had been approved by the Ayush Division Council.

Plastic containers are widely used for packing, dispensing, and storing homoeopathic preparations. However, the physio-chemical properties of the packaging material, particularly the leaching properties, are key considerations for drug quality, particularly in terms of long-term storage and dispensing of drugs.

There is a high demand for standards of plastic containers and closures for pharmaceutical use in homoeopathy. This standard prescribes the required materials and testing of plastic containers together with the corresponding closure systems for the packaging and dispensing of homoeopathic pharmaceutical preparations in different dosage forms. However, this standard does not deal with the specifications of the types of resin. Therefore, if needed, the plastic materials specified in this standard may be tested as per the relevant monographs in the Indian pharmacopoeia and USP.

The international standards and practices prevailing in different countries, in addition to the practices followed by the homoeopathic industry in India, are duly consulted during its preparation. Inputs have also been derived from the information available in the public domain in print and electronic media, including Indian Pharmacopoeia and USP.

Also, due consideration has been given to the provisions of the *Drug and Cosmetics Act*, 1940 and the Rules 1945, framed thereunder, including the latest amendments. In case of any disparity, this standard is subject to the restrictions imposed under these will be applicable.

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

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 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 shall be the same as that of the specified value in this standard.

*Indian Standard*

PLASTIC CONTAINERS AND CLOSURES FOR HOMOEOPATHIC PHARMACEUTICAL PREPARATIONS — SPECIFICATION

**1 SCOPE**

This standard prescribes the materials, requirements, sampling methods, and testing of plastic containers (phials, bottles, and jars) and closures (screw caps, droppers, and stoppers) used for storing and dispensing different dosage forms in Homoeopathy.

This document is applicable to Phials, Jars, Drop-dispensing, and Screw-neck plastic bottles for liquid and solid preparations used in Homoeopathy. Together with the corresponding closure systems, they are used for packaging and dispensing of homoeopathic pharmaceutical preparations in solid and liquid dosage forms.

**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 this standard, apart from definitions given in IS 2828 and IS 7019, the following terms and definitions shall apply.

**3.1 Plastic Container** — A receptacle that holds an intermediate compound, active pharmaceutical ingredient, excipient, or dosage form and is in direct contact with the article (for example, phials, bottles, and jars).

**3.2 Plastic Closure** — A material that seals an otherwise open space of a container and provides protection for the contents. It also provides access to the contents of the container (for example, screw caps, droppers, and stoppers).

**3.3** **Phial** — A phial is a small cylindrical plastic container with plastic closure that is frequently used to hold and dispense homoeopathy preparations in solid and liquid forms.

**3.4 Screw neck plastic bottle** — A semitransparent, opaque, milky, or amber-coloured plastic container with a stopper and plastic or metal closure, generally used for storing and dispensing syrups and other liquid homoeopathic preparations.

**3.5 Drop-dispensing plastic bottle** — A semitransparent, opaque, milky, or amber-coloured plastic container with a dropper plug or tip plug, and plastic closure, generally used for dispensing liquid homoeopathic preparations.

**3.6 Wide-mouth Plastic bottles** — A semitransparent, opaque, milky, amber-coloured plastic container with plastic or metal closure, generally used for dispensing biochemic tablets or other solid homoeopathic preparations.

**3.7 Jar** — A transparent, milky, or amber-coloured plastic container with plastic closure, generally used for storing solid homoeopathic preparations.

**4 REQUIREMENTS**

**4.1 Material**

The material used for plastic containers and closures shall be pharmaceutical grade polyethylene (PE), including subcategories, high-density polyethylene (HDPE) and low-density polyethylene (LDPE), conforming to IS 7328 (any constituents, if added shall conform to IS 16738) or polyethylene terephthalate (PET) conforming to IS 12252 or polypropylene (PP) conforming to IS 10951.

**4.1.1** *Plastic container*

Material used for the different types of plastic containers shall be as per Table 1.

**Table 1 Materials for plastic containers**

(Clause 4.1.1)

|  |  |  |
| --- | --- | --- |
| **SI No.** | **Container Type** | **Material**  |
| (1) | (2) | (3) |
| 1.
 | Phials | HDPE |
|  | Bottles (Screw neck/Drop-dispensing/Wide-mouth) | HDPE, PET, or PP |
|  | Jar | HDPE or PET |

NOTE **—** Drop-dispensing plastic bottles shall be leak-proof self-sealing dropper bottles.

**4.1.2** *Plastic Closures*

The material used for the different types of plastic closures shall be as per Table 2.

**Table 2 Material for plastic closures**

(Clause 4.1.2)

|  |  |  |
| --- | --- | --- |
| **SI No.** | **Closure Type** | **Material**  |
| (1) | (2) | (3) |
|  | Caps (Screw cap or cap with nozzle) | HDPE or PP |
|  | Stoppers  | LDPE |
|  | Droppers  | LDPE |

NOTE **—** The stopper/dropper shall form a liquid-tight seal with the bottleneck. Dropper insert flow rates refer to the speed at which droplets are dispensed. The first drop dispensed shall take 2 s to 5 s, and after that, it shall take 1s to 3s.

**4.2 Pigments and Colorants**

In case pigments and colorants are used, they shall comply with IS 9833.

**4.3 Capacity**

**4.3.1** The capacity of containers shall generally conform to Table 3 or as mutually agreed between the purchaser and the supplier.

**4.3.2** The brimful capacity of the bottle shall exceed the normal capacity by a minimum of 5 percent. The brimful capacity shall be determined by the method prescribed in IS 2798.

**Table 3 Nominal capacity of homoeopathic plastic container**

(Clause 4.3.2)

|  |  |  |
| --- | --- | --- |
| **SI No.** | **Container type** | **Nominal Capacities** |
| (1) | (2) | (3) |
|  | Phial | ½ dram, 1 dram, 2 dram, 4 dram, 6 dram |
|  | Bottle |  |
|  | Screw neck or Drop-dispensing plastic bottle  | 5 ml, 10 ml, 15 ml, 30 ml, 50 ml, 100 ml, 500 ml |
|  | Wide-mouth plastic bottle | ½ ounce, 1 ounce, 2 ounce |
|  | Jar | 500 ml, 1 000 ml, 2 000 ml, 5 000 ml |

NOTE **—** 1 dram = 3.7 ml, 1 ounce = 29.57 ml.

**4.4 Design, shape, and dimension**

The containers and closures shall be of a suitable design, shape, and dimensions as mutually agreed to between the purchaser and the supplier.

**4.5 Odour**

Containers and closures shall be free from any odour.

**4.6 Mass**

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

**4.7 Overall Migration**

Overall migration shall be NMT 60 mg/kg or 10 mg/dm2. The overall migration of constituents of plastic material shall be determined as per IS 9845.

**4.8 Wall thickness**

The wall thickness shall be declared by the manufacturer. The wall thickness, when measured in accordance with 4.5 of IS 2798, shall be within ± 2 percent of the declared value.

**4.9 Workmanship and Finish**

1. Containers and closures shall be manufactured by a suitable process adhering to Good Manufacturing Practice (GMP).
2. The body of the container shall be free from any visual defects like cavities, crevices, flaws, or stains.
3. The containers and closures be free from residual plastics burr or free particles generated during manufacturing.
4. Containers and closures shall be free from dirt, dust particles, etc.
5. Containers shall be pre and final rinsed through demineralized water/purified water and then air-dried or vacuum-dried properly so that the strength of the medicine is not affected on filling.

**5 PERFORMANCE TESTS**

**5.1** **Environmental stress – crack resistance**

The containers shall pass the test when tested in accordance with method **I** of IS 8747 and shall show no evidence of environmental stress-crack failure.

**5.2 Leakage Test**

The containers shall pass the test when tested in accordance with **6** of IS 2798.

**5.3** **Drop Impact Test**

The containers shall pass the test when tested in accordance with **8** of IS 2798.

**5.4 Collapsibility Test**

A container shall, by collapsing inwards during use, yield at least 90 percent of its nominal contents at the required rate of flow at ambient temperature.

NOTE — This test is applicable when the containers are of squeeze-bottle type.

**5.5 Compatibility Test**

Method of test for compatibility of containers shall be as prescribed in **12** of IS 2798.

**5.6 Container Material Test**

These tests shall be performed only on material obtained from containers before filling as prescribed in **4.3** of IS 7803.

**5.7 Verticality test**

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

**5.8 Transparency**

The transparency of a container shall not be less than 85 percent in light transmittance, when tested in accordance with the method as prescribed in Annex A of IS 15410.

NOTE — This test is applicable for transparent bottles only.

**5.9** **Stack Load Test**

The containers shall be of sound construction and shall not show any cracks or permanent buckling when subjected to testing according to the method given in **9** of IS 2798.

**6 PACKING**

**6.1** The containers shall be packed in acceptable outer packages as agreed to between the purchaser and the supplier. Only containers of the same nominal capacity and bearing the same batch identification shall be packed together in one package. Additionally, it is crucial to ensure that the bottles remain protected from external contaminants during transport.

**6.2** The phials/droppers/stoppers/caps shall be packed by using Thermoform or an automatic packaging machine after sterilizing (wherever required) in a sterilization plant using Ethylene oxide or Gamma radiations.

**7 MARKING**

**7.1** Each container, except in case of very small size, shall be permanently and legibly marked with the following:

1. Name of Material.
2. Nominal capacity.
3. Recycling symbol, as per IS 14534.

**7.2** The packing slip in each package shall be marked with the following:

1. Name and/or trademark of the manufacturer.
2. Nominal capacity
3. Batch no.
4. Homoeopathy use only

**7.3 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 product(s) may be marked with the Standard Mark.

**8 SAMPLING**

The method of drawing a representative sample from a lot and the determination of criteria of conformity of a lot to requirements of this specification shall be as per Annex B.

**ANNEX A**

(*Clause* 2)

**LIST OF REFERRED STANDARDS**

|  |  |
| --- | --- |
| *IS No.* | *Title* |
| IS 2828 : 2019 / ISO 472 : 2013 | Plastics – Vocabulary (*second revision*) |
| IS 7019 : 1998  | Glossary of terms in plastics and flexible packaging, excluding paper  |
| IS 16738 : 2018 | Positive list of constituents for polypropylene, polyethylene and their copolymers for its safe use in contact with foodstuffs and pharmaceuticals |
| IS 7328 : 2020 | Specification for polyethylene material for moulding and extrusion (*third revision*) |
| IS 12252 : 2017  | Specification for Polyalkylene Terephthalates (PET and PBT) for their safe use in contact with foodstuffs pharmaceuticals and drinking water *(first revision*) |
| IS 10951 : 2020 | **Polypropylene**materials for moulding and extrusion *(second revision*) |
| IS 8747 : 1977 | Methods of test for environmental stress - crack resistance of blow - Moulded polyethylene containers |
| IS 9833 : 2018  | List of pigments and colorants for use in plastics in contact with foodstuffs, pharmaceuticals, and drinking water (*second revision*) |
| IS 9845 : 1998  | Determination of overall migration of constituents of plastics materials and articles intended to come into contact with foodstuffs — Method of analysis (*second revision*) |
| IS 2798 : 1998  | Methods of test for plastics containers *(first revision*) |
| IS 15410 : 2003 | Containers for packaging of natural mineral water and packaged drinking water — Specification |
| IS 7803 (Part 1) : 1975 | Specification for polyethylene containers or pharmaceutical use |
| IS 14534 : 2023  | Plastics recovery and recycling of plastics waste — Guidelines (*second revision*) |
| IS 4905 : 2015  | Random sampling and randomization procedures *(first revision*) |

**ANNEX B**

(*Clause* 8)

**SAMPLING**

**B-1 SCALE OF SAMPLING**

**B-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.

**B-1.2 Scale of Sampling**

For ascertaining the conformity of the lot to the requirement of this standard, test 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.

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

**B-2 CRITERIA FOR CONFORMITY**

**B-2.1 Visual examination**

The sample bottles selected as per column 2 of Table 4 shall be examined for manufacturing conditions (see 4.9). 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 bottles in the sample does not exceed the acceptance number given in column 3 of Table 4.

**B-2.2 Brimful capacity, bottle mass**

For the purpose of the above tests, five bottles for lot sizes up to 5000 and 10 bottles for lot sizes above 5000 shall be selected at random from the samples already drawn according to B-1.3. Each of the sample bottles shall be subjected to tests for brimful capacity and bottle mass. There shall be no failure if the lot is to be accepted under this clause.

**B-2.3 Test for Transparency and Leakage Test**

The number of sample bottles to be drawn shall be in accordance with col 4 of table 4. Each of the sample bottle shall be subjected to closure leakage test. The number of failures shall not exceed the acceptance number given in col 5 of table 4.

**B-2.4 Drop Impact, Collapsibility, and compatibility, Stack load Test**

One set of sample bottles as given in the test methods (see 5.3, 5.4, 5.5, 5.9) 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, Collapsibility, Compatibility, and stacking requirement.

**B-2.5** The sub-sample of size given in col 8 of Table 4 shall be subjected to overall height and diameter, wall thickness and verticality. No failure shall occur for acceptance of the lot under this clause.

**B-2.6** **Container Material Test**

The number of sample bottles to be drawn shall be in accordance with col 6 of table 4. The number of failures shall not exceed the acceptance number given in col 7 of table 4.

**Table 4 Scale of Sampling and Acceptance Number**

(*Clauses* B-1.2, B-2.1, B-2.3, B-2.5, and B-2.6)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SI No.** | **Lot size** | **Workmanship and finish** | **For Transparency and Leakage Test** | **Container Material Test** | **For Overall Height, Diameter, wall Thickness, Verticality, Drop Impact, Collapsibility, compatibility, and Stack load Test** |
|  |  |  |  |  |  |  |  |  |
|  |  | **Sample Size** | **Acceptance Number** | **Sample Size** | **Acceptance Number** | **Sample Size** | **Acceptance Number** | **No. of Sample** |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|  | Up to 500 | 13 | 1 | 5 | 0 | 3 | 0 | 2 |
|  | 501 to 1000 | 20 | 2 | 8 | 0 | 5 | 0 | 2 |
|  | 1001 to 3000 | 32 | 3 | 13 | 0 | 8 | 0 | 2 |
|  | 3001 to 5000 | 50 | 5 | 20 | 1 | 13 | 0 | 3 |
|  | 5001 and above | 80 | 7 | 32 | 2 | 20 | 0 | 5 |

**ANNEX C**

(*Foreword*)

**COMMITTEE COMPOSITION**

Homoeopathy Sectional Committee, AYD 07

| *Organization* | *Representative(s)* |
| --- | --- |
| Govt of NCT, Directorate of Ayush, New Delhi  | Dr Raj K. Manchanda (***Chairperson***) |
| Anchrom Enterprises Private Limited, Mumbai | Shri Akshay Charegaonkar Shri Vishwajit Prakash Kale (*Alternate*) |
| ARP Industries, Meerut | Shri Raveendranath Acharya |
| Bakson Drugs and Pharmaceuticals Private Limited, Greater Noida  | Dr Mudita Arora  |
| Bhargava Phytolab Private Limited, Noida  | Shri Rajeshwar Sahai BhargavaShri Karan Bhargava (*Alternate* I)Ms Neha Vashishtha (*Alternate* II) |
| Biosimilia Private Limited, Mumbai  | Dr Rajesh ShahShrimati Gitanjali Talele (*Alternate*) |
| B Jain Pharmaceuticals Private Limited, Noida | Shri Nishant JainDr Priyanka Motwani (*Alternate*) |
| Botanical Survey of India, Kolkata  | Dr D. K. Agrawala Dr Umeshkumar L. Tiwari (*Alternate*) |
| Central Council for Research in Homoeopathy, New Delhi  | Dr Divya TanejaDr Manas Sarangi (*Alternate*) |
| Central Drugs Standard Control Organization, New Delhi | Shri Sushant SharmaDr Rachna Paliwal (*Alternate*) |
| Centre of Medicinal Plants Research in Homoeopathy, The Nilgiris  | Dr J. Shashikanth Shrimati Anagh D. (*Alternate*) |
| Delhi Institute of Pharmaceutical Sciences and Research, New Delhi  | Prof P. K. Sahoo Dr Beauty Behera (*Alternate*) |
| Directorate of AYUSH (Homoeopathic Wing), Govt of NCT, New Delhi  | Dr Leena V. Chhatre |
| Dr Anjali Chatterjee Regional Research Institute for Homoeopathy, Kolkata  | Dr Bibaswan Biswas Dr Suraia Parveen (*Alternate* I)Shri G. V. Narasimha Kumar (*Alternate* II) |
| Dr BR Sur Homoeopathic Medical College, Hospital and Research Centre, New Delhi  | Dr Neeraj GuptaDr Amar Bodhi (*Alternate*) |
| Dr DP Rastogi Central Research Institute for Homoeopathy, Noida | Dr Swapnil A. Kamble Dr Binit Dwivedi (*Alternate* I) Dr Anamika Kotiya (*Alternate* II) |
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| King George's Medical University, Lucknow  | Dr Shailendra K. Saxena |
| Medisynth Chemicals Private Limited, Navi Mumbai  | Dr Prakash V. Joshi Shri Nihar J. Vaknalli (*Alternate* I)Dr Dhara R. Bhatt (*Alternate* II) |
| Mind Technologies Private Limited, Mumbai | Dr Jawahar ShahShri Parag Shah (*Alternate* I)Dr Tarana Malick (*Alternate* II) |
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| National Commission for Homoeopathy (NCH), New Delhi | Dr Mangesh R. JatkarDr Laxmi Mahto (*Alternate*) |
| National Homoeopathy Research Institute in Mental Health, Kottayam | Dr K C Muraleedharan Dr Dastagiri P. (*Alternate* I)Dr Arun Krishnan P (*Alternate* II) |
| National Institute of Homoeopathy, Kolkata | Dr Subhas SinghDr Raja Manoharan (*Alternate*) |
| Nehru Homoeopathic Medical College and Hospital, New Delhi | Dr Seema RaiDr Vandana Chopra (*Alternate*) |
| Pharmacopoeia Commission for Indian Medicine & Homoeopathy, Ghaziabad | Shrimati Devki Pant Shri Lalit Tiwari (*Alternate* I)Shri Kuldeep Singh (*Alternate* II) |
| The Kerala State Homoeopathic Co-operative Pharmacy Limited (HOMCO), Alappuzha | Dr Sobha Chandran R. Dr Suresh S. (*Alternate* I)Dr Vineetha L. (*Alternate* II) |
| BIS Directorate General | Shri Unnikrishnan A. R., Scientist ‘G’ and Head (Ayush) [Representing Director General (*Ex –officio*)] |

*Member Secretary*

Dr KUMAR VIVEKANAND

SCIENTIST ‘D’/JOINT DIRECTOR

(Ayush), BIS

Working Group for Plastic and glass containers and closures, AYD 07/WG 05

|  |  |
| --- | --- |
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| Bakson Drugs and Pharmaceuticals Private Limited, Greater Noida | Dr Mudita Arora |
| BJain Pharmaceuticals Private Limited, Noida | Dr Priyanka Motwani |
| Dr DP Rastogi Central Research Institute of Homoeopathy, Noida | Dr Binit Dwivedi Ms Anamika Kotiya  |