SRI LANKA STANDARD 634:1984
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SPECIFICATION FOR
PLASTIC BUCKETS

SRI LANKA STANDARDS INSTITUTION

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SLS 634:1984
(Attached AMD 198)

Gr. 7

SRI LANKA STANDARDS INSTITUTION
53, Dharmapala Mawatha,
Colombo 3,
Sri Lanka.

SRI LANKA STANDARD
SPECIFICATION FOR PLASTIC BUCKETS

FOREWORD

This Sri Lanka Standard was authorized for adoption and publication by the Council of the Sri Lanka Standards Institution on 1984-02-22, after the darft, finalized by the Drafting Committee on Plastics had been approved by the Chemicals Divisional Committee.

All standard values given in this specification are in SI units.

For the purpose of deciding whether a particular requirement of this specification is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with CS 102. The number of significant places retained in the rounded off value should be the same as that of the specified value in this specification.

In the preparation of this specification, the assistance obtained from the publications of the Indian Standards Institution and Japanese Standards Association is gratefully acknowledged.

1 SCOPE

This specification prescribes requirements, methods of sampling and test for plastic buckets.

2 REFERENCES

ISO 183 Plastics Qualitative evaluation of bleeding of colorants

ISO 4582 Determination of changes in colour and variations in properties after exposure to daylight under glass, natural weathering or artificial light

ISO 4892 Methods of exposure to laboratory light sources

IS 10146 Specification for polythene for its safe use in contact with food stuffs pharmaceuticals and drinking water

CS 102 Presentation of numerical values

SLS 428 Random sampling methods

SLS 616 Glossary of terms for plastics.

3 TERMINOLOGY

For the purpose of this specification, the definitions given in SLS 616 shall apply.

4 REQUIREMENTS

4.1 Materials

4.1.1 The body of the buckets shall be made from polyethylene conforming to IS 10146 or polypropylene and it may contain additives that act as processing aids or that improve the physical and mechanical properties of the material or its resistance to deterioration when exposed to normal service conditions.

4.1.2 The handle shall be rigid and made of metal coated metal or plastic. Where metal handles are used, they shall be corrosion resistant.

4.2 Construction

4.2.1 The base of the bucket shall be so designed that it does not come in contact with the plain surface on which it is placed, when the bucket is filled with water at 60 °C.

4.2.2 The handle shall be so constructed and attached that it will swing freely outside the bucket.

4.2.3 The centre of the handle shall be such as to provide an adequate grip.

4.2.4 When the bucket is supplied with a lid it shall fit well with the main body and shall be capable of being removed readily by hand.

4.2.5 The thickness of the bottom of the bucket shall be not less than 2 mm.

4.3 Workmanship

All surface of the buckets shall be smooth and free from scratch marks, mould injury, flow marks or any visible foreign material. There shall be no visible deformation. Any sprue (stalk) shall be neatly removed by milling or cutting and the buckets shall also be free from moulding flash.

4.4 Water capacity

The water capacity when determined as prescribed in Appendix G shall not differ by more than $\pm \frac{10}{4}$ per cent of the declared water capacity at room temperature.

4.5 Odour

The buckets shall be free from any objectionable odour when tested as prescribed in Appendix F.

4.6 Colour fastness

4.6.1 *Colour bleeding*

When tested and examined in accordance with ISO 183 there shall be no staining or marking of the filter paper and the polyvinyl chloride sheet.

4.6.2 *Colour fastness to water*

When tested as prescribed in Appendix H the water shall be free from any colour.

4.6.3 *Light fastness*

4.6.3.1 The change in colour when determined visually as specified in 3.1 of ISO 4582, after exposure to a laboratory light source for 150 h as specified in 5.1.3 of ISO 4892 shall not be less than Grade 4 of the Grey scale.

4.6.3.2 There shall also be no visible changes of appearance when examined as described in 3.2 of ISO 4582.

4.7 Reversion test

The change in length of any specimen shall not exceed five per cent when tested as prescribed in Appendix A.

4.8 Splitting test

The opening of the slit shall not exceed 2.5 mm when tested as prescribed in Appendix B.

4.9 Surface attack test

The specimen shall not show delaminations beyond the appearance of fine fissures as shown in Fig. 1 when tested as prescribed in Appendix C.

FIGURE 1 - Fissures

4.10 Distortion test

The increase in diameter of top, at right angles to the handle (d) (see figure 2) shall not be more than 10 per cent of the initial when tested as prescribed in Appendix D.

4.11 Overload test

No part of the bucket or handle shall break and the handle shall not become detached from the bucket at either side when tested as prescribed in Appendix E.

5 MARKING AND PACKAGING

5.1 Marking

5.1.1 Each bucket shall be marked legibly and indelibly with the following:

a) Water capacity at room temperature in litres;

b) Name and address of the manufacturer and/or registered trade mark.

5.1.2 Batch or Code number, shall also be marked on each bucket.

5.1.3 The buckets may also be marked with the Certification Mark of the Sri Lanka Standards Institution illustrated below on permission being granted for such marking by the Sri Lanka Standards Institution.

NOTE - The use of the Sri Lanka Standards Institution Certification Mark (SLS mark) is governed by the provisions of the Sri Lanka Standards Institution Act and the regulations framed thereunder. The SLS mark on products covered by a Sri Lanka Standard is an assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control, which is devised and supervised by the Institution and operated by the producer. SLS marked products are also continuously checked by the Institution for conformity to that standard as a further safeguard. Details of conditions under which a permit for the use of the Certification Mark may be granted to manufacturers or processors may be obtained from the Sri Lanka Standards Institution.

5.2 Packaging

The buckets shall be packed as agreed to between the purchaser and the supplier.

6 SAMPLING

6.1 Lot

In any consignment, all the buckets of the same material, and drawn from a single batch of manufacture shall be grouped to form a lot.

6.2 Scale of sampling

6.2.1 Samples shall be tested from each lot separately for ascertaining conformity of the lot to the requirements of this specification.

6.2.2 The number of buckets to be sampled from a lot shall be in accordance with Column 1 and Column 2 of Table 1.

TABLE 1 - Scale of sampling

Number of buckets in the lot (1)	Number of buckets to be selected (2)	Sub-sample size (3)	Acceptance number (4)
Up to 90	5	2	0
91 to 150	8	2	1
151 to 280	13	3	1
281 to 500	20	3	2
501 and above	32	5	3

6.2.3 These buckets shall be selected at random from the lot. In order to ensure randomness of selection, random number tables given in SLS 428 shall be used.

6.3 Number of tests

6.3.1 Each bucket selected as in 6.2.2 shall be examined for marking requirement.

6.3.2 Each bucket selected as in 6.2.2, shall be examined for requirements given below.

a) Construction (see 4.2)

b) Workmanship (see 4.3)

c) Water capacity test (see 4.4)

d) Distortion test (see 4.10)

e) Overload test (see 4.11)

f) Odour (see 4.5)

6.3.3 If the lot has been found satisfactory with respect to the requirements mentioned in 6.3.2 a sub-sample of the size given in Column 3 of Table 1 shall be selected from the buckets selected as in 6.2.2 and each bucket shall be tested for the requirements given below.

a) Colour Fastness (see 4.6)

b) Reversion test (see 4.7)

c) Splitting test (see 4.8)

d) Thickness (see 4.2.5)

e) Surface attack test (see 4.9).

7 METHODS OF TEST

7.1 Tests shall be carried out as specified in 4.2, 4.3 and Appendices A to H.

7.2 At least 72 h shall elapse between manufacture of buckets and the testing of specimens. The specimens shall be conditioned for at least 4 h at a temperature of 27 ± 2 °C immediately before testing. The conditioning time period may form part of the 72 h period. Unless otherwise specified, the same temperature conditions shall be maintained throughout the tests.

8 CONFORMITY TO STANDARD

The lot shall be declared as conforming to the requirements of this specification if the following conditions are satisfied.

8.1 Each bucket examined as in 6.3.1 satisfies the marking requirements.

8.2 The number of buckets, not conforming to one or more requirements when tested as in 6.3.2 is less than or equal to the corresponding acceptance number given in Column 4 of Table 1.

8.3 Each bucket tested as in 6.3.3, satisfy the relevant requirements.

APPENDIX A

REVERSION TEST

A.1 PRINCIPLE

Reversion test is carried out by immersing the specimen in boiling water for a specified period and then determining the change in length.

A.2 TEST SPECIMENS

Cut test specimens from the side wall of the bucket. The test specimen shall be of a size 50 mm x 2.5 mm and shall be cut in a direction parallel to the direction of flow of the material during the moulding operation. Five such specimens cut from separate sectors of the side of the bucket shall be used for this test.

A.3 PROCEDURE

Immerse the test specimen in boiling water for 30 min. Remove the test specimen from the water-bath and allow it to cool to room temperature for 1 h. Measure its length to the nearest 0.5 mm.

A.4 REPORT

Report the change in length as a percentage of the initial length of the test specimen.

APPENDIX B

SPLITTING TEST

B.1 PRINCIPLE

Splitting test is carried out by immersing the specimen, having a slit of specified dimensions, in boiling water for a specified period and then determining the increase in the opening of the slit.

B.2 TEST SPECIMEN

Cut from the base of a bucket a disc of 75 mm diameter with the sprue at its centre. Make a slit of 35 ± 2 mm in the specimen so that its midpoint lies on the centre of the circular specimen and extends through its thickness. This slit may be made by a special tool or razor blade.

B.3 PROCEDURE

Immerse the specimen in boiling water for 30 min. Remove the test specimen from the water-bath and allow it to cool to room temperature. Measure the distance between the two ends of the slit.

B.3.1. The buckets shall be taken to have passed this test if the opening of the slit has not exceeded 2.5 mm.

APPENDIX C

SURFACE ATTACK TEST

C.1 PRINCIPLE

Surface attack test is carried out by immersing the test specimen in carbon tetrachloride for a specified period and then examining for delamination.

C.2 TEST SPECIMENS

Cut four specimens of 50 mm x 2.5 mm from the base of the bucket so that its centre point is 75 mm away from the sprue.

C.3 REAGENT

C.3.1 Carbon tetrachloride

C.4 PROCEDURE

Immerse the test specimens in carbon tetrachloride at 40 ^{o}C for 4 h. Remove the test specimens from carbon tetrachloride solution and place them on a blotting paper. Allow the specimens to dry at room temperature for 1 h. Note the extent and nature of the delamination produced in the specimens.

APPENDIX D

DISTORTION TEST

D.1 PRINCIPLE

Distortion test is carried out by hanging a bucket filled with water at 60 °C and then determining the increase in diameter of the bucket.

D.2 PROCEDURE

Suspend the bucket by its handle at the centre from a double hook, the arms of which are approximately 75 mm apart (see Fig. 2). Measure the diameter d of top at right angles to the handle (including spout, if any). Pour water at 60 °C until it is filled to a level of 25 mm from the rim. After 5 min. measure d (diameter) and report the increase in dimensions as percentage of the initial dimensions.

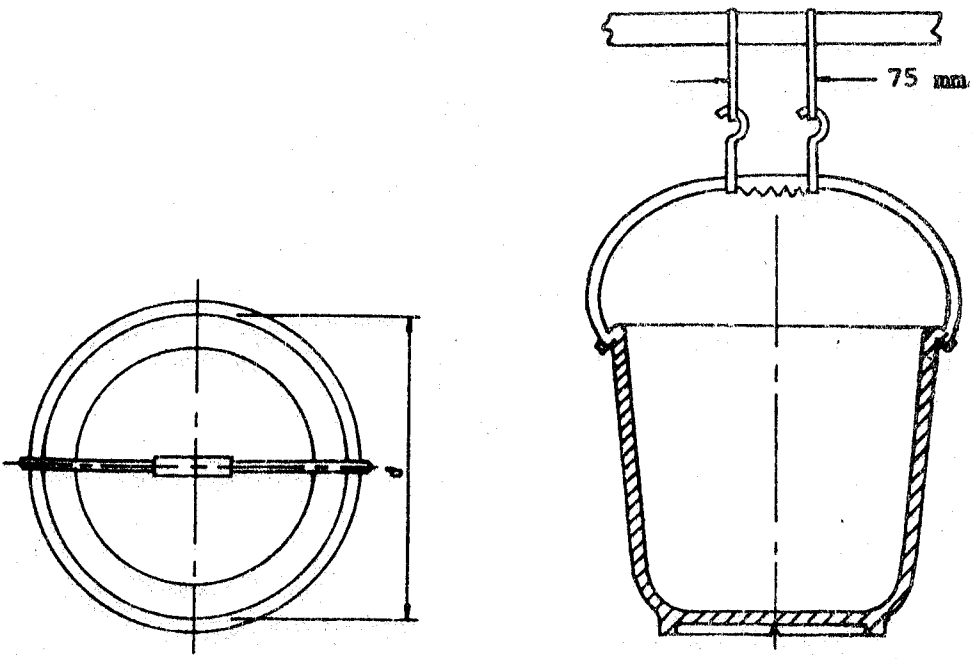

FIGURE 2 - Apparatus for determination of distortion

APPENDIX E

OVERLOAD TEST

E.1 PRINCIPLE

Overload test is carried out by hanging a bucket filled with specified load for a specified period and then examining for any break or detachment of the handle.

E.2 PROCEDURE

Suspend the bucket as prescribed in D.2. Pour into the bucket lead shots or any other suitable material of a mass equal to twice that of the water required to fill the bucket. Examine the bucket or handle for any break or detachment of the handle from the bucket at either side after 30 min.

APPENDIX F

TEST FOR ODOUR

Immediately after the test specified in Appendix E is carried out, remove water from the bucket and check for any objectionable odour.

APPENDIX G

DETERMINATION OF WATER CAPACITY

G.1 PROCEDURE

Place the bucket on a platform balance and fill it with water. Find the mass of water and convert it to volume (see Note). The complete filling is checked by pulling a thread over the brim of the bucket. When the water surface touches the thread it is considered to be completely full. In case of buckets with hinge holes (made to fix the carrying handle) the buckets are considered to be full when water starts to flow through the holes.

NOTE - One kilogram is equal to one litre at 27 ± 2 °C.

APPENDIX H

DETERMINATION OF COLOUR FASTNESS TO WATER

H.1 PROCEDURE

Cut a small piece of the material from a sheet prepared as in 6.2 of ISO 183 and place it in a 100-ml beaker. Cover the specimen with approximately ten times its mass of distilled water. Keep the beaker with the contents in an oven maintained at 70 ± 1 °C for 24 ± 1 hours.

H.2 REPORTING

If the water is free from colour, it shall be reported that the colour fastness of the material to water is satisfactory.

AMENDMENT NO. 01 TO SLS 634 : 1984
SPECIFICATION FOR PLASTIC BUCKETS

EXPLANATORY NOTE

This amendment is introduced a) to amend clause **4.2.5** to include number of measurements to be taken to determine thickness of the bottom of the bucket, b) to amend clause **4.6.3** to give the correct reference to ISO 4892 as it has been revised in 1994 and c) to amend test method for determination of colour fastness to water (clause **H.1** of Appendix **H**).

AMENDMENT NO. 01 APPROVED ON 1995-11-23 TO SLS 634 : 1984
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Clause 4.2.5

Delete the existing test in clause **4.2.5** and substitute the following:

"The thickness of any point of the bottom of the bucket shall be not less than 2 mm when measured at 20 randomly selected points."

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Clause 4.6.3.1

In line 3 substitute "**5.1.3**" with "Part **4**".

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Appendix H

Clause H.1 PROCEDURE

Delete the first sentence and substitute the following:

"Cut a small piece of 50 mm square from a sheet of material to be tested (the thickness is of no importance) and place it in a 100 mm beaker."

SRI LANKA STANDARDS INSTITUTION

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Science & Technology.

The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

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All members of the Technical and Sectoral Committees render their services in an honorary capacity. In this process the Institution endeavours to ensure adequate representation of all view points.

In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of standardization as are of special interest to Sri Lanka.

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