

BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

(Not to be reproduced without the permission of BIS or used as an Indian Standard)

DRAFT AMENDMENT NO. 1

TO

IS 17803 : 2022

**POTABLE WATER BOTTLES (COPPER, STAINLESS STEEL,
ALUMINIUM) — SPECIFICATION**

ICS 55.100; 67.250

Utensils, Cutlery and Domestic Hardware
Sectional Committee, MED 33

Last date for receipt of
comments is **19 July 2024**

(Title) — Substitute the following for the existing:

‘पेयजल की बोतल (धातु) — विशिष्टि

Potable Water Bottles (Metallic) — Specification’

(Foreword, para 3) — Add the following to the end of the third paragraph:

‘As material grades conforming to IS 6911 and IS 15997 have been permitted, so requirements for the welding procedure, staining test, and migration of heavy materials have been made mandatory. Apart from the importance of corrosion resistance, following requirements have been also added:

- a) Sensory verification analysis to ensure no discernible sensory alterations.
- b) Constituent migration assessment to verify compliance with safe transfer levels.
- c) Corrosion resistance evaluation to confirm maintenance of stainless steels intrinsic anticorrosion properties.’

(Foreword, para 5) — Substitute the following for the existing:

‘The composition of the committee responsible for the formulation of this standard is given in Annex D’

(Page 2, *clause 5.3*) — Substitute the following for the existing:

‘If possible, avoid welding and have only seamless stainless bottle. Welding if done for stainless steel bottle, shall be free from welding defects. The welding electrode shall conform to grade 308L as per IS 5856. The weld shall be finished properly so that when a finger is passed on the joint, it shall be smooth.

Note — The welding shall comply with Annex C.’

(Page 2, *clause 7.1.2.1, line 1*) — Substitute the following for the existing:

‘The materials used to manufacture the inner containers shall be stainless steel of grades N1, N2 as per IS 15997 or IS 6911 or grade 304 series as per IS 5522 or IS 6911 or 308L/316/316L as per IS 6911’

(Page 2, *clause 7.1.2*) — Add the following notes at the end of the clause:

‘NOTES:

1. If grades N1 and N2 are used, then material shall comply with the requirements given in Annex A, B, and C.
2. Material requirements of aluminum bottle shall be as per IS 3603.’

(Page 2, *clause 7.1.9*) — Substitute the following for the existing:

‘Any bottle, irrespective of the material, if coated fully or partially externally, shall conform to the thickness test, salt water corrosion test, adhesion test procedures as per IS 9730. The limit for lead and cadmium of the coating shall be as per IS 9806 (*see* Table 1 of IS 9806), when measured as per standard test method. The minimum thickness of the coating shall be declared by the manufacturer.

NOTE — Material Requirements of Aluminum Bottle Shall be as per IS 3603.’

(Page 3, *clause 7.3.1*) — Substitute the following for the existing:

‘7.3.1 Drop Impact Test

7.3.1.1 Horizontal hang

Fill water in the bottle up to its full capacity at the normal temperature and drop it horizontally from the height of 400 mm in a horizontal state on a hard wood board of 30 mm or more in thickness fixed. The bottle shall comply with the requirements specified in 7.3.2.2.

7.3.1.2 Vertical hang

Fill water in the bottle up to its full capacity at the normal temperature and drop it horizontally from the height of 400 mm in a vertical state on a hard wood board of 30 mm or more in thickness fixed. The bottle shall comply with the requirements specified in 7.3.2.2.

7.3.1.3 Free fall test

Fill water in the bottle up to its full capacity at the normal temperature and drop it on a hard wood board of 30 mm or more in thickness fixed horizontally. The test shall be carried out in free-fall state (i.e.) by pushing the bottle gently by hand with a force just sufficient to fall from a table, at a height 400 mm above the ground level. The bottle shall comply with the requirements specified in 7.3.2.2.'

(Page 3, Fig. 1) — Add new figure and renumber the subsequent figures accordingly.

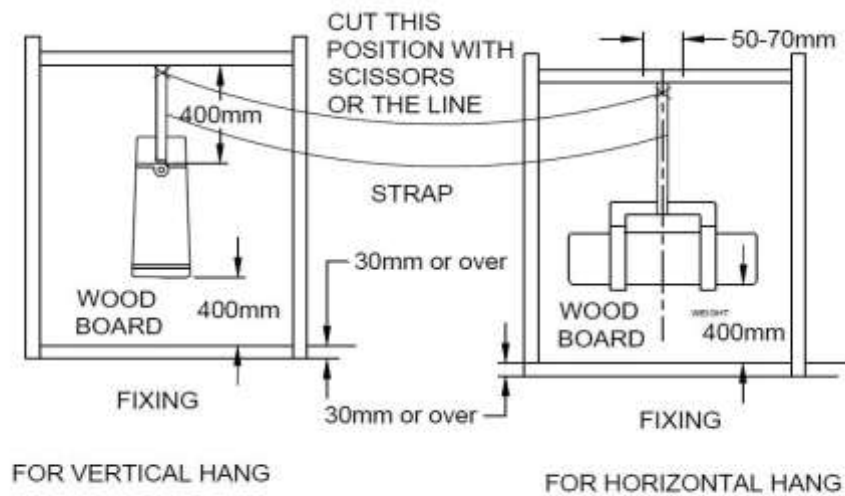


FIG. 1 DROP IMPACT TEST

(Page 4, clause 7.7.1, line 1) — Substitute the following for the existing:

‘7.7.1 Fill the bottle to 75 percent of its nominal capacity with water at normal temperature and containing 0.5 percent surfactant.’

(Page 6, Annex A) — Insert the following new Annex A and renumber the subsequent:

‘ANNEX A

**TEST METHOD FOR LEACHING OF FOOD GRADE STAINLESS STEEL
(WELDED SAMPLE) (TYPE TEST)**

(Clause 7.1.2)

A-1 GENERAL

A-1 Stainless steel coupons are collected/made to conduct leaching in food simulating medium through analytical studies.

A-1.2 Details of stimulants are given below:

- a) 3% Acetic acid;
- b) 3% Lactic acid; and
- c) 4% NaCl (Common Salt).

A-1.3 Following instruments / equipment's are required for carrying out this taste:

- a) Inductively Coupled Plasma – Mass Spectrometer (ICP – MS);
- b) Millipore water purification system;
- c) Hot plate ambassador, with energy regulator; and
- d) Calibrated Vernier calliper.

A-2 PROCEDURE

A-2.1 Take a required volume of simulate in the cleaned beaker and make the volume up to 250 ml using deionized (DI) water.

A-2.2 Heat a beaker with food simulator only and covered with water filled petri-dish to boiling temperature and soak at the same temperature for 30 minutes. Cool it to the room temperature and note down the volume. This experiment is done to estimate the loss in the volume of the medium during boiling. The contents of the beaker have to be discarded and not used further in any experiment.

A-2.3 The cleaned coupons are then added to stimulated food media and covered with a thoroughly cleaned petri-dish containing water.

A-2.4 Different beakers containing one coupon each in the different simulated food are to be heated to boiling temperature and soaked at the same temperature for 30 minutes. At the same time, prepare a sample blank also. The sample blank shall contain only simulated food medium without coupon.

A-2.5 After soaking, remove the beakers using cleaned tongs and cool to room temperature.

A-3 METHOD OF ANALYSIS ON ICP-MS

The leaching solution shall be analysed for the presence of Fe, Cu, Ni, Cr and Mn and hazardous elements on the ICP-MS.

A-4 CALCULATIONS

The values of the presence of five elements Fe, Cu, Ni, Cr and Mn and hazardous elements are analysed using ICP-MS. The value of sample blank shall be subtracted from it. Then, resultant values shall be normalized with respect to the area of the coupon in contact with simulated food medium, per unit volume of the simulator food item, so that the final concentration is given in mg/kg. Resultant values for Fe, Cu, Ni, Cr and Mn and hazardous elements shall not be more than specific release limits (SRLs) given below:

Element	Specific Release Limit (SRL) (mg/kg)
Antimony	0.04
Arsenic	0.002
Chromium	0.25
Cobalt	0.02
Copper	4
Iron	40
Lead	0.01
Manganese	1.8
Mercury	0.003
Molybdenum	0.12
Nickel	0.14
Tin	100

(Page 8, Annex B) — Insert the following new Annex B and renumber the subsequent:

‘ANNEX B **SENSORIAL TEST METHOD (TYPE TEST)**

(Clause 7.1.2)

B-1 Following simulation solvents and test conditions are stipulated:

- a) Food Stimulant – Distilled water.
- b) Test duration and temperature – 2 hours at 100 °C

B-2 Transfer of taste and smell to the distilled water shall be less than 3.

Note — Evaluation criteria for transfer of taste and smell are as follows:

- 0 = No Discernible Deviation
- 1 = Barely Discernible Deviation
- 2 = Weak Deviation
- 3 = Clear Deviation
- 4 = Strong Deviation

(Page 9, Annex C) — Insert the following new Annex C and renumber the subsequent:

‘ANNEX C
WELDING AND FINISHING

(Clause 5.3 and 7.1.2)

C-1 GENERAL

Tungsten Inert Gas Welding (TIG) welding is the preferred process because there is no flux or cleaning agent involved. The metal joints shall have clean TIG welding. Mechanical cleaning followed by chemical cleaning shall be done on joints.

Note — Mechanical processes may include any of the processes like grinding, filing, sanding, sandblasting, and brushing. Chemical processes use solvents and acids to remove paint, oil, grease, and oxide.

C-2 PROCEDURE

- a) TIG welding shall be used.
- b) Preferred filler material grade 308L (07Cr18Ni9) as per IS 5856 to be used.
- c) After the weld, the weld surface and adjacent area to be grinded using 60 Grit wheel.
- d) Clean the weld surface and adjacent area using a brush.
- e) Polish the weld and adjacent area in the following sequence:
 - 1) 120 Grit;
 - 2) 200 Grit;
 - 3) 400 Grit;
 - 4) Jute brush;
 - 5) Hard buff; and
 - 6) Clean with chalk powder or electro polishing.’