

स्टेनलेस स्टील के बर्तन — विशिष्टि  
( तीसरा पुनरीक्षण )

**Stainless Steel Utensils —  
Specification**  
( *Third Revision* )

ICS 77.140.20; 97.040

© BIS 2024



भारतीय मानक ब्यूरो  
BUREAU OF INDIAN STANDARDS  
मानक भवन, 9 बहादुर शाह जफर मार्ग, नई दिल्ली - 110002  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI - 110002  
[www.bis.gov.in](http://www.bis.gov.in) [www.standardsbis.in](http://www.standardsbis.in)

November 2024

Price Group 9

## FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Utensils, Cutlery and Domestic Hardware Sectional Committee had been approved by the Mechanical Engineering Division Council.

This standard was first published in 2000 and subsequently revised in 2017 and 2022. The standard is being revised again for incorporating the modifications found necessary as a result of experience gained with the use of this standard. Also, the major changes in the standard in this revision are given below:

- a) Scope of the standard has been modified for better clarification on coverage and exemption of different type of utensils;
- b) Permissible reduction in pressing and spinning process has been increased;
- c) Classification criteria has been added;
- d) Definitions have been added for all types of utensils covered in the standard.
- e) The tolerances for 3 Ply material have been added
- f) Requirement on minimum thickness of the sheet to be used for manufacturing the utensil has been modified; and
- g) Marking requirements have been modified;

The composition of the Committee responsible for the formulation of this standard is given in [Annex F](#).

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*

## STAINLESS STEEL UTENSILS — SPECIFICATION

*( Third Revision )***1 SCOPE**

This standard lays down the minimum requirements for following types of stainless steel utensils:

- a) Cooking utensil;
- b) Serving utensils;
- c) Table utensils; and
- d) Storage utensils.

## NOTES

- 1 Utensils above 15 litres and 500 mm in diameter/length/width (where capacity cannot be measured), shall be classified as commercial.
- 2 The figures of the utensils included in this standard are for representation only.
- 3 Cutlery items (spoons/ladle, forks, knives) are not covered in this standard.

**1.1 Applicability of Clauses**

**1.1.1** All clauses are applicable to cooking utensils and serving utensils (Type CS).

**1.1.2** Clauses [2](#), [3](#), [4](#), [5](#), [8](#) and [9](#) (reference, materials, classification, workmanship, marking and packaging) are applicable for:

- a) Serving utensils (Type S);
- b) Table utensils; and
- c) Storage utensils.

**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 editions of these standards.

**3 MATERIAL**

**3.1** The stainless steel used for manufacture of utensils shall conform to IS 5522/grades of IS 5522 as per IS 6911 or IS 15997/grades of IS 15997 as per IS 6911.

**3.2** The material used for composite bottom shall be as per IS 15960. For thicknesses, please refer to [4.4](#).

**3.3** If the body of the utensil is made of a 3-ply construction, it shall conform to IS 18755.

**3.4** If the utensil is provided with a stainless steel lid, the material of lid shall be as per IS 5522/grades of IS 5522 as per IS 6911 or IS 15997/grades of IS 15997 as per IS 6911.

**3.5** If the utensil is provided with a tempered glass lid, the lid shall conform to the performance requirements as given in IS 2347. The minimum thickness of glass shall be 3.5 mm. If the stainless steel rim is provided on the glass lid, the material of rim shall be as per IS 5522/grades of IS 5522 as per IS 6911 or IS 15997/grades of IS 15997 as per IS 6911. The minimum thickness of the rim shall be 0.25 mm.

NOTE — If material for utensil as per IS 15997 is used, then it shall comply with the requirements given in [Annex C](#), [Annex D](#), and [Annex E](#). (for welded utensils only)

**4 SHAPES, DIMENSIONS, CLASSIFICATIONS AND DEFINITIONS**

**4.1** The shapes and dimensions for various types of utensils shall be as per the agreement between the purchaser and the manufacturer. However, some of the shapes of different types of utensils are given in [Annex B](#) for guidance.

**4.2** The minimum thickness of the sheet used for manufacturing of utensils shall conform to [Table 1](#) and [Table 2](#).

The permissible reduction in the thickness of the finished utensils, taking into account the pressing or spinning process, shall not be more than 25 percent for pressing and 60 percent for spinning on the minimum sheet thickness specified as per [Table 1](#). For fabricated utensils, the reduction in the thickness of the sheet is not applicable.

NOTE — The permissible reduction in the thickness of the finished utensils includes reduction for all operations.

**4.3 Classification**

Where specified, the utensil shall be classified as follows:

- a) Heavy;
- b) Medium;
- c) Light; and
- d) Commercial

**Table 1 Minimum Sheet Thickness for Body of Utensil**

(Clause 4.2)

Sl No.	Type of Utensil	Minimum Thickness of Sheet mm					
		Heavy		Medium		Light	
(1)	(2)	Vessel with Cladding (3)	Vessel (4)	Vessel with Cladding (5)	Vessel (6)	Vessel with Cladding (7)	Vessel (8)
i)	Cooking utensil	0.7	0.9	0.6	0.7	0.5	0.5
ii)	Serving utensil type CS	0.7	0.9	0.6	0.7	0.5	0.5
iii)	Serving utensil type S	-	0.7	-	0.6	-	0.3
iv)	Table utensil	-	0.7	-	0.5	-	0.3
v)	Storage utensil	-	0.7	-	0.5	-	0.3

NOTE — For commercial utensils (cooking utensils and serving utensils type CS), the minimum thickness of the sheet shall be  $\geq 1$  mm. For other types of commercial utensils, the minimum thickness shall be  $\geq 0.4$  mm.

**Table 2 Minimum Sheet Thickness for Lid of Utensil**

(Clause 4.2)

Sl No.	Type of Utensil	Minimum Thickness of Sheet mm		
		Heavy (3)	Medium (4)	Light (5)
i)	Cooking utensil	0.6	0.4	0.3
ii)	Serving utensil type CS	0.6	0.4	0.3
iii)	Serving utensil type S	0.6	0.4	0.3
iv)	Table utensil	0.6	0.4	0.3
v)	Storage utensil	0.6	0.4	0.3

NOTE — The permissible reduction in the thickness of the lid, taking into account the pressing or spinning process, shall not be more than 20 percent.

**4.4** The thickness of aluminium disc/core and protector/cowl for composite bottom utensils shall be as given below:

Sl No.	Composite Bottom – 2-ply and 3-ply	Thickness mm		
		Heavy (3)	Medium (4)	Light (5)
i)	Aluminium disc/core	$\geq 3$	$\geq 2.5$	$\geq 1.8$
ii)	Protector/cowl		$\geq 0.4$	

NOTE — The material thickness for 2-ply and 3-ply composite bottom of stainless steel utensil can also be as per IS 15960.

**4.5** The minimum sheet thickness of 3-ply utensil shall be 2.5 mm ± 0.15 mm.

The permissible reduction in the thickness of the 3-ply finished utensils, taking into account the pressing with a radius at the bottom (base with the side wall):

- a) The base shall be same as the circle thickness; and
- b) The maximum permissible reduction in the thickness shall be 30 percent of the base thickness.

## 4.6 Definitions

**4.6.1 Cooking Utensils or Cookware** — Utensils intended for use in the preparation and/or cooking of food or beverages on the top of a stove, or any other heating appliance.

NOTE — Accessories like separators/containers, *Idli* plate, steamer plate, dhokla plate, etc., are not covered in this standard.

**4.6.2 Serving Utensils** — Utensils intended for use in serving of food or beverages, it could be hot or cold.

- a) *Serving Utensils Type CS* — can be used for cooking also; and
- b) *Serving Utensils Type S* — cannot be used for cooking.

**4.6.3 Table Utensils** — Utensils intended for use on the table, for eating of food or drinking of water or beverages, it could be hot or cold. It cannot be used for cooking.

**4.6.4 Storage Utensils** — Utensils intended for storage of food, could be hot or cold. It cannot be used for cooking.

## 5 WORKMANSHIP AND FINISH

**5.1** The utensils shall be free from any manufacturing defects, sharp edges, cuts, when checked with naked eyes or corrected vision. The utensils generally be bright finish, matt finish or combination of both finish and shall not rock when placed on a gas stove (*see* Note). In case of electrolytic copper deposition on the utensils at the bottom, the coating shall be free from defects such as uncoated area and their superficial blemishes visible to the naked eye.

NOTE — Flat bottom utensil shall not rock when placed on flat surface (except tadka pan).

**5.2** The construction of the utensils shall be such that, it is possible to clean them thoroughly and all surfaces are accessible for cleaning by hand or brush.

**5.3** Metal handles shall be fitted to the utensils by spot welding or riveting. Spot welded joints shall not have any crevices. In case of plastic handles, it shall be suitably fitted to the body through a metal bracket or ferrule fixed to the utensil by spot welding or riveting. Stainless steel rivets or stainless steel capped aluminium rivets can be used to fix the handles on utensils. The material for the stainless-steel rivets shall be as per IS 6527/IS 6528. The material of the stainless steel cap shall be as per IS 5522/grades of IS 5522 as per IS 6911 or IS 15997/grades of IS 15997 as per IS 6911.

**5.4** Where handles are required, the requirements for handles shall conform to IS 13395.

**5.5** Welding if done, the weld shall be free from welding defects. The welding electrode shall conform to grade 308 L (07Cr18Ni9) or higher grade as per IS 5856. The weld shall be finished properly so that when a finger is passed on the joint, it shall be smooth.

### NOTES

- 1 **5.5** is not applicable for spot welded utensils.
- 2 The welding shall comply with [Annex E](#).

**5.6** After processing 3-ply utensils, there shall be no oozing of the middle layer or any delamination of the layers when checked visually at the edges.

**5.7** If required by the purchaser, the utensils (cooking utensil and serving utensils Type CS) may be supplied with non-stick unreinforced coating or ceramic coating conforming to IS 9730. The coating should be PFOA and BPA free (supplier certificate is only acceptable).

### NOTES

- 1 In case of utensils, which have a honeycomb/square type of etching/embossing structure in the inner side of the utensil, the sample used for tests conforming to IS 9730 shall be as given below in Note 2.
- 2 Similar utensil without a honeycomb/square type of etching/embossing structure would go through all the process of manufacture and coating. This plain sample would be tested as per IS 9730 instead of the utensil with honeycomb structure.

**5.8** The cookware, if coated with powder coating or ceramic coating or high temperature resistant liquid coating, fully or partially externally, shall conform to the thickness test, adhesion test as per IS 9730.

The coating shall comply with IS 9806. The minimum thickness of the coating shall be 30 microns (powder coating) and 15 micron (ceramic coating, high temperature resistant liquid coating). The externally coated cookware shall be subjected to thermal shock test as given in [5.8.1](#).

**5.8.1** Dry heat the cookware on gas stove to  $250\text{ }^{\circ}\text{C} \pm_{-0}^{+25}\text{ }^{\circ}\text{C}$  and then quench in water at ambient temperature. Repeat the test 25 times. There shall be no blistering of coating from the cookware during or on completion of 25 gas heat cycles.

## 6 TESTS

### 6.1 Staining Test (Type Test - Frequency Once in a Year)

The surface of the utensil (vessel and lid) shall be thoroughly washed with hot soapy water. Thoroughly rinse and then degrease the test specimens in acetone or methylated spirits, then wipe using a soft cloth. The utensils, when filled with any of the following solutions at ambient temperature and kept for 16 h, shall not show any sign of staining after removal from the solutions at the end of above period and washing with hot soapy water, thoroughly rinse with water and wipe with soft cloth.

- a) Ten grams of glacial acetic acid (99 percent) dissolved in distilled water to make 100 ml; or
- b) 0.5 grams of pure sodium chloride dissolved in distilled water to make 100 ml.

#### NOTES

- 1 The vessel and lid can be tested separately in case of lid. The lid should be dipped in the solution.
- 2 It is a type test and applicable only for cooking utensil and serving utensils Type CS.

### 6.2 Mechanical Shock Test (for Cladded Utensils Only)

The utensil body shall be supported in air with the bottom side up and a steel ball weighing half a kg  $\pm 5\text{ g}$  dropped on to it from the height of 500 mm five times. After completion of the test, the cladded or deposited layer shall not show sign of peeling off or coming off.

### 6.3 Thermal Shock Test (for Cladded Utensils Only)

The utensil body only shall be kept in an oven to attain a temperature of  $250\text{ }^{\circ}\text{C} \pm_{-0}^{+25}\text{ }^{\circ}\text{C}$ . Thereafter the utensil shall be removed and dipped immediately in water maintained at ambient temperature. This process shall be repeated three times and at the end

of the process the deposited layer/cladding shall not show any sign of peeling off or coming off.

### 6.4 Dry Heat Test (for Cladded Utensils Only)

The utensil body only shall be heated up to  $250\text{ }^{\circ}\text{C} \pm_{-0}^{+25}\text{ }^{\circ}\text{C}$  on induction and immediately quench in water (water temperature before quenching shall be around  $(35\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C})$ ). Repeat the cycle for 25 times on induction and repeat the cycle for 25 times on gas. Check the bottom for bulge, separation of disc or blisters after cooling every cycle. There shall be no separation of cowl or disc from the utensil after cooling.

### 6.5 Coating Thickness Test (for Copper Deposit)

The total thickness of the utensil including copper deposit shall be measured. Then, the copper deposit shall be stripped off in two areas of required size and thickness of the stainless steel sheet shall be measured. The difference between the total thickness including copper deposited and the thickness of stainless steel sheet be considered as the thickness of the copper deposited. This test is for electro deposition of copper only. The thickness of the copper-deposited shall be as agreed to between the purchaser and manufacturer.

**6.6** For 3-ply construction utensil body, the body shall be tested as per [6.6.1](#). The body shall not show any separation (or delamination) of the 3-ply or shall not show blisters, after the completion of 50 heat cycles.

**6.6.1** Heat the utensil body to  $250\text{ }^{\circ}\text{C} \pm_{-0}^{+25}\text{ }^{\circ}\text{C}$  and quench in water at ambient temperature. Before quenching, the utensil body shall be checked at a minimum of two locations to confirm, that the temperature of the utensil body has attained to  $250\text{ }^{\circ}\text{C} \pm_{-0}^{+25}\text{ }^{\circ}\text{C}$ . Temperature to be measured at inside bottom and top edge (mouth portion) of the utensil (record the temperature for at least the first and the last cycle). Repeat this cycle 50 times.

#### NOTES

- 1 Hold (soak) the utensil body for 2 min at  $250\text{ }^{\circ}\text{C} \pm_{-0}^{+25}\text{ }^{\circ}\text{C}$  under heating condition, before measuring and subsequent quenching in ambient temperature water.
- 2 For guidance purposes, the heating source may be a hot air oven or any other equipment which can be used to achieve such temperature.

### 6.7 Nominal Capacity Test

**6.7.1** The nominal capacity of cookware shall be expressed only in complete or 10 ml units for utensils less than 1 litre capacity and 50 ml units for utensils above 1 litre capacity. No negative tolerances shall be allowed on the nominal capacity.

**6.7.2** In case the marking or labelling is in terms of diameter, the internal diameter of utensil shall be marked (except for tawa, where the diameter is outer diameter). The dimensions shall be exclusive of the handles. The diameter shall be expressed only in complete or 0.1 cm units. No negative tolerances shall be allowed on the diameter.

NOTE — If the diameter is 39.25 cm, its diameter shall be marked as the nearest lower complete of 0.1 cm units, the diameter to be marked as 39.2 cm or less (39.1 cm, 39 cm).

## 7 SAMPLING

**7.1** Unless agreed to between the purchaser and the manufacturer, the sampling of utensils and criteria of conformity shall be done in accordance with IS 9040 for dimensional and staining test.

**7.2** The tests [6.2](#), [6.3](#), [6.4](#), [6.5](#) and [6.6](#) are type tests applicable to clad utensils and shall be done on separate sample in every month or one in 50 000 utensils manufactured, whichever is less. To ensure the quality of the utensils, additional tests shall be conducted on one utensil selected at random once a month or one in 50 000 utensils, whichever is less in the order as specified in [Table 3](#).

## 8 MARKING

**8.1** Each utensil shall have the following details:

- a) Capacity in litre/millilitre or size in cm/mm of utensil;
- b) Thickness of sheet (mm) or Classification;
- c) Material grade (Lid-SS 304 or SS 304/

Al 19000/SS 430, Body-SS 304 or SS304/Al 19000/SS 430);

- d) Manufacturer name or initials or trademark; and
- e) Batch number.

### NOTES

**1** The details can be marked in the form of a sticker/leaflet in case it cannot be stamped, embossed or etched.

**2** For cooking utensils, (a), (b), (d), to be marked on utensils only, (c) and (e) can be marked on primary packaging.

**3** For other utensils not used for cooking, (b) and (d) to be marked on utensils only, (a), (c), and (e) can be marked on primary packaging.

**4** Details can also be put up on primary packaging for lid.

**5** Details can be put on primary packaging for small utensils.

## 8.2 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.

## 9 PACKING

Each utensil shall be suitably packaged to avoid any damage during transit.

**Table 3 Additional Tests**

(Clause [7.2](#))

SI No.	Tests	Remarks
(1)	(2)	(3)
i)	Sample 1: a) Mechanical shock test (see <a href="#">6.2</a> ) b) Thermal shock test (see <a href="#">6.3</a> )	If found OK subject to next test Only clad utensils
ii)	Sample 3: Dry heat test (see <a href="#">6.4</a> )	For bottom clad 2-ply and 3-ply construction utensils
iii)	Sample 4: Dry heat test (see <a href="#">6.6</a> )	For 3 ply full body utensils

## ANNEX A

(Clause 2)

## LIST OF REFERRED STANDARDS

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
IS 5522 : 2014	Stainless steel sheets and strips for utensils — Specification ( <i>third revision</i> )	IS 13395 : 2021	Performance of handles and handle assemblies attached to cookware — Specification ( <i>first revision</i> )
IS 6527 : 1995	Stainless steel wire rods — Specification ( <i>first revision</i> )	IS 15960 : 2013	Composite bottom stainless-steel cooking utensils — Specification
IS 6528 : 1995	Stainless steel wire — Specification ( <i>first revision</i> )	IS 15997 : 2012	Low nickel austenitic stainless steel sheet and strip for utensils and kitchen appliances — Specification
IS 6911 : 2017	Stainless steel plate, sheet and strip — Specification ( <i>second revision</i> )	IS 18755 : 2024	Tri-ply (SS-Al-SS) material used for manufacture of utensils and kitchen appliances — Specification
IS 9040 : 2024	Methods for sampling of utensils ( <i>first revision</i> )		
IS 9730 : 2008	Non-stick unreinforced plastics coatings on domestic cooking utensils — specification ( <i>first revision</i> )		

To access Indian Standards click on the link below:

[https://www.services.bis.gov.in/php/BIS\\_2.0/bisconnect/knowyourstandards/Indian\\_standards/isdetails/](https://www.services.bis.gov.in/php/BIS_2.0/bisconnect/knowyourstandards/Indian_standards/isdetails/)



## ANNEX B

(Clause 4.1)

## DIAGRAMMATIC SHAPE OF DIFFERENT TYPES OF UTENSILS

**B-1** Diagrammatic shape of different types of utensils shall be as shown in [Fig. 1](#) to [Fig. 14](#). In these figures, 'H' is the height and 'D' is the diameter:

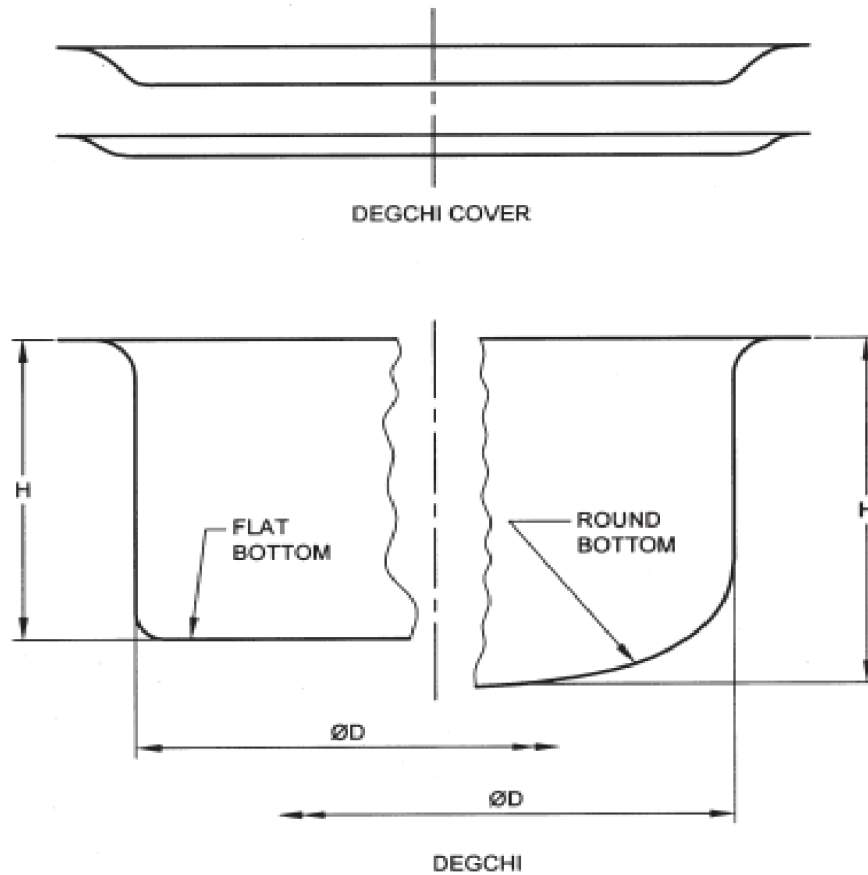


FIG. 1 DEEP DEGCHI

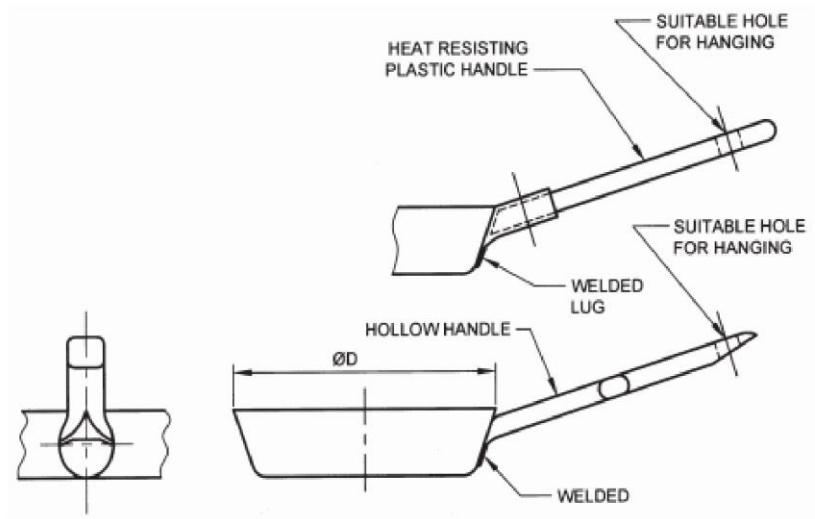


FIG. 2 FRYING PAN

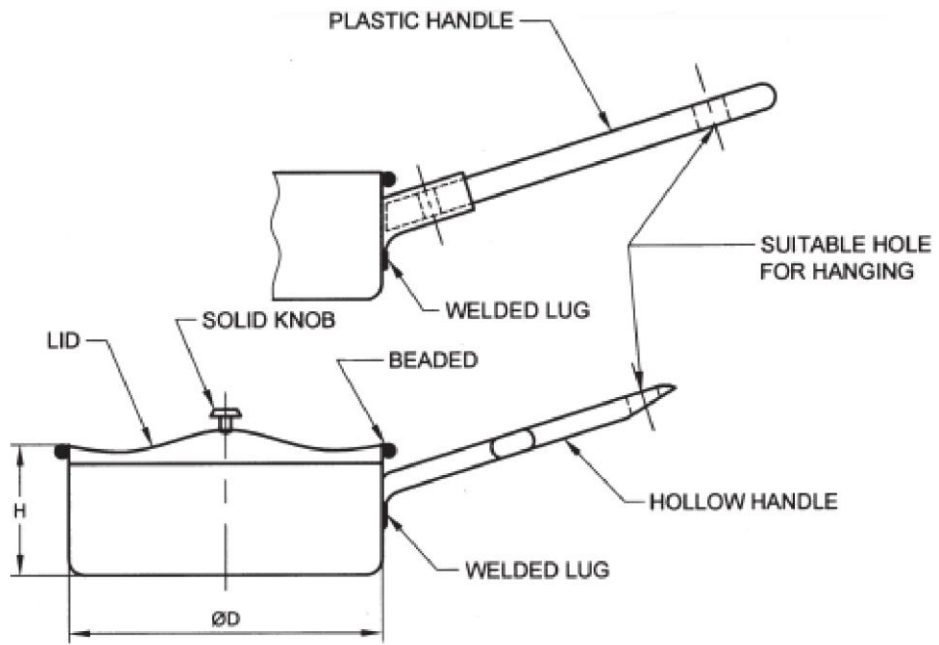


FIG. 3 SAUCEPAN

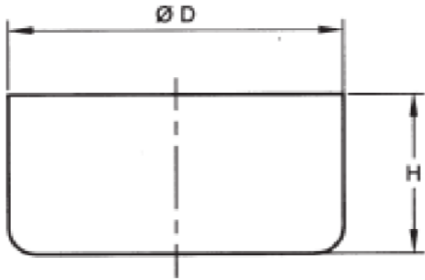


FIG. 4 KATORI

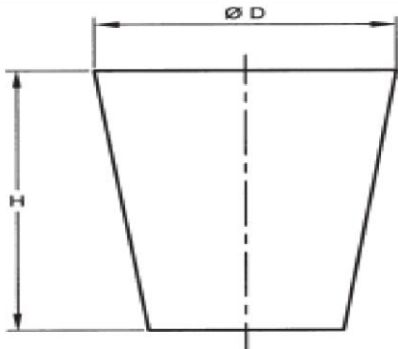


FIG. 5 TUMBLER

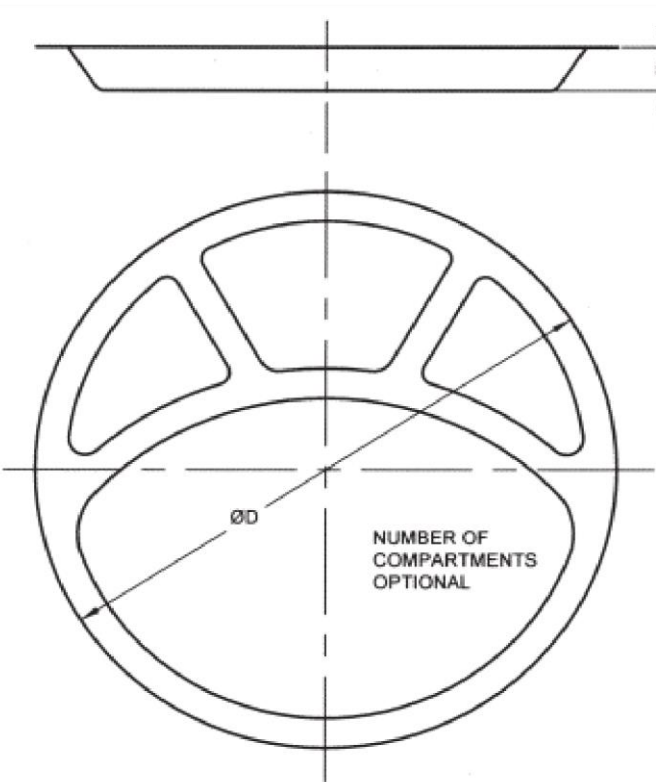


FIG. 6 COMPARTMENTAL TRAY, ROUND

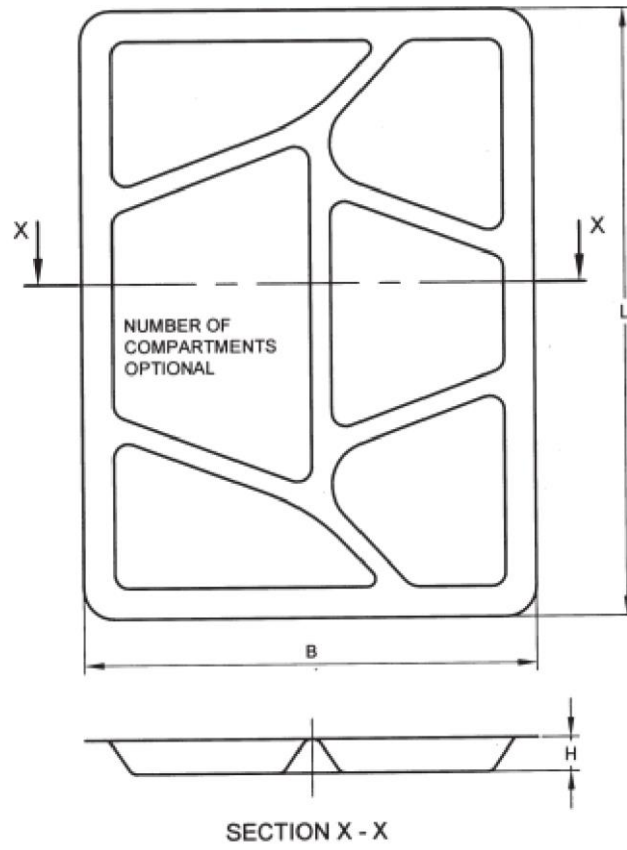


FIG. 7 COMPARTMENTAL TRAY, RECTANGULAR

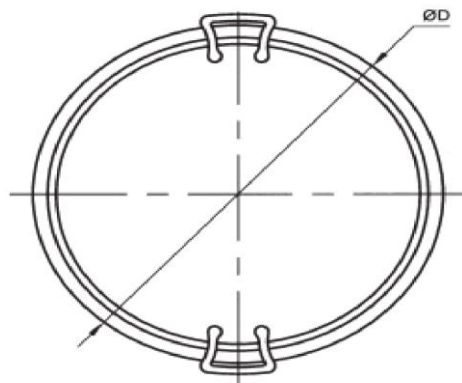


FIG. 8 ENTREE DISH, ROUND

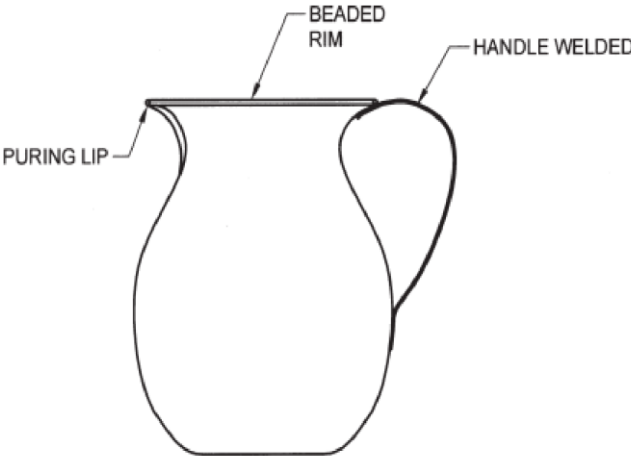


FIG. 9 JUG TYPICAL

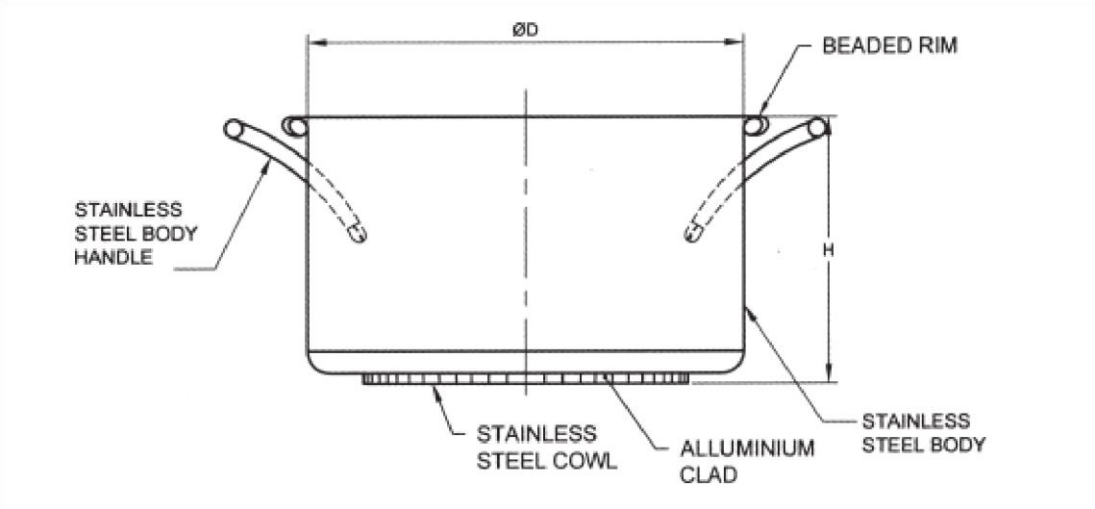


FIG. 10 CASSEROLE WITH CLADDED BASE

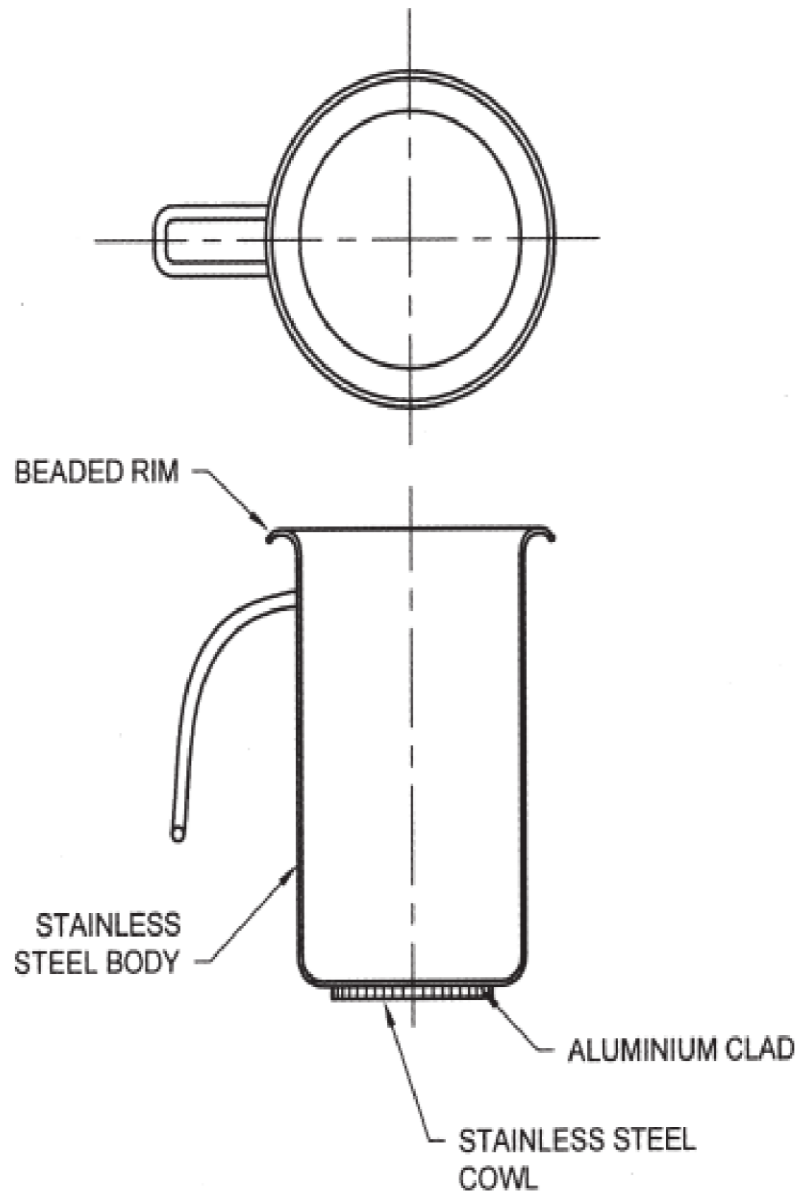


FIG. 11 JUG WITH CLADDED BASE

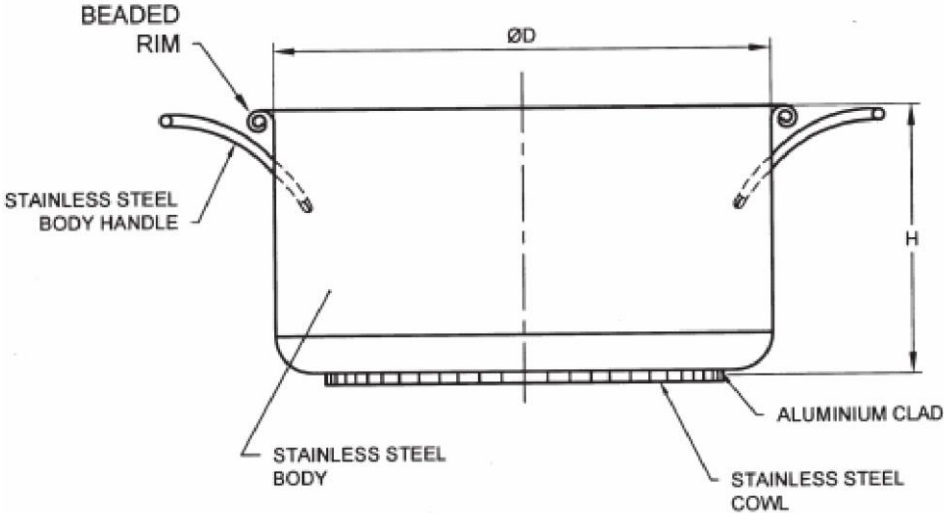


FIG. 12 DEEP POT WITH CLADDED BASE

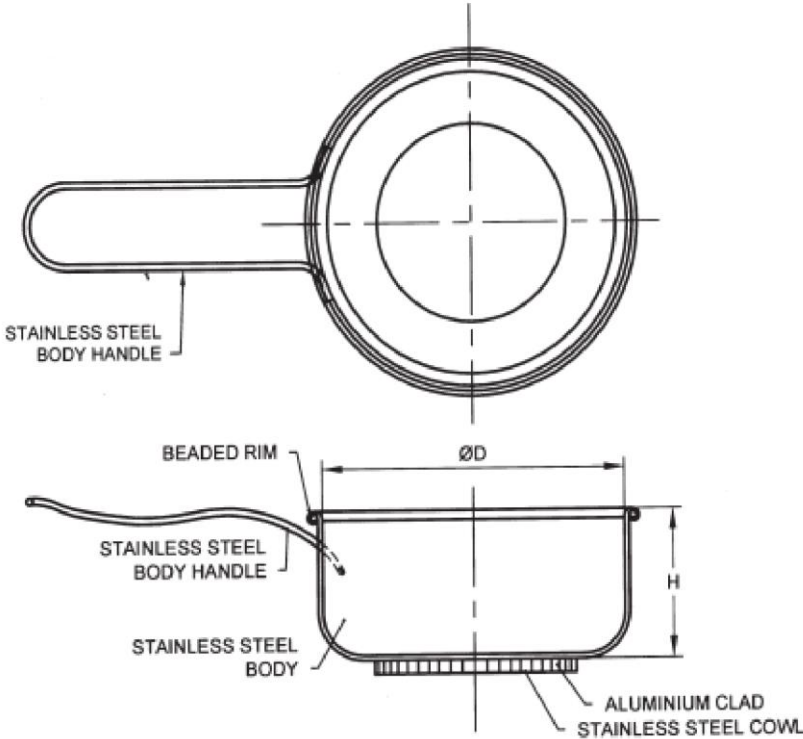


FIG. 13 FRY PAN WITH CLADDED BASE

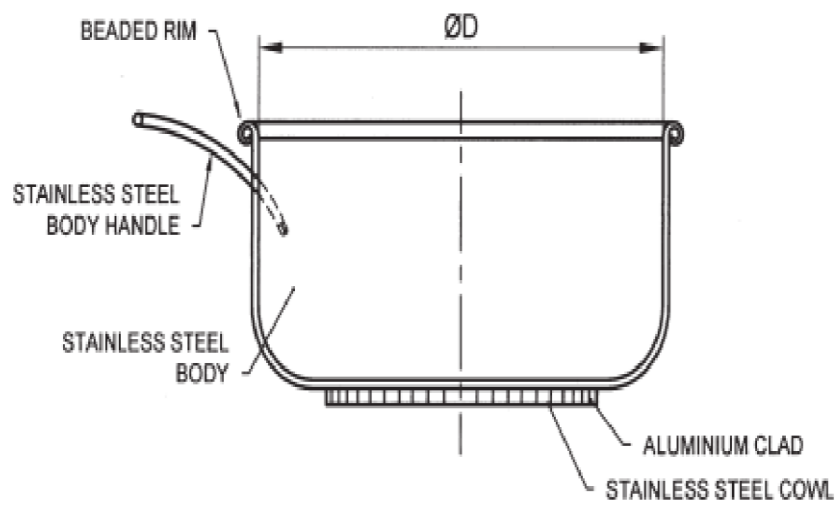


FIG. 14 SAUCE PAN WITH CLADDED BASE



## ANNEX C

(Clause 3.5)

## TEST METHOD FOR LEACHING OF FOOD GRADE STAINLESS STEEL (TYPE TEST)

## C-1 GENERAL

**C-1.1** Stainless steel coupons are collected/made to conduct leaching in food simulated medium through analytical studies. Coupons shall be of dimensions 70 mm (length) × 50 mm (breadth) × t mm (thickness of RM sheet used) with weld in the center parallel to the breadth. For welding and finish, please refer to [Annex E](#).

**C-1.2** Details of stimulants are given below:

- a) 3 percent acetic acid — Solution prepared by diluting 30 g of acetic acid with distilled water to a volume of 1 litre and;
- b) 4 percent NaCl (common salt) — Solution prepared by diluting 40 g of NaCl (common salt) with distilled water to a volume of 1 litre.

**C-1.3** Following instruments/equipment's are required for carrying out this test:

- a) Inductively coupled plasma — Mass spectrometer (ICP – MS);
- b) Millipore water purification system or distilled water;
- c) Hot plate ambassador, with energy regulator; and
- d) Calibrated Vernier calliper.

## C- 2 PROCEDURE

**C-2.1** Different beaker/petri dish containing one coupon each in the different simulated food are to be heated to boiling temperature and soaked at the same temperature for 30 min\*. At the same time, prepare a sample blank also. The sample blank shall contain only simulated food medium without coupon.

**C-2.2** After soaking, remove the coupons using cleaned tongs and cool to ambient temperature.

NOTE — \*Soaking can be in boiling temperature for 30 min/70 °C for 2 h/40 °C for 10 days.

## C-3 METHOD OF ANALYSIS ON ICP-MS

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

## C-4 CALCULATIONS

The values of the presence of Fe, Cu, Ni, Cr and Mn and other 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 other elements shall not be more than specific release limits (SRLs) given below:

<i>Sl No.</i>	<i>Element(s)</i>	<i>Specific Release Limit (SRL) mg/kg</i>
(1)	(2)	(3)
i)	Antimony	0.04
ii)	Arsenic	0.002
iii)	Chromium	0.25
iv)	Cobalt	0.02
v)	Copper	4
vi)	Iron	40
vii)	Lead	0.01
viii)	Manganese	1.8
ix)	Mercury	0.003
x)	Molybdenum	0.12
xi)	Nickel	0.14
xii)	Tin	100

## ANNEX D

(Clause [3.5](#))

### SENSORIAL TEST METHOD (TYPE TEST)

#### D-1 FOOD STIMULANT

Distilled water

#### D-2 TEST PROCEDURE

Fill the flask/bottle with 95 °C distilled water, ensure the welded portion is in touch with the water, close the cap/lid and soak till the temperature of distilled water reaches ambient water temperature. At the same time, similarly prepare a sample blank, the water should not touch the welded portion, follow the protocol as cited above.

#### D-3 ACCEPTANCE CRITERIA

Transfer of taste and smell to the distilled water shall

be less than 3. The distilled water samples of soaked and blank are smelled and tasted by a minimum of 5 personnel and results tabulated. The average of the results tabulated shall be taken for acceptance criteria.

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

## ANNEX E

### WELDING AND FINISHING

(Clauses [3.5](#), [5.5](#) and [C-1.1](#))

#### E-1 GENERAL

Tungsten inert gas welding (TIG) 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.

#### E-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; and
- 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.

## ANNEX F

*(Foreword)*

## COMMITTEE COMPOSITION

Utensils, Cutlery Domestic Hardware Sectional Committee, MED 33

<i>Organization</i>	<i>Representative(s)</i>
In Personal Capacity (A-504, K.G Chandra Vista, OMR, Opposite to Satyabhama University, Sholinganallur, Chennai)	SHRI G. SHANMUGANATHAN ( <b>Chairperson</b> )
All India Stainless Steel Industries Association, Mumbai	SHRI SAILESH SHAH SHRI JAGESH JAIN ( <i>Alternate</i> )
Anna Aluminium Company Private Limited, Kizhakkambalam	SHRI K. CHANDRASHEKARAN PILLAI SHRI V. THULASIDHARAN ( <i>Alternate</i> )
Autopress India Private Limited, Pune	SHRI RAJIV AGARWAL SHRI KUSH AGARWAL ( <i>Alternate I</i> ) SHRI DHRUV AGARWAL ( <i>Alternate II</i> )
Butterfly Gandhimathi Appliances Private Limited, Chennai	SHRI S. R. SIVAKUMAR SHRI KUMAR A. ( <i>Alternate</i> )
Central Public Works Department, New Delhi	SHRI PREM MOHAN SHRI DINESH K. UJJAINIA ( <i>Alternate</i> )
Consumer Voice, New Delhi	SHRI B. K. MUKHOPADHYAY SHRI M. A. U. KHAN ( <i>Alternate</i> )
Delhi Test House, Delhi	SHRI DINESH GOEL SHRI ROHIT GOEL ( <i>Alternate</i> )
Directorate General Quality Assurance, Ministry of Defence, Kanpur	SHRI M. SATYANARAYANA SHRI AMIYA KUMAR MALLICK ( <i>Alternate</i> )
D. P. Garg and Company Private Limited, Noida	SHRI S. M. GARG SHRI K. S. ARYA ( <i>Alternate</i> )
Federation of All India Aluminium Utensils Manufacturers, Rourkela	SHRI BHARAT GARG SHRI TARUN KUMAR GOYAL ( <i>Alternate</i> )
Federation of Hardware MFG and Traders Welfare Association, Gurugram	SHRI TAKSHAY BANSAL SHRI NAVEEN HANDA ( <i>Alternate I</i> ) SHRI VIKAS NARWAL ( <i>Alternate II</i> )
Godrej and Boyce Manufacturing Company Limited, Mumbai	SHRI DEODATTA JOSHI SHRI KSHITIJ R. GAIKAR ( <i>Alternate</i> )
Hamilton Housewares Private Limited, Mumbai	SHRI SANJAY MORESHWAR MHATRE SHRI INDUPRAKASH SINGH ( <i>Alternate I</i> ) SHRI VIKAS SURENDRA KUMAR BHATIA ( <i>Alternate II</i> )
Hawkins Cookers Limited, Thane	SHRI RAJESH SHARMA SHRI SANJAY SASIKUMAR ( <i>Alternate I</i> ) SHRI RAVINDRA MALI ( <i>Alternate II</i> )

<i>Organization</i>	<i>Representative(s)</i>
Hindalco Industries Limited, Mumbai	SHRI DEVESH KUMAR SHRI ATUL GUPTA ( <i>Alternate</i> )
Indian Stainless Steel Development Association, Gurugram	SHRI ROHIT KUMAR SHRI AKSHAYA KUMAR SHARMA ( <i>Alternate</i> )
Jindal Stainless Limited, Hisar	SHRI BISWABASU ROY SHRIMATI NISHA GOEL ( <i>Alternate</i> )
Nanobot Housewares Solutions Private Limited, Jodhpur	SHRI VIKAS JAIN SHRI MANOJ JAIN ( <i>Alternate</i> )
Office of Development Commissioner (MSME), New Delhi	SHRI SUVANKAR SANTRA
Pritam International, New Delhi	SHRI RAHUL KHERA SHRI ROHIT KHERA ( <i>Alternate</i> )
Royal Kitchen Appliances Private Limited, Sonipat	SHRI SURESH AGARWAL
Sat Rattan Engineering Works, New Delhi	SHRI G. L. KHERA
Shriram Institute for Industrial Research, Delhi	SHRI ALOK KUMAR SHRI ANEESH KUMAR ( <i>Alternate I</i> ) SHRI PUNEET KAPOOR ( <i>Alternate II</i> )
Sivanesan Company, Chennai	SHRI N. MANIKANDA RAJA SHRIMATI K. S. NETHRA MANJARI ( <i>Alternate</i> )
Steel Authority of India Limited (SAIL) - Salem Steel Plant, Salem	SHRI L. SIVAKUMAR SHRI SUNIL KUMAR MURATHIA ( <i>Alternate</i> )
TTK Prestige Limited, Bengaluru	SHRI ANTO VIMAL ANAND SHRI S. RAJASEKARAN ( <i>Alternate</i> )
In Personal Capacity ( <i>179, Sri Sai, 13th Cross, Ananthnagar Phase 1, Electronic City Post, Bengaluru - 560100</i> )	SHRI B. VISWANATH SHENOY
BIS Directorate General	SHRI K. VENKATESWARA RAO, SCIENTIST 'F'/SENIOR DIRECTOR AND HEAD (MECHANICAL ENGINEERING) [REPRESENTING DIRECTOR GENERAL ( <i>Ex-officio</i> )]

*Member Secretary*  
SHRI LOKRAJ MEENA  
SCIENTIST 'C'/DEPUTY DIRECTOR  
(MECHANICAL ENGINEERING), BIS

## Panel for Review of IS 14756, MED 33 : Panel 1

<i>Organization</i>	<i>Representative(s)</i>
In Personal Capacity (179, Sri Sai, 13th Cross, Ananthnagar Phase 1, Electronic City Post, Bengaluru - 560100)	SHRI B. VISWANATH SHENOY ( <b>Convener</b> )
All India Stainless Steel Industries Association, Mumbai	SAILESH SHAH SHRI JAGESH JAIN ( <i>Alternate</i> )
Autopress India Private Limited, Pune	SHRI RAJIV AGARWAL
Avon Appliances Private Limited, Ankleshwar	SHRI ASHWIN VORA
Butterfly Gandhimathi Appliances Private Limited, Chennai	SHRI S. R. SIVAKUMAR SHRI KUMAR A ( <i>Alternate I</i> ) SHRI RAMASUBRAMANIAN ( <i>Alternate II</i> )
Directorate General of Quality Assurance, Ministry of Defence, Kanpur	SHRI M. SATYANARAYANA
Hawkins Cookers Limited, Thane	SHRI B. S. SETHI SHRI RAVINDRA MALI ( <i>Alternate</i> )
Indian Stainless Steel Development Association, Gurugram	SHRI ROHIT KUMAR
Jindal Stainless Limited, Hisar	SHRIMATI NISHA GOEL
Rajasthan Stainless Steel Utensils Manufacturer Association, Jodhpur	SHRI RAJESH JEERAWLA SHRI ROHAN JEERAWLA ( <i>Alternate</i> )
Rajlaxmi Stainless Steel Utensils Manufacturers, Jodhpur	SHRI SUSHIL JAIN
Sat Rattan Engineering Works, New Delhi	SHRI G. L. KHERA
Shriram Institute for Industrial Research, Delhi	SHRI ANEESH KUMAR
Sivanesan Company, Chennai	SHRI N. MANIKANDAN RAJA K. S. NETHRA MANJARI ( <i>Alternate</i> )
Stainless Steel Merchants Association, Mumbai	SHRI SUNIL AGARWAL SHRI RAMSESH KOTADIA ( <i>Alternate I</i> ) SHRI KALPESH SHAH ( <i>Alternate II</i> )
TTK Prestige Limited, Bengaluru	SHRI S. RAJASEKARAN SHRI ANTO VIMAL ANAND ( <i>Alternate</i> )
Voluntary Organisation in Interest of Consumer Education (VOICE), New Delhi	SHRI M. A. U. KHAN
Wazirpur Bartan Nirmata Sangh, Wazirpur	SHRI JAI KUMAR BANSAL SHRI NEERAJ JAIN ( <i>Alternate</i> )





## Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 2016* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

### Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Head (Publication & Sales), BIS.

### Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-[www.bis.gov.in](http://www.bis.gov.in) or [www.standardsbis.in](http://www.standardsbis.in).

This Indian Standard has been developed from Doc No.: MED 33 (25154).

### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

## BUREAU OF INDIAN STANDARDS

### Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002

Telephones: 2323 0131, 2323 3375, 2323 9402

Website: [www.bis.gov.in](http://www.bis.gov.in)

### Regional Offices:

	Telephones
Central : 601/A, Konnectus Tower -1, 6 <sup>th</sup> Floor, DMRC Building, Bhavbhuti Marg, New Delhi 110002	{ 2323 7617
Eastern : 8 <sup>th</sup> Floor, Plot No 7/7 & 7/8, CP Block, Sector V, Salt Lake, Kolkata, West Bengal 700091	{ 2367 0012 2320 9474
Northern : Plot No. 4-A, Sector 27-B, Madhya Marg, Chandigarh 160019	{ 265 9930
Southern : C.I.T. Campus, IV Cross Road, Taramani, Chennai 600113	{ 2254 1442 2254 1216
Western : 5 <sup>th</sup> Floor/MTNL CETTM, Technology Street, Hiranandani Gardens, Powai Mumbai 400076	{ 2570 0030 2570 2715

**Branches :** AHMEDABAD, BENGALURU, BHOPAL, BHUBANESHWAR, CHANDIGARH, CHENNAI, COIMBATORE, DEHRADUN, DELHI, FARIDABAD, GHAZIABAD, GUWAHATI, HARYANA (CHANDIGARH), HUBLI, HYDERABAD, JAIPUR, JAMMU, JAMSHEDPUR, KOCHI, KOLKATA, LUCKNOW, MADURAI, MUMBAI, NAGPUR, NOIDA, PARWANOO, PATNA, PUNE, RAIPUR, RAJKOT, SURAT, VIJAYAWADA.