

BUREAU OF INDIAN STANDARDS

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<p><i>Draft Indian Standard</i></p> <p>FINE (BONE) CHINA CROCKERYWARE — SPECIFICATION</p> <p><i>(Third Revision)</i></p> <p>(ICS 81.060.20; 97.040.60)</p>	
Ceramicware Sectional Committee, CHD 09	Last Date for Comments: 10 November 2023

FOREWORD

(Formal clause to be added later)

This standard was originally published in 1973 and subsequently revised in 1994. Second revision of this standard was brought out in 2002 and the limits for release of lead and cadmium had been modified by taking assistance from ISO/DIS 6486-2 : 1999 ‘Ceramicware, glass ceramicware and glass dinnerware in contact with food — Release of lead and cadmium — Part 2 : Permissible limit’.

In this revision, grade 2 and grade 3 has been removed as the grades are only distinguished based on visual assessment test.

The various test methods have been placed in IS 14179 : 1999 ‘Methods of test for ceramic tableware’ and IS 9806 : 2001 ‘Methods of test for and permissible limits of toxic materials released from ceramicware, vitreous enamelware, glassware and glass ceramicware in contact with food (*first revision*)’.

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.

1 SCOPE

This standard prescribes the requirements, and methods of sampling and test for fine (bone) china crockeryware.

2 REFERENCES

The following Indian Standards contain provisions which, through reference in this text, constitute provision 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 the standards indicated below:

<i>IS No.</i>	<i>Title</i>
2781:1975	Glossary of terms relating to ceramicware (<i>first revision</i>)
9806:2001	Methods of test for and permissible limits of toxic materials released from ceramicware, vitreous enamelware, glass ware and glass ceramicware in contact with food (<i>first revision</i>)
14179:1999	Methods of test for ceramic tableware

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 2781, in addition to the following, shall apply.

3.1.1 *Fine (Bone) China* — A white/coloured, translucent porcelain made from a ceramic body containing a minimum 35 percent of bone ash.

3.1.2 *Crockeryware* — It shall mean all types of dinnerware, tableware, etc (other than artware) made from earthenware, stoneware, fine (bone) china, porcelain, vitreous china and glass ceramics.

4 REQUIREMENTS

4.1 Material

It shall be a ceramic material white/coloured containing bone ash content at least 35 percent having low porosity high translucency and high mechanical strength, biscuited at high temperature, glazed at relatively lower temperature and covered with a properly matured fritted soft glaze. The body shall show upon fracture, dense, homogeneous and fine-grained vitrified texture. The glaze shall be of uniform colour, smooth, glossy impervious and as free as possible from visual defects.

4.2 Workmanship

4.2.1 General

All items of crockeryware in a set shall generally be of a matching design, colour and decoration.

4.2.2 The cup shall rest in the middle of the saucer without rocking or spinning.

4.2.3 The handle, where provided, shall not be misplaced.

4.2.4 The lip or spout shall be so designed that liquids may not trickle down from the sides of the ware while pouring.

4.2.5 The lid, where used, shall fit properly and shall not fall down while pouring out liquids.

4.2.6 The capacity of the tea pot/coffee pot in a set shall correspond to the capacity of the cups.

4.3 Finish

The entire surface of items of fine (bone) china crockeryware shall be covered by a uniform, continuous, smooth, glossy impervious and fritted glaze except for the resting surface (bottom rim) of the hollow ware which is cleanable and retains this quality. In addition, the resting surface of items other than hollow ware shall be non-abrasive in texture.

4.3.1 The glazed surface shall be even, free from defects, namely, craze, speck, crawling, patches, finger prints and pin holes, and shall comply with the requirements of visual assessment as prescribed in Annex A.

4.3.1.1 The pin hole shall be determined by applying a dye-based fountain pen ink on the surface of the article under test. Allow it to dry. Wipe out the ink from the article with a wet cloth and observe the spot wherever ink stain have remained.

4.4 Warpage

4.4.1 Out-of-roundness

The out-of-roundness of various items of fine (bone) china crockeryware shall not exceed 0.3 mm on the nominal diameter when measured in accordance with the method prescribed in **7.1** of IS 14179.

4.4.2 Edge-warpage and Slope of Flatware

The edge-warpage and slope of the flatware shall not exceed 0.5 mm and 1.5° when measured in accordance with the method prescribed in **7.2** of IS 14179.

4.4.3 Flatness of Dinner Plate

The eating surface of the dinner plate shall be flat within 2 mm total indicator run-out when measured in accordance with the method prescribed in **7.3** of IS 14179.

4.5 Release of Lead and Cadmium (Toxic Elements)

The limit of release of lead (Pb) and cadmium (Cd) extracted from fine (bone) china crockeryware shall not exceed the following limits when tested as prescribed in IS 9806.

<i>Type of Ware</i>	<i>Minimum Number of Specimen</i>	<i>Unit</i>	<i>Lead Limit</i>	<i>Cadmium Limit</i>
Flatware	4	mg/dm ²	0.8	0.07
Large hollowware	4	mg/l	1.0	0.25
Small hollowware	4	mg/l	2.0	0.50
Cups and mugs	4	mg/l	0.5	0.25
Storage hollowware	4	mg/l	0.5	0.25
Cooking-ware	4	mg/l	0.5	0.05

NOTE— Flatware shall constitute a minimum source of lead or cadmium burden from porcelain articles. Limits for flatware (lead or cadmium) refer to the value obtained when the individual values of the pieces tested are averaged. All other limits are expressed in absolute maximum values, in that, no individual unit comprising a sample exceeds these levels.

4.6 Thermal Shock Resistance

All items of crockeryware shall withstand a thermal shock of 120°C for five cycles when tested in accordance with the method prescribed in **13** of IS 14179.

4.7 Water Absorption

The average water absorption of the fine (bone) china crockeryware, when tested in accordance with the method prescribed in **10** of IS 14179, shall be less than 0.2 percent and the individual value shall not exceed 0.4 percent.

4.8 Impact Strength and Chipping Resistance

The impact strength and chipping resistance of the various items of fine (bone) china crockeryware, when tested in accordance with the method prescribed in **9** of IS 14179, shall be as prescribed below:

<i>Item of Crockeryware</i>	<i>Impact Strength Min</i>	<i>Chipping , Resistance, Min</i>
	Nm	Nm
Cup, mug, sugar pot, milk pot, tea pot, coffee pot and bowl.	0.30	—
Flatware	0.35	0.20

4.9 Resistance to Detergents

When tested by the method prescribed in **11** of IS 14179, the test article shall not show any loss of gloss of the glaze when compared with the untested test specimen.

4.10 Resistance to Citric Acid

When tested by the method prescribed in **12** of IS 14179, the test article shall not show any loss of gloss of the glaze when compared with the untested test specimen.

4.11 Craze Resistance

When tested in accordance with **8** of IS 14179, the articles of the crockeryware shall show no crazing after undergoing five cycles.

5 MARKING AND PACKING

5.1 Marking

Each item of fine (bone) china crockeryware shall be indelibly and legibly marked with on its bottom surface with its source of manufacture.

5.1.1 In addition to the above, each package shall be marked with the following particulars:

- a) Indication of the source of manufacture;
- b) Description of the items;
- c) Quantity;
- d) Batch number and lot number;
- e) Grade and type;
- e) Decoration quality number, if any; and
- g) Month and year of manufacture.

5.1.2 BIS Certification Marking

The packages may also be marked with the Standard Mark.

5.1.2.1 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 products may be marked with the standard mark.

5.2 Packing

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

6 SAMPLING

Representative samples of the fine (bone) china crockeryware shall be drawn in accordance with 4 of IS 14179.

ANNEX A
 (Clauses A-1, A-2 and A-2.1)

VISUAL ASSESSMENT FOR GRADING OF FINE (BONE) CHINA CROCKERYWARE

A-1 GENERAL

Visual assessment of fine (bone) china crockeryware is done on the basis of the nature, number and distribution of the defects in the final ware in respect of its appearance, finish and decoration as given in Table 1.

A-2 ASSESSMENT

A-2.1 Any item of the fine (bone) china crockeryware having not more than 4 defects out of first thirteen characteristics of Table 1.

Table 1 Classification of Defects Fine (Bone) China Crockeryware

(Clauses A-1, A-2 and A-2.1)

Sl. No.	Characteristic	Earthenware Crockeryware
(1)	(2)	(3)
i)	Pin holes a) Body	2 up to 0.8 mm
ii)	b) Glaze Grog a) Surface b) Bottom	10 upto 1.0 mm Nil 2 up to 0.8 mm
iii)	Iron specks and colour specks on glaze/body a) White glaze b) Colour glaze	1 up to 1.0 mm 3 up to 1.0 mm
iv)	Clay particle a) Surface b) Handle	1 up to 2.0 mm 4 up to 2.0 mm
v)	Cracks, lengthwise a) Surface b) Bottom	Nil 1 up to 0.8 mm (thickness 10 percent of the thickness of the item)
vi)	c) Handle Handle replacement	Nil Handle replacement
vii)	Chips a) Rim b) Bottom	Nil 1 up to 0.8 mm
viii)	Uneven glaze a) White b) Colour	Nil 10 percent

ix)	Glaze cut	
	a) Surface	Nil
	b) Bottom	1 up to 3.0 mm
x)	Off glaze	
	a) Rim	1 up to 0.5 mm
	b) Surface	2 up to 0.5 mm
	c) Bottom	3 upto 1.0 mm
xi)	Blister	Nil
xii)	Droper	1 upto 3.0 mm
xiii)	Glaze grinding mark	1 up to 0.8 mm
xiv)	Scuming	Nil
xv)	Loss of sound	Nil
xvi)	Decoration	Nil
xvii)	Burning decoration	Nil
xviii)	Off decoration	Nil

Note more than four in a cluster
