



**PRODUCT MANUAL FOR
TINPLATE FOR ROUND OPEN TOP
SANITARY CANS FOR FOODS AND DRINKS
ACCORDING TO IS 9396 (PART 1): 1987**

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	Product	:	IS 9396 (Part 1): 1987
	Title	:	Tinplate for Round Open Top Sanitary Cans for Foods and Drinks
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	As per Clause 3.1 of IS 9396 (Part 1):1987
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	<ul style="list-style-type: none"> • Mechanical Tests - 1 full sheet • Chemical Tests - 5 pieces of 5cm x 5cm or 50 gm drillings for wet analysis
3.	List of Test Equipment	:	Please refer ANNEX – B
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – C
5.	Possible tests in a day	:	All Tests
6.	Scope of the Licence:		
	Licence is granted to use Standard Mark as per IS 9396 (Part 1): 1987 with the following scope:		
	Name of the product	Tinplate for Round Open Top Sanitary Cans for Foods and Drinks	
	Type	Type MR/ Type L	
	Thickness (mm)		
	Steel Grade		
	Tin coating grade		

ANNEX A

Grouping Guidelines

1. The guidelines given below shall be followed for considering GoL/CSoL:
 - (a) Sample of Tin plate of each type (Type MR/ Type L) with any finish shall be tested to cover that particular type in the scope of licence.
 - (b) Tin plate of lowest thickness intended to be covered shall be tested to cover tin plates of higher thickness also.
 - (c) Tin plate of any “Steel grade’ shall be tested to cover tin plates of all steel grades intended to be covered.
 - (d) If tin plate with higher tin coating grade as per clause 3.3 of IS 9396 (Part 1):1987 (corresponding to tin coating mass in g/m^2) is tested, tin plate with lower tin coating grade may also be covered.
2. The Firm shall declare the varieties they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
3. During operation of licence, BOs shall ensure that all the varieties covered in the licence are tested in rotation, to the extent possible.

ANNEX B**List of Test Equipment*****Major test equipment required to test as per the Indian Standard***

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Chemical Composition (Clause 3.1)	Test equipment details as per relevant parts of IS 228 are listed below from a) to g).
	a) Preparation of specimen	(i) Abrasive Cutting Machine (ii) Fine Polishing Machine (iii) Grinding Machine (iv) Longitudinal cutting machine (v) Moulding machine (vi) Rough Polishing Machine
	b) For C, S, P, Mn, Si, Cu	Instrumental methods Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry, Spectrophotometer
	c) For C & S (chemical method, alternative to instrumental method)	(i) Barometer with chart (ii) Complete range of glass wares (iii) Desiccator (iv) Distilled Water (v) Electronic Balance (vi) Ether or acetone (vii) Hot air oven, Hot plate (viii) Measuring cylinders (ix) Muffle furnace (x) Oxygen - 99.5 percent minimum purity (xi) Porcelain boats or ceramic crucibles (xii) Standard Sample (xiii) Strohlein or Leco apparatus with all attachments (xiv) Thermometer
	d) Phosphorus content (chemical method, alternative to instrumental method)	(i) Analytical balance (ii) Filter paper pulp pad (iii) Heater/ Heating element along with energy regulator (iv) Ice water bath (v) Sodium Nitrite (vi) Standard Reference Material (NML) with certificate (vii) Potassium Permanganate (KMnO ₄) (viii) Suction Filtration Facility (ix) Vol Flask Cap – 1 litre

		(x) Whatman filter paper No. 040
	e) Manganese content (chemical method, alternative to instrumental method)	(i) Conical flask (ii) Hot plate, (iii) Reagents: ✓ Ammonium persulphate ✓ Concentrated Nitric Acid ✓ Dilute Nitric Acid ✓ Dilute Sulphuric Acid ✓ Permanganic acid ✓ Phosphoric Acid ✓ Silver nitrate ✓ Sodium arsenite solution ✓ Sodium Chloride Solution
	f) Silicon content (chemical method, alternative to instrumental method)	(i) Filter paper pulp, (ii) Hot air oven, (iii) Hot plate, (iv) Medium textured filter paper, (v) Muffle furnace (vi) Platinum crucible, (vii) Porcelain casserole, (viii) Reagents: ✓ Concentrated nitric acid, ✓ Concentrated sulphuric acid, ✓ Dilute Hydrochloric Acid, ✓ Dilute Sulphuric Acid, ✓ Hydrofluoric acid ✓ Perchloric Acid, ✓ Silver nitrate solution, ✓ Tartaric acid
	g) Cu content (chemical method, alternative to instrumental method)	(i) Muffle Furnace, (ii) Plate, (iii) Porcelain or silica crucible, (iv) Reagents: ✓ Acetic Acid, ✓ Ammonium Bifluoride Solution ✓ Dilute Ammonium Hydroxide, ✓ Dilute Nitric Acid, ✓ Dilute sulphuric acid, hydrogen sulphide, ✓ Hot Wash Solution (dilute sulphuric acid solution 1: 99 v/v with hydrogen sulphide), ✓ Potassium Iodide, ✓ Sodium Fluoride, solid, ✓ Sodium Thiosulphate Solution, ✓ Starch Solution,
2	Tinplate Thickness and Dimension (Clause 3.2)	(i) Measuring Tape (ii) Micrometer (iii) Vernier Caliper

3	Shape (Clause 3.9)	(i) Bow Measuring Table and Steel ruler (ii) Feeler gauge (iii) Flatness Table and Steel Tape (iv) Measuring Block and Wedge Scale (v) Measuring Table with L-square (vi) Surface table (vii) Wedge Scale
4	Tin Coating (Clause 3.3)	Electrochemical method: ✓ Tin Coating Analyzer Volumetric method: ✓ 500 ml flask ✓ Acetone, ✓ Al metal foil ✓ Apparatus as per fig. F3. ✓ Carbon Dioxide oxygen free ✓ Cellulose laquer ✓ Diethyl ether ✓ Ferric Chloride ✓ Hydrochloride acid ✓ Liebig condenser ✓ Platinum wire ✓ Potassium Iodate ✓ Starch
5	Surface Finish (Clause 3.4)	Surface Roughness Tester
6	Tin Grain Size (Clause 3.5)	(i) Ferric Chloride (ii) Grain size Chart
7	Iron Solution Value (Clause 3.6)	Test Disc Punch, Test Solution- H ₂ SO ₄ , Ammonium Thiocyanate, Hydrogen Peroxide, Standard Test Bottle, Apparatus as per Appendix-B and Spectrophotometer
8	Surface Oil Coating (Clause 3.7)	Surface oil measuring balance
9	Passivation Treatment (Clause 3.8)	Chemical Solution (Alkaline Solution, H ₂ SO ₄ , Di Fenyle Carbazyde , Ammonium Persulphate & AgNO ₃) and Spectrophotometer
10	Mechanical Properties (Clause 3.10)	Rockwell Hardness Tester / Tensile Testing Machine

The above list is indicative only and may not be treated as exhaustive.

ANNEX C

Scheme of Inspection And Testing

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipments.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. LABELLING AND MARKING – As per the requirement of IS 9396 (Part 1):1987.

4. CONTROL UNIT – Coil/sheets of the same size, coating, temper and thickness produced from material of same cast and electroplated under uniform conditions of production shall constitute a control unit.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

6. REJECTIONS – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
3.1	Material	3.1	IS 9396 (Part 1)	S	One	Each Control Unit	Material covered under mandatory certification of BIS shall be ISI marked.
3.2	Tinplate Thickness, Dimensions and Shape	3.2, 3.9	IS 9396 (Part 1)	R	One	Each Control Unit	--
3.3	Tin Coating	3.3	IS 9396 (Part 1)	R	One	Each Control Unit	--
3.4	Surface Finish	3.4	IS 9396 (Part 1)	R	One	Every Sixth Control Unit/ once in a shift whichever is earlier	Surface Roughness need not be tested if certificate of parent material for surface roughness is available
3.5	Tin Grain Size	3.5	IS 9396 (Part 1)	R	One	Each Control Unit	--
3.6	Iron Solution Value	3.6	IS 9396 (Part 1)	R	One sample per shift (continuous 8 hrs production) or whenever there is change in coating weight on heavier coated side		
3.7	Surface oil	3.7	IS 9396 (Part 1)	R	One sample /shift		
3.8	Passivation treatment	3.8	IS 9396 (Part 1)	R	One sample /shift		
3.10	Mechanical Properties	3.10	IS 9396 (Part 1)	R	One	Each Control Unit	--

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.