



**PRODUCT MANUAL
FOR IRON FORTIFIED IODIZED SALT (DOUBLE FORTIFIED SALT)-FOOD GRADE
ACCORDING TO IS 16232:2014**

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 16232:2014
	Title	:	Iron Fortified Iodized Salt (Double Fortified Salt) — Food Grade
	No. of Amendments	:	02 Amendments
2.	Sampling Guidelines:		
a)	Raw material	:	Salt used for manufacture of double fortified salt shall have minimum 98.0 percent of sodium chloride content on dry weight basis for double fortified salt manufactured by fortification with encapsulated ferrous fumarate and 99.0 percent of sodium chloride on dry weight basis for other forms of iron fortification when tested in accordance with the method prescribed in A-5 of IS 253. Moisture shall also not be more than 1.5 percent by mass when tested in accordance with the method prescribed in Annex A of IS 7224.
b)	Grouping Guidelines	:	NA (No varieties of the product mentioned in IS)
c)	Sample Size	:	One Kilogram (1 kg) of sample for complete testing.
3.	List of Test Equipment	:	Please refer ANNEX-A
4.	Scheme of Inspection and Testing	:	Please refer ANNEX-B
5.	Possible tests in a day :		
	All tests can be carried out in a day except for Sodium Hexa Meta Phosphate.		
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 16232:2014 with the following scope:		
	Name of the product	:	Iron Fortified Iodized Salt (Double Fortified Salt) – Food Grade.

ANNEX A
TO PRODUCT MANUAL
FOR IRON FORTIFIED IODIZED SALT (DOUBLE FORTIFIED SALT)-FOOD GRADE
ACCORDING TO IS 16232:2014
List of Test Equipment

Major test equipment required to test as per the Indian Standard

Sl. No.	Tests Equipment	Tests used in with clause Reference Chemical
1	Weighing Balance, Weighing bottle, Wide mouth squat type bottle (about 30ml capacity) Oven, Desiccator, Air tight container, Agate Mortar approximately to size of 2.8 mm sieve	Moisture, 3.4, Table 1
2	Weighing balance, Petri dish Beaker, G-4 Crucible, 1 litre graduated flask, Hotplate/ Hot Water bath, 200 ml Beaker, Gooch or Sintered glass crucible (G No 4)	Water insoluble matter, 3.4, Table 1
3	Conical flask, burette Potassium Chromate indicator (5%) Silver nitrate solution (0.1N), pipette	Chloride content (as NaCl), 3.4, Table 1
4	Weighing balance Beaker, hot plate, Filter paper (Whatman No.41), G-4 crucible, Oven. Dilute hydrochloric acid 1:1(v/v) and 1:20(v/v), concentrated hydrochloric acid	Matter insoluble in dil.HCl, 3.4, Table 1
5	Weighing balance Spectrophotometer, 100ml Volumetric flask, 1000ml Sulphuric Acid (30%), Potassium Persulphate (7%), Potassiumthiocyanate (40%), Volumetric flask, 5ml, 10ml pipette. Std. Iron solution, working solution, Measuring flask 100ml, Glass Funnel, Concentrated HCl	Iron content (as Fe), 3.4, Table 1
6	Weighing balance, Beaker(100ml), Glass rod, Erlenmeyer Flask with stopper, burette Potassium Iodide (1%), Ortho Phosphoric Acid Analytic grade (Sp gravity 1.75), Sodium Thiosulphate (0.005M), Starch(1%), NaCl, Potassium iodate, Double distilled Water/de-ionized water, Volumetric Flask 100ml and 1000ml	Iodine content, 3.4, Table 1
7	Weighing balance, pH meter, volumetric flask (100 ml) Beaker	pH, 3.4, Table 1
8	Weighing balance, beaker, hot plate, G-4 Crucible, Vacuum Pump, Oven	Sulphate, 3.4, Table 1 Gravimetric method

	<p>Dilute hydrochloric acid (approx. 4N), Barium chloride (10%) Methyl orange indicator (as SO₄), percent by mass, Whatman filter paper No 42</p> <p>Standard barium chloride solution Dilute hydrochloric acid — Approximately 1 N. Standard EDTA solution Eriochrome black T indicator solution Ammonium chloride-ammonium hydroxide buffer solution, Heating arrangement Pipette litmus paper filtration</p>	Volumetric Method
9	<p>Calcium Carbonate, E.D.T.A., Eriochrome black T indicator, Dilute sodium solution Ammonium chloride Ammonium hydroxide Buffer solution hydroxide (10%), Murexide Indicator Pipette 10ml, Conical flask 250ml, Burette, Calcein Indicator, Rectified Spirit</p>	Magnesium, 3.4, Table 1
10	<p>Weighing balance 500ml Beaker, Glass rod, G-4 crucible, oven, Desiccator, Burette, Whatman No.40 circles filter paper Ammonium Molybdate (10% w/v), Dilute Nitric Acid (2%), Potassium Nitrate (1%), Phenolphthalein, Sodium hydroxide (1N), Sulphuric acid(1N), Concentrated Nitric acid,</p>	Phosphorous (as P ₂ O ₅), 3.4, Table 1
11	<p>Weighing balance, Oven, Desiccator, 100 ml beaker, 5ml, 25ml pipette ,500 ml volumetric flask, 500ml beaker, Glass rod, G-4 crucible, Whatman No.40 circular filter paper Ammonium Molybdate (10% w/v), Dilute Nitric Acid (2%), Potassium Nitrate (1%), Phenolphthalein, Sodium hydroxide (1N), Sulphuric acid(1N), Concentrated Nitric acid</p>	Sodium Hexa Meta Phosphate, 3.4, Table 1
12	<p>4.00mm IS Sieve, Weighing balance, Collection pan/bowl</p>	Particle Size, 3.3

List above is only indicative and may not be taken as exhaustive.

ANNEX B

**SCHEME OF INSPECTION AND TESTING
FOR IRON FORTIFIED IODIZED SALT (DOUBLE FORTIFIED SALT)
ACCORDING TO IS 16232:2014**

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. PACKING AND MARKING –The Standard Mark, as given in the Schedule of the licence, shall beprinted/stenciled on each package, as the case may be, provided always that the material in each container to which this mark is thus applied, conform to every requirement of the specification.

3.1 Packing and marking shall be done as per the provision of the Indian Standard. In addition, the following details shall be mentioned on each package legibly and indelibly:

a) BIS Licence No. CM/L..... .

b) BIS website details i.e –“For details of BIS certification please visit www.bis.gov.in”

4. RAW MATERIAL-Salt used for manufacture of double fortified salt shall be tested for sodium chloride content and moisture as per clause 3.2 of the Indian Standard. Test records for all such tests shall be maintained as per Table 1.

5. CONTROL UNIT – For the purpose of this scheme, the quantity of material blended with same premix composition in a day shall constitute a batch or control unit.

6. 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.

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

6.2On the basis of the test results, decision regarding the conformity or otherwise of a control unit for a given requirement of specification shall be made as follows:

6.2.1 One sample shall be drawn at every 4 hrs and tested for iodine and iron content. In case of failure the material produced during the period shall be rejected and sample at every ½ hr shall be tested till three samples pass. The material thus rejected may be reprocessed. The reprocessed material may be marked if sample drawn from the material passes all the requirements including iodine and iron content.

6.2.2 One sample shall be drawn at every 8 hrs and tested for the requirements of description (cl. 3.1), moisture (cl. 3.4), particle size (cl. 3.3), chloride content (cl. 3.4) and pH (cl. 3.4). If the sample fails, in any of these requirements, the entire 8 hrs production shall be considered unfit for the purpose of marking.

6.2.3 A composite sample shall be prepared from all the sample drawn from each shift production in a day, which were found to have passed the requirements of description, moisture content, particle size, chloride content, pH, iodine and iron content as mentioned at 4.3 and 4.4 above. This sample when tested shall conform to all other requirements of the specification (See Table 1 of the Scheme). If the sample fails, in any of this requirement, the day's production shall be considered unfit for the purpose of marking.

6.2.4 In respect of all other clauses of the specification and at all stages of production, appropriate controls and checks shall be maintained by the factory so as to ensure that the product conforms to the various requirements of the specification.

6.2.5 The material shall be processed, packed, stored and distributed under hygienic conditions and the manufacturing premises shall be maintained in a thoroughly clean and hygienic manner (See IS 2491:2013, Food Hygiene – General Principles – Code of practice).

7. 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 the BIS Act, 2016.

TABLE 1
LEVELS OF CONTROL

(1)				(2)	(3)		
TEST DETAILS				Test equipment requirement R: required (or) S: Subcontracting permitted	LEVELS OF CONTROL		
Clause	Requirement	Test method Cl. Ref	Test Method IS		No. of Sample	Frequency	Remarks
3.1	Description	3.1	IS 16232	R	One	Every 8 hrs production	--
3.2	Raw Material						
-do-	Sodium Chloride content	A-5	IS 253	R	-do-	Every batch / control unit	--
-do-	Moisture	Annex A	IS 7224	R	-do-	-do-	--
	Product (Double Fortified Salt)						
3.3	Particle size	3.3	IS 16232	R	-do-	Every 8 hrs production	--
3.4 & Table 1	Moisture	Annex A	IS 7224	R	-do-	-do-	--
-do-	Water insoluble matter	A-4	IS 253	R	One composite sample	Every batch / control unit	--
-do-	Chloride content (as NaCl)	A-5	-do-	R	one	Every 8 hrs production	--

-do-	Matter insoluble in dilute HCl	Annex G	IS 16232	R	One composite sample	Every batch / control unit	--
-do-	Matter soluble in Water	A-6	IS 253	R	-do-	-do-	--
-do-	Iron content (as Fe)	Annex A	IS 16232	R	One	Every 4 hrs production	--
-do-	Iodine content	Annex B	-do-	R	-do-	-do-	--
-do-	pH of 5% aqueous solution	Annex C	-do-	R	-do-	Every 8 hrs production	--
-do-	Sulphate (as SO ₄)	A-8	IS 253	R	One composite sample	Every batch / control unit	--
-do-	Magnesium (as Mg), Water Soluble	A-7	IS 253	R	-do-	Every batch / control unit	--
-do-	Phosphorous (as P ₂ O ₅)	Annex D	IS 16232	R	-do-	-do-	--
-do-	Sodium Hexa Meta Phosphate	Annex E	-do-	R	-do-	-do-	--

Note-1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. 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.