



**PRODUCT MANUAL  
FOR TARTRAZINE, FOOD GRADE ACCORDING TO IS 1694 : 1994**

*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.	<b>Product</b>	:	IS 1694 : 1994
	<b>Title</b>	:	Tartrazine, Food Grade
	<b>No. of Amendments</b>	:	01
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	No specific requirements
b)	<b>Grouping guidelines</b>	:	Not Applicable
c)	<b>Sample Size</b>	:	100 grams
3.	<b>List of Test Equipment</b>	:	Please refer ANNEX – <u>A</u>
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer ANNEX – <u>B</u>
5.	<b>Possible tests in a day :</b>		
	i. Total dye content ii. Loss on Drying at 135°C iii. Water-Insoluble Matter iv. Combined Ether Extracts v. Subsidiary Dyes vi. Dye Intermediates vii. Arsenic		
6.	<b>Scope of the Licence :</b>		
	“Licence is granted to use Standard Mark as per IS 1694 : 1994 with the following scope:		
	Name of the product	:	Tartrazine, Food Grade

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**ANNEX A**  
**TO PRODUCT MANUAL**  
**FOR TARTRAZINE, FOOD GRADE ACCORDING TO IS 1694 : 1994**

**LIST OF TEST EQUIPMENT**

**Major test equipment required to test as per requirement of Indian Standard**

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	Total dye content Cl 3.1 & Table 1 (Annex A of IS 1694)	<p><b>Spectrophotometric method (Reference method)</b></p> <p>Spectrophotometer (with properly calibrated scales for both wave length and optical density) or Spectrocolorimeter, Volumetric flasks of varying capacities, Analytical balance, drying oven, 0.1 N Hydrochloric acid.</p> <p><b>Titanium Trichloride method</b></p> <p>Analytical balance, Heating mantle or water bath, Volumetric flasks of varying capacities, sodium citrate, 0.1 N standard potassium dichromate solution, 0.1 N standard Titanium trichloride solution, concentrated Hydrochloric acid, Ferrous ammonium sulphate, carbon dioxide, sulphuric acid, ammonium thiocyanate.</p>
3	Loss on drying & Chlorides & sulphides expressed as sodium salt Cl 3.1 & Table 1 (Cl 6, 13 and 14 of IS 1699)	<p>Analytical balance, weighing bottle fitted with a ground-glass lid, hot air oven, desiccator.</p> <p>Potentiometric titration apparatus, with silver indicator electrode, calomel reference electrode, saturated potassium sulphate bridge or glass electrode, Analytical balance, 1.5 N Nitric acid, 0.1 N silver nitrate solution.</p> <p>Analytical balance, water bath, Hot plate, muffle furnace, ignition crucible, sulphate-free sodium chloride, saturated sodium chloride solution, filter funnel, filter paper, pipettes, flasks of varying capacities, Hydrochloric acid, 0.25 N Barium chloride solution.</p>
4	Water insoluble matter Cl 3.1 & Table 1 (Cl 7 of IS 1699)	Prepared Gooch crucible or sintered glass funnel Grade 4, Analytical balance, hot plate, drying oven.

5	Combined ether extracts Cl 3.1 & Table 1 (Cl 8 of IS 1699)	Separators or continuous extractor of 250 ml capacity, water /steam bath, Analytical balance, evaporating dish, desiccator, Isopropyl ether, 0.5 N sodium hydroxide, saturated ferrous sulphate solution, 10% sodium hydroxide solution, Dilute Hydrochloric acid
6	Subsidiary Dyes Cl 3.1 & Table 1 (Annex B of IS 1694 and cl 9 of IS 1699)	Chromotography Tank & Ancillary apparatus, Micro syringe, Chromatography solvents, Extracting solvents (Acetone & water), Sodium bicarbonate, Spectrophotometer, Filter papers, Test tubes, Drying cabinet.
7	Dye intermediates Cl 3.1 & Table 1 (Annex C of IS 1694)	<p><b>Routine method</b></p> <p>Chromatography Tank and Ancillary Equipment (as per clause 9.2.1 of IS 1699), Micro syringe, Ultraviolet Lamp (at 365.5 nm), Drying oven, Whatman No. 1 filter paper, ammonium hydroxide solution, 1-Naphthylamine-4-Sulphonic Acid, 2-Naphtho13: 6 Disulphonic Acid, Developing Solvent [sodium bicarbonate solution (10 percent m/v)]</p> <p><b>Reference Method</b></p> <p>Chromatographic tube, Spectrophotometer with UV range, Whatman powdered cellulose (or equivalent), ammonium sulphate.</p>
8	Lead Cl 3.1 & Table 1 (Cl 15 of IS 1699)	<p><b>Instrumental Method (Referee method)</b></p> <p>Weighing balance, hot plate 50 ml one-mark graduated flask, 100 ml one-mark volumetric flasks, Modified Kjeldahl flask (as per Fig 4 of IS 1699), Atomic absorption spectrophotometer (with Hydride generation vessel accessory and potentiometric recorder), nitric acid, Perchloric acid, Sulphuric acid, Hydrochloric acid, metal-free Distilled water, Sodium sulphate, Sodium borohydride pellets, Potassium chloride, standard lead solution</p> <p><i>Note: Reagents shall be of an order of purity higher than accepted analytical reagent grade quality.</i></p> <p><b>Chemical Method</b></p> <p>Digestion funnel, separatory funnel, Hot plate, Nitric acid, Sulphuric acid, Ammonium acetate-citrate solution, ammonia solution, Carbon tetrachloride, Ammonium hydroxide, Potassium cyanide, Hydroxylamine hydrochloride solution, Dithizone solution, pH 2 buffer.</p>
9	Arsenic Cl 3.1 & Table 1	<b>Instrumental Method (Referee method)</b>

	(CI 15 of IS 1699)	<p>Weighing balance, hot plate 50 ml one-mark graduated flask, 100 ml one-mark volumetric flasks, Modified Kjeldahl flask (as per Fig 4 of IS 1699), Atomic absorption spectrophotometer (with Hydride generation vessel accessory and potentiometric recorder), nitric acid, Perchloric acid, Sulphuric acid, Hydrochloric acid, metal-free Distilled water, Sodium sulphate, Sodium borohydride pellets, Potassium chloride, standard lead solution</p> <p><b>Note:</b> <i>Reagents shall be of an order of purity higher than accepted analytical reagent grade quality.</i></p> <p><b>Chemical Method</b></p> <p><b>Method 1:</b> Distillation apparatus (as per Fig 6 of IS 1699), conical flask (as per Fig 7 of IS 1699), microburner, water bath, Sulphuric acid, potassium permanganate, ferrous sulphate, Hydrochloric acid. Potassium bromide solution, Aluminium strips, Tin chloride solution, Test paper (dried strips of filter paper in saturated ethanolic solution of mercuric bromide), nitric acid, distilled water</p> <p><b>Method 2 (Modified Gutzeit method)</b></p> <p>Distillation setup, Modified Gutzeit Apparatus/Spectrophotometer, Analytical balance, Distilled water, Concentrated Hydrochloric acid, Hydrazinc Sulphate, Sodium Bromide, Lead Acetate, Filter paper strips, Absorbent Cotton Wool, Mercuric Bromide Paper, Dilute Sulphuric Acid, Potassium Iodide, Stannous Chloride, Zinc granules, Arsenic trioxide, Sodium hydroxide</p>
10	Heavy metal CI 3.1 & Table 1 (CI 16 of IS 1699)	50 ml Nessler tubes, pH meter/pH indicator paper, weighing balance, igniting crucible, muffle furnace, steam bath, litmus paper, Ammonia solution, Hydrochloric Acid, Lead nitrate, distilled water, nitric acid, sulphuric acid, Hydrogen sulphide, acetic acid, filter funnel, filter paper, Litmus paper.

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

## ANNEX B

### SCHEME OF INSPECTION AND TESTING FOR TARTRAZINE, FOOD GRADE ACCORDING TO IS 1694 : 1994

**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 be clearly and indelibly marked on the labels of the container of Tartrazine, Food Grade, provided always that the material in each container to which this mark is thus applied, conforms to every requirement of the specification.

**3.1 Marking** – Each container shall be legibly and indelibly marked with the information provided under clause 4.2 of the Indian Standard, IS 1694. In addition, the following information shall be clearly and indelibly marked on each container:

- i) BIS Licence Number CM/L .....and
- ii) BIS website details i.e. “For details of BIS certification please visit [www.bis.gov.in](http://www.bis.gov.in)”.

**3.2 Packing** – The material shall be packed in glass containers, metal containers, polyethylene containers, or cardboard containers suitably lined with polyethylene. Subject to agreement between the purchaser and the vendor any other suitable container may also be used.

**4. CONTROL UNIT** – For the purpose of this Scheme, Tartrazine, Food Grade manufactured, dried and pulverized at a time shall constitute a control unit or a batch.

**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.

**5.2** On the basis of test results, the decision regarding conformity or otherwise of a control unit to a given requirement shall be made as follows:

**5.2.1** Two independent samples drawn from each control unit or batch and tested for pure dye content, shall individually satisfy the requirements given in the specification. If any one of the sample fails, the entire material in the control unit shall be considered as unfit for the purpose of marking.

5.2.2 A composite sample made from the two independent samples drawn under 5.2.1 and tested for the all the remaining characteristics of the specification, except lead, shall satisfy the corresponding requirements. If it fails in any one or more of these requirements, the entire material in the control unit shall be considered as unfit for the purpose of marking.

5.2.3 A composite sample made from the two independent samples drawn once in a month and tested for the requirement of 'lead', shall satisfy the corresponding requirement. If it fails in this requirement, the entire material in the control unit shall be considered as unfit for the purpose of marking.

**6 RAW MATERIALS** - Routine analysis of various raw materials going into the manufacture of Tartrazine, Food Grade shall be made on each lot received in the factory or alternatively raw materials of known composition may be used. Precaution shall be taken to ensure that the material is free from mercury, copper, and chromium in any form; aromatic amines; aromatic nitro compounds, aromatic hydrocarbons and cyanides.

**7. HYGIENIC CONDITIONS** - The material shall be manufactured, packed, stored and distributed under hygienic conditions (See IS 2491). All the processing equipments should be properly cleaned and care should be taken to prevent infestation.

**8. 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**  
**LEVELS OF CONTROL**

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method Cl. Ref.	Test Method IS		No. of Sample	Frequency	Remarks
3.1 & Table 1	i) Total Dye Content	Annex A	IS 1694	R	One	Each control unit	See cl 5.2.1 of SIT
-do-	ii) Loss on drying at 135°C & chloride & sulphates expressed as sodium salt	6, 13 and 14	IS 1699	R	One	Each control unit	See cl 5.2.2 of SIT
-do-	iii) Water insoluble matter	7	IS 1699	R	One	Each control unit	-do-
-do-	Combined ether extracts	8	IS 1699	R	One	Each control unit	-do-
-do-	Subsidiary dyes	Annex B & 9	IS 1694 IS 1699	R	One	Each control unit	-do-
-do-	Dye intermediates	Annex C	IS 1694	R	One	Each control unit	-do-
-do-	Lead	15	IS 1699	S	One	Once in a month	See cl 5.2.3 of SIT
-do-	Arsenic	15	IS 1699	R	One	Each control unit	See cl 5.2.2 of SIT
-do-	Heavy metal (as Pb)	16	IS 1699	R	One	Each control unit	-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 empaneled 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.