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BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

भारतीय मानक मसौदा

सोडियम टारट्रेट, खाद्य ग्रेड — विशिष्टि

(*आइ एस 5708 का दूसरा पुनरीक्षण*)

Draft Indian Standard

SODIUM TARTRATE, FOOD GRADE — SPECIFICATION

(*Second Revision of IS 5708*)

ICS No. 67.220.20

Food Additives Sectional Committee, FAD 08 **Last Date of Comments:** 10 October 2024

FOREWORD

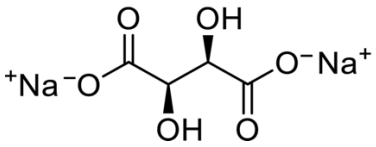
(*Formal clauses would be added later*)

Food additives are added to improve the appearance, flavour, texture or storage properties, etc of the processed foods. As certain impurities in these substances have been found to be harmful, it is necessary to have a strict quality control of these food additives. A series of standards have, therefore, been prepared to cover purity and identification of these substances. These standards would help in checking purity, which requires to be checked at the stage of manufacture, for it is extremely difficult to detect the impurity once these substances have been added to the processed foods. Besides, these standards are intended to guide the indigenous manufacturers in making their product conform to specifications that are accepted by scientists, health authorities and national/ international bodies.

Sodium tartrate, food grade widely used as an emulsifying and stabilizing agent, is permitted under the *Food Safety and Standards (Food Products Standards and Food Additives) Regulations*, 2011.

Chemical Name and Formula:

The recognized chemical name is disodium tartrate or sodium *d*-tartrate. The chemical formula is $C_4H_4O_6Na_2.2H_2O$ and has molecular weight of 230.08. Its INS No. is 335 (ii). Following is its structural formula:



This standard was published in 1969. In the preparation of this standard, assistance was derived from Food Chemical Codex (FCC), Third Edition, National Academy of Sciences, National Research Council, Washington, DC.

It was first revised in 1996 revised to bring the requirement of solubility under description section to make it in line with FCC, and to provide 'directions for storage' and 'expiry date' in the 'Marking' clause.

In this revision, one amendment issued to the previous version of the standard has been incorporated and the following major changes have been made:

a) The requirement for heavy metals has been removed as the limit of lead (contaminant in food colours) is already covered through the standard.

b) The marking requirements have been updated.

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*)' This 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 the methods of sampling and test for sodium tartrate, food grade.

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:

IS No.	*Title*
IS 1070 : 2023	Reagent grade water — Specification (*fourth revision*)
IS 1699 : 202X	Methods of sampling and test for food colours (*third revision*) [*Under preparation Doc: FAD 08 (23204)F*]

3 DESCRIPTION

Sodium tartrate is disodium salt of L(+)-tartaric acid. It is transparent, colourless, and odourless crystal. One gram dissolves in 3 ml of water. It is insoluble in ethyl alcohol.

NOTE − The solubility is intended only as information regarding approximate solubility and is not to be considered as a quality requirement and is of minor significance as a means of identification or determination of purity.

4 REQUIREMENT

4.1 Identification

4.1.1 On ignition, sodium tartrate emits the odour of burning sugar and leaves a residue which shall be alkaline to litmus and effervesces with acids.

4.1.2 Heat a few milligrams of sodium tartrate on a steam bath with 2 ml of sulphuric acid containing 0.5 percent pyrogallol. An intense violet colour shall be produced.

4.1.3 A solution of sodium tartrate acidified with dilute acetic acid filtered if necessary, and treated with uranyl zinc acetate shall yield a yellow crystalline precipitate within a few minutes.

4.2 The *p*H of 10 percent solution of the material shall be between 7.0 and 7.5.

4.3 The material shall also comply with the requirements given in Table 1.

Table 1 Requirements of Sodium Tartrate, Food Grade

(*Clause* 4.3)

Sl. No.	**Characteristic**	**Requirements**	**Method of Test, Ref to**
(1)	(2)	(3)	(4)
i)	Purity (as $C_4H_4O_6Na_2.2H_2O$) on dry basis, percent by mass, *Min*	99	Annex A (A-1)

ii)	Loss on drying, percent by mass	14 − 17	Annex A (A-2)
iii)	Oxalate	To pass the test (less than 0.1 percent)	Annex A (A-3)
iv)	Arsenic (as As) (on dry basis), mg/kg, *Max*	3	IS 1699
v)	Lead (as Pb), mg/kg, *Max*	2	IS 1699

4 PACKING

The material shall be securely packed in containers with minimum access to light and moisture. The containers shall be such as to preclude contamination of the contents with metals or other impurities.

5 STORAGE

The material shall be stored in a cool and dry place so as to avoid excessive exposure to heat.

6 MARKING

6.1 The containers shall be securely closed and shall bear legibly and indelibly the following information:

a) Name of the material including the words 'Food Grade';
b) Source of manufacture;
c) Net quantity when packed;
d) Batch or code number;
e) Date of manufacture; and
f) Expiry/ Best before date;
g) Any other requirements as specified under the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011 and *Food Safety and Standards* (*Labelling and Display*) *Regulations*, 2020.

6.2 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 products may be marked with the Standard Mark.

7 SAMPLING

Representative samples of the materials shall be drawn according to the method prescribed in IS 1699.

8 TESTS

Tests shall be carried out by the methods specified in co1 (4) of Table 1.

9 QUALITY OF REAGENTS

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE – ‘Pure chemicals’ shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

[*Table* 1, *Sl No.* (i), (ii) and (iii)]

METHOD OF TEST FOR SODIUM TARTRATE, FOOD GRADE

A-1 DETERMINATION OF PURITY

A-1.1 Two methods have been specified. Either could be used.

A-1.2 Titrimetric Method

A-1.2.1 *Reagents*

A-1.2.1.1 *Sulphuric acid* − 0.5 N.

A-1.2.1.2 *Methyl orange* − Dissolve 100 mg of methyl orange in 100 ml of water, and filter, if necessary.

A-1.2.1.3 *Sodium hydroxide* − 0.5 N.

A-1.2.2 *Procedure*

Weigh accurately about 1.500 g of sodium tartrate, previously dried, at 150 °C for 3 h, into a tared porcelain crucible, ignite gently at first, until the salt is thoroughly carbonized, protecting the carbonized salt from contact with the flame at all times. Cool the crucible, place in a glass beaker and break up the carbonized mass with a glass rod. Without removing the glass rod or the crucible, add 50 ml of water, 50 ml of the sulphuric acid, cover the beaker and boil the solution for 30 min. Filter and wash with hot water until the last washing is neutral to litmus. Cool the combined filtrate and washings, add methyl orange, and titrate the excess acid with the sodium hydroxide. Each ml of 0.5 N sulphuric acid is equivalent to 0.048 51 g of $C_4H_4O_6Na_2$.

A-1.3 Potentiometric Titration Method

A-1.3.1 *Reagents*

A-1.3.1.1 *Glacial acetic acid*

A-1.3.1.2 *Perchloric acid* − 0.1 N.

A-1.3.2 *Procedure*

Weigh accurately about 0.450 g of sodium tartrate, previously dried at 150 °C for 3 hours and transfer to a 250 ml beaker. Add 100 ml of glacial acetic acid, and stir the solution (for example, with a magnetic stirrer) until the sample is dissolved. Titrate the solution with 0.1 N perchloric acid in glacial acetic acid, adding the titrant in 0.2 ml increments as the end-point is neared, and determine the end-point potentiometrically. Each ml of 0.1 N perchloric acid is equivalent to 0.009 703 g of $C_4H_4O_6Na_2$.

A-2 LOSS ON DRYING

A-2.1 Procedure

Weigh accurately about 5 g of the material in a tared weighing bottle. Place the bottle containing the sample (uncovered) in the oven maintained at (105 ± 1) °C for 3 h. Remove the bottle from oven, close it and allow to come to room temperature in a desiccator and weigh. Calculate the loss on drying, percent by mass.

A-3 TEST FOR OXALATE

A-3.1 Reagents

A-3.1.1 *Acetic Acid Solution* − containing 6 percent (*m*/*v*) of CH_3COOH.

A-3.1.2 *Calcium Chloride* − Dissolve 7.5 g of calcium chloride in sufficient water to make 100 ml.

A-3.2 Procedure

Add 5 drops of acetic acid and 2 ml of calcium chloride to 10 ml of a 10 percent solution of sodium tartrate. No turbidity shall be produced within 1 h.