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मानक

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IS 9505 (2007): Monosodium L-glutamate, Food Grade [FAD 8: Food Additives]



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“Knowledge is such a treasure which cannot be stolen”



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भारतीय मानक  
मोनोसोडियम एल-ग्लूटामेट, खाद्य ग्रेड — विशिष्टि  
( पहला पुनरीक्षण )

*Indian Standard*  
MONOSODIUM L-GLUTAMATE, FOOD GRADE —  
SPECIFICATION  
( *First Revision* )

ICS 67.220.20

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**BUREAU OF INDIAN STANDARDS**  
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NEW DELHI 110002

## FOREWORD

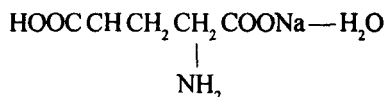
This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Food Additives Sectional Committee had been approved by the Food and Agriculture Division Council.

With the increased production of processed foods, manufacturers have started adding a large number of substances, generally in small quantities, to improve the appearance, flavour, texture or storage properties of the processed foods. As impurities in these substances have been found to be harmful, it is necessary to have a strict quality control of these food additives. Use of monosodium L-glutamate as flavour enhancer has been permitted for certain foods in the *Prevention of Food Adulteration Rules, 1955*. This standard would help in checking purity which requires to be checked at the stage of manufacture, for it is extremely difficult (and in many cases impossible) to detect the impurity once these substances are added to the processed foods.

This standard was first published in 1980 based on the then existing 'Specification for identity and purity of food additives' published by FAO and WHO. This standard is being revised taking into consideration the latest publication for standard of monosodium L-glutamate issued by JECFA. In this revision the limits for heavy metal contaminants have been made more stringent and methods of test have been revised and updated.

### Chemical Characteristics

Chemical names are monosodium L-glutamate monohydrate, sodium glutamate, MSG. Its empirical formula is  $C_5H_8O_4NNaH_2O$ . Its molecular weight is 187.13 and structural formula is :



Due consideration has also been given to the *Prevention of Food Adulteration Rules, 1955* and *Standard of Weights & Measures (Packaged Commodities) Rules, 1977*. However, this standard is subject to restrictions imposed under these, wherever applicable.

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 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

# Indian Standard

## MONOSODIUM L-GLUTAMATE, FOOD GRADE — SPECIFICATION

( *First Revision* )

### 1 SCOPE

This standard prescribes the requirements and methods of sampling and test for monosodium L-glutamate, food grade.

### 2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provisions 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
1070:1992	Reagent grade water ( <i>third revision</i> )
1699:1995	Methods of sampling and test for food colours ( <i>second revision</i> )
2491:1998	Food hygiene — General principles — Code of practice ( <i>second revision</i> )

### 3 REQUIREMENTS

#### 3.1 Description

Monosodium L-glutamate shall be in the form of white,

practically odourless crystals or crystalline powder. It may have either a slightly sweet or a slightly salty taste.

#### 3.2 Identification

##### 3.2.1 Solubility

Monosodium L-glutamate shall be freely soluble in water, sparingly soluble in ethanol and practically insoluble in ether.

3.2.2 To 1 ml of a 1 in 30 solution add 1 ml of ninhydrin solution and 100 mg of sodium acetate, and heat in a boiling water bath for 10 min. An intense violet-blue colour is formed.

3.2.3 To 1 ml of a 1 in 100 solution, add uranyl zinc acetate solution. A yellow crystalline precipitate appears within a few minutes.

##### 3.2.4 Specific Rotation

[ $\alpha$ ]<sub>20, D</sub>: Between + 24.8 and + 25.3° [ 10 percent (w/v) solution in 2N hydrochloric acid ].

3.2.5 pH of 1 in 50 solution of the material shall be between 6.7 and 7.2.

3.3 The material shall also conform to the requirements given in Table 1.

**Table 1 Requirements for Monosodium L-glutamate**

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of this Standard	Clause of IS 1699
(1)	(2)	(3)	(4)	(5)
i)	Purity as (C <sub>5</sub> H <sub>9</sub> O <sub>4</sub> NNa.H <sub>2</sub> O), percent by mass, <i>Min</i>	99	A	
ii)	Loss on drying, percent by mass, at 98°C for 5 h, <i>Max</i>	0.5	—	—
iii)	Chloride, percent by mass, <i>Max</i>	0.2	B	—
iv)	Arsenic (as As), mg/kg, <i>Max</i>	2	—	15
v)	Lead (as Pb), mg/kg, <i>Max</i>	5	—	15
vi)	Heavy metals (as Pb), mg/kg, <i>Max</i>	10	—	16

3.4 The product shall be processed, packed, stored and distributed under hygienic conditions in licenced premises (see IS 2491).

#### 4 PACKING, STORAGE AND MARKING

##### 4.1 Packing

The product shall be securely packed in well-filled 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.

##### 4.2 Storage

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

##### 4.3 Marking

Each container shall be marked legibly to give the following information:

- a) Name of the material;
- b) Name and address of the manufacturer;
- c) Batch or Code number;
- d) Net content when packed;
- e) Instruction for storage to include 'Store away from direct sunlight and heat';

- f) Best before date (Month and Year to be given by the manufacturer); and
- g) Any other requirements as given under the *Standards of Weights and Measures (Packaged Commodities) Rules, 1977* and *Prevention of Food Adulteration Act, 1955* and Rules.

##### 4.3.1 BIS Certification Marking

The product may also be marked with the Standard Mark.

4.3.1.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

#### 5 SAMPLING

Representative samples of the material shall be drawn according to the method prescribed in 4 of IS 1699.

#### 6 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 result of analysis.

### ANNEX A

[Table 1, Sl No. (i)]

#### DETERMINATION OF PURITY

##### A-1 PROCEDURE

Dissolve about 200 mg of sample, previously dried and accurately weighed, in 6 ml of formic acid and add 100 ml of glacial acetic acid. Titrate with 0.1 N perchloric

acid determining the end point potentiometrically. Run a blank determination in the same manner and correct for the blank. Each ml of 0.1 N perchloric acid is equivalent to 9.356 mg of  $C_3H_8O_4NNa.H_2O$ .

### ANNEX B

[Table 1, Sl No. (iii)]

#### DETERMINATION OF CHLORIDE

##### B-1 PROCEDURE

B-1.1 Unless otherwise specified, place 0.07 g of the sample in a Nessler tube, dissolve it in about 30 ml of water, and neutralize with dilute nitric acid if the solution is alkaline. Add 6 ml of dilute nitric acid TS and dilute to 50 ml with water. Transfer 0.4 ml of 0.01 N hydrochloric acid into another Nessler tube to serve as the standard, add 6 ml of dilute nitric acid TS, and dilute to 50 ml with water.

If the solution containing the sample is not clear, filter both solutions under the same conditions. Add 1 ml of silver nitrate TS to each solution, mix thoroughly, and allow to stand for 5 min protected from direct sunlight. Compare the turbidity of the two solutions by observing the Nessler tubes from the sides and the tops against a black background. The turbidity of the sample solution does not exceed that of the standard.

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This Indian Standard has been developed from Doc: No. FAD 8 (1589).

### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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