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BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

भारतीय मानक मसौदा

पोटेशियम नाइट्राइट, खाद्य ग्रेड - विशिष्टि

(*आइ एस* 5057 *का दूसरा पुनरीक्षण*)

Draft Indian Standard

POTASSIUM NITRITE, FOOD GRADE — SPECIFICATION

(*Second Revision of IS 5057*)

ICS No. 67.220.20

Food Additives Committee, FAD 08 **Last Date of Comments: 16 June 2024**

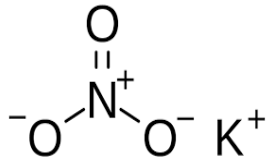
FOREWORD

(*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.

Potassium nitrite is permitted as a food preservative under the *Food Safety and Standards* (*Food Products Standards and Food Additives*) *Regulation*, 2011.

Chemical Name and Formula - The recognized chemical name is potassium nitrite. Chemical formula is KNO_2. Its molecular weight is 85.11.



STRUCTURAL FORMULA

This standard was first published in 1969. A considerable amount of assistance was derived from the following publications in preparing this standard:

a) Food chemical Codex (FCC), Third Edition, 1981, National Academy of Science, National Research Council, Washington D.C., USA
b) Compendium of Food Additive Specifications, Volume 2, Joint FAO/WHO Expert committee on food Additives JECFA, 1992.

This standard is harmonized with the specification of FCC. However, the standard deviates from the FAO/WHO specification, in that the requirement of *p*H is not specified in this standard.

It was first revised in 1996 to provide instruction for storage and expiry/best before date under marking clause.

In this revision, 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 requirements for purity and loss on drying have been aligned with JECFA Monograph (2006).
c) 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*)’. The 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 potassium nitrite, 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*)
Doc: FAD 08 (23204)WC	Methods of sampling and test for food colours (*third revision of IS 1699*)

3 DESCRIPTION

Potassium nitrite shall be in the form of small white or yellowish deliquescent granules or cylindrical sticks. It is very soluble in water but is sparingly soluble in 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 REQUIREMENTS

4.1 Identification Tests

4.1.1 A 10 percent solution of potassium nitrite shall be alkaline to litmus and shall give positive test for potassium given in **4.1.1.1** and positive test for nitrite given in **4.1.1.2.**

4.1.1.1 *Test for Potassium*

When to the neutral 10 percent solution of the material sodium bitartarate is added, a white precipitate shall be formed. This precipitate shall be soluble in ammonia and in solution of alkali hydroxides or carbonates.

4.1.1.2 *Test for nitrite*

To a 10 percent solution of the material, add a few drops of potassium iodide and a few drops of dilute sulphuric acid; iodine shall be liberated which shall turn starch solution to blue.

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

Table 1 Requirements for Potassium Nitrite, Food Grade

(*Clause* 4.2)

Sl. No.	Characteristic	Requirements	Method of Test, Ref to
(1)	(2)	(3)	(4)

i)	Purity, as (KNO_2), percent by mass, on dry basis, *Min*	95	Annex A
ii)	Loss on drying when dried over silica gel for 4 h, percent by mass, *Max*	3	Doc: FAD 08 (23204)WC
iii)	Arsenic (as As), mg/kg, *Max*	3	Doc: FAD 08 (23204)WC
v)	Lead (as Pb), mg/kg, *Max*	2	Doc: FAD 08 (23204)WC

5 PACKING AND STORAGE

5.1 Packing

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

5.2 Storage

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

6 MARKING

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

a) Name of the material including the words 'Food Grade';
b) Source of manufacture;
c) Minimum net mass or content;
d) Batch or code number;
e) Date of manufacture; and
f) Any other requirements as specified under the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011 and *Food Safety and Food Safety and Standards* (*Packaging*) *Regulations*, 2018 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 Doc: FAD 08 (23204) WC.

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 result of analysis.

ANNEX A

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

DETERMINATION OF PURITY

A-l REAGENTS

A-l.1 Potassium Permanganate Solution – 0.5 N

A-1.2 Sulphuric Acid – 94.5 to 95.5 percent.

A-l.3 Oxalic Acid Solution – 0.1 N

A-2 PROCEDURE

Transfer about 1.2 g of the material, accurately weighed, into a 100 ml volumetric flask, dissolve in water, dilute to volume and mix. Pipette 10 ml of this solution into a mixture of 50 ml of 0.1 N potassium permanganate, 100 ml of water and 5 ml of the sulphuric acid, keeping the tip of the pipette well below the surface of the liquid. Warm the solution to 40°C, allow it to stand for 5 min, and add 25 ml of oxalic acid. Heat the mixture to about 80°C, and titrate with 0.1 N potassium permanganate. Each ml of 0.1 N potassium permanganate is equivalent to 4.255 mg of KNO_2.