

BUREAU OF INDIAN STANDARDS

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भारतीय मानक मसौदा

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Draft Indian Standard

GLACIAL ACETIC ACID, FOOD GRADE – SPECIFICATION

ICS No. 67.220.20

Food Additives Sectional Committee, FAD 08

Last Date of Comments: **25 June 2024**

FOREWORD

(Formal clauses would be added later)

Glacial acetic acid or acetic acid is a permitted food additive, as an acidity regulator, in many foods like ketchups, sauces, etc. It imparts a typical vinegar acid note to the products. Glacial Acetic Acid is the key ingredient in the manufacture of synthetic vinegar. Food Safety and Standards permits glacial acetic acid at GMP (Good Manufacturing Practice) level in many foods and food categories.

This Indian Standard is based on Joint FAO/WHO expert Committee on Food Additives (JECFA) standard.

Synonym – Glacial Acetic Acid, ethanoic acid or methanecarboxylic acid, INS 260

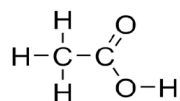
Chemical names – Acetic Acid

C.A.S. No. 64-19-7

Chemical formula – C₂H₄O₂

Molecular weight – 60.05

Structural formula:



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

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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 requirements, methods of sampling and test for glacial acetic acid, food grade.

2 REFERENCES

The following 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 is encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
IS 695 : 2020	Acetic Acid — Specification (<i>fourth revision</i>)
IS 1070 : 2023	Reagent grade water – Specification (<i>fourth revision</i>)
IS 1699 : 202X	Methods of sampling and test for synthetic food colours (<i>third revision</i>) [<i>Under preparation Doc: FAD 08(23204)F</i>]

3 REQUIREMENTS

3.1 Description

Glacial acetic acid shall be a colourless liquid, having a pungent characteristic odour.

3.2 Identification

3.2.1 Solubility

The material shall be miscible with water, ethanol, glycerol and diethyl ether.

3.2.2 Test for Acid

1 in 3 solution shall be acidic

3.2.3 Test for Acetate

Acetic acid or acetates, when warmed with sulfuric acid and alcohol, form ethyl acetate, recognizable by its characteristic odour. With neutral solutions of acetates, ferric chloride (9 percent by volume solution in water) produces a deep red colour which is destroyed by the addition of a mineral acid.

3.2.4 The material shall also confirm to the requirements given in Table 1.

4 PACKING AND STORAGE

4.1 Packing

The material shall be securely packed in suitable containers inert to the material. The containers shall be such as to preclude contamination of the contents with metals or other impurities.

4.2 Storage

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The material shall be stored in a cool place so as to avoid excessive exposure to heat and freezing temperature. The material expands on freezing. To be stored in such way to contain in case of spillage.

Table 1 Requirements for Glacial Acetic Acid, Food Grade

(Clause 3.2.4)

SI No.	Characteristic	Requirements	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Purity, as C ₂ H ₄ O ₂ , percent by mass, <i>Min</i>	99.5	Annex A
ii)	Crystallization point (°C), <i>Min</i>	15.6	Annex A (A-3) of IS 695
iii)	Non-volatile residue, percent by mass, <i>Max</i>	0.01	Annex A (A-4) of IS 695
iv)	Readily oxidizable substances	Pass the test	Annex A (A-11) of IS 695
v)	Lead, mg/kg, <i>Max</i>	0.5	IS 1699

5 MARKING

5.1 Each container shall be legibly and indelibly marked with the following information:

- a) Name of the material, including the words 'Food Grade';
- b) Name of the manufacturer or registered trade-mark, if any;
- c) Net quantity when packed;
- d) Lot/batch No.;
- e) Month and year of manufacture;
- f) Expiry date; and
- g) Any other requirements as specified under the *Legal Metrology (Packaged Commodities) Rules, 2011* and *Food Safety and Standards (Labelling and Display) Regulations, 2020*.

5.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provision of *Bureau of Indian Standards Act, 2016* and Rules and Regulation framed there under and the product(s) may be marked with the Standard Mark

6 SAMPLING

The representative sample of the material shall be drawn according to the method prescribed in IS 1699.

7 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 experimental results.

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ANNEX A

[Table 1, Sl No. (i)]

DETERMINATION OF PURITY

A-1 APPARATUS

Glass Stoppered Flask

A-2 REAGENTS

A-2.1 Water

A-2.2 Phenolphthalein

A-2.3 Sodium Hydroxide – 1 N

A-3 PROCEDURE

Measure about 2 ml of the sample into a tared, glass-stoppered flask, and weigh accurately. Add 40 ml of water, then add phenolphthalein and titrate with 1 N sodium hydroxide. Each ml of 1 N sodium hydroxide is equivalent to 60.05 mg of $C_2H_4O_2$.