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BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

भारतीय मानक मसौदा

अल्फा नेफथाइल एसिटिक एसिड, तकनीकी – विशिष्टि

(*आइ एस 13070 का पहला पुनरीक्षण*)

Draft Indian Standard

ALPHA NAPHTHYL ACETIC ACID, TECHNICAL — SPECIFICATION

(*First Revision of IS 13070*)

ICS No. 65.100.99

Pesticides Sectional Committee, FAD 01 **Last Date of Comments: 30 June 2024**

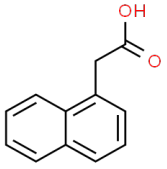
FOREWORD

(*Formal clauses would be added later*)

Alpha naphthyl acetic acid, technical is employed in the preparation of formulations used as a plant growth regulator that stimulates plant growth and development.

*Alph*a naphthyl acetic acid is the accepted common name by the International Organization for Standardization (ISO) for 1-naphthyl acetic acid or 1-naphthalene acetic acid.

The empirical and structural formulae and the molecular mass of *alpha* naphthyl acetic acid are given below:

Empirical Formula	*Structural Formula*	*Molecular Mass*
$C_{12}H_{10}O_2$		186.2

This standard was first published in 1991. In this revision, the standard has been brought out in the latest style and format of the Indian Standards, and references to Indian Standards wherever applicable have been updated.

In the preparation of this standard, due consideration has been given to the provisions of the *Insecticides Act*, 1968 and the Rules framed thereunder. However, this standard is subject to the 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 : 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 and the methods of sampling and test for *alpha* naphthyl acetic acid, technical.

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 6940 : 1982	Methods of test for pesticides and their formulations (*first revision*)
IS 8190 (Part 1) : 1988	Requirements for packing of pesticides : Part 1 Solid pesticides (*second revision*)
IS 10946 : 1996	Methods of sampling for technical grade pesticides (*first revision*)

3 REQUIREMENTS

3.1 Description

The material shall be in the form of white to cream coloured powder emitting a slight naphthalene type odour. It shall be free from extraneous impurities.

3.2 Identity Test

When tested by the method prescribed in Annex A, the material shall have an ultra-violet (UV) absorption maxima at 280 nm.

3.3 Solubility

When 5 g of the material is dissolved in 30 ml of 1 N sodium hydroxide solution and diluted to 50 ml with water, the resultant solution shall not be hazy or dirty and be not more than pale yellow in colour.

3.4 The material shall also comply with the requirement given in Table 1.

Table 1 Requirements of *Alpha* Naphthyl Acetic Acid, Technical

(*Clause* 3.4)

Sl. No.	**Characteristic**	**Requirements**	**Method of Test, Ref to**
(1)	(2)	(3)	(4)
i)	*Alpha* naphthyl acetic acid content, percent by mass, *Min*	98.0	Annex B
ii)	Melting point (°C)	126 - 132	IS 6940
iii)	Sulphated ash content, percent by mass, *Max*	0.5	Annex C

4 PACKING

The material shall be packed in high density polyethylene (HDPE) woven sacks provided internally with a low density polyethylene (LDPE) loose liner of thickness not less than 0.062 mm. The container shall also comply with the general packing requirements specified in IS 8190 (Part 1)

5 MARKING

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

a) Name of the material;
b) Name and address of the manufacturer;
c) Batch number;
d) Date of manufacture;
e) Date of expiry;
f) Net quantity;
g) Nominal *alpha* napthyl acetic acid content, percent (*m*/*m*);
h) Cautionary notice as worded in the *Insecticides Act*, 1968, and Rules framed thereunder; and
j) Any other information required under the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011.

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 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.

6 SAMPLING

Representative samples of the material shall be drawn as prescribed in IS 10946.

7 TESTS

Tests shall be carried out by appropriate methods as referred in col (4) of Table 1.

8 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

[*Clause 3.2*]

IDENTITY TEST

A-1 APPARATUS

A-1.1 Ultra-Violet Spectrophotometer – with quartz cells of path length 1 cm.

A-2 REAGENTS

A-2.1 Sodium Hydroxide Solution – 1 N.

A-2.2 Purified *Alpha* Naphthyl Acetic Acid

Dissolve technical grade *alpha* naphthyl acetic acid in hot water. Filter the hot solution under vacuum and cool the filtrate for crystallization. Separate the crystals by filtration and wash them with warm water. Dry the crystals in an air at (105 ± 2) °C.

A-3 PROCEDURE

A-3.1 Transfer about 0.15 g of the material in a 500 ml volumetric flask and dissolve in 125 ml sodium hydroxide solution. Dilute to the mark with water and mix. Pipette 5 ml of this solution into a 100 ml volumetric flask, add 25 ml sodium hydroxide solution, dilute to the mark with water and mix well.

A-3.2 Scan the solution **(A-3.1),** for absorbance using 1 cm cell, between 220 and 350 nm against a blank prepared by diluting 25 ml sodium hydroxide solution to 100 ml with water. The spectrum shall be similar to that of the purified *alpha* naphthyl acetic acid with an absorbance maximum at 280 nm.

ANNEX B

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

DETERMINATION OF *ALPHA* NAPHTHYL ACETIC ACID

B-1 REAGENTS

B- 1.1 Methanol - Neutralized, AR grade, alternatively neutralized ethanol or isopropanol may be used.

B-1.2 Sodium Hydroxide Solution – 0.5 N

B-1.3 Phenolphthalein Indicator Solution

B-2 PROCEDURE

Weigh accurately 3 g sample and dissolve in 40 ml methanol and titrate with sodium hydroxide solution using phenolphthalein as indicator, to a pink colour end point.

B-3 CALCULATION

Alpha naphthyl acetic acid content, percent by mass $= \frac{18.62 \times V \times N}{M}$

where,

V = volume, in ml, of sodium hydroxide solution used in the titration;
M = mass, in g, of the sample taken for the test; and
N = normality of sodium hydroxide solution.

ANNEX C

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

DETERMINATION OF SULPHATED ASH CONTENT

C-1 APPARATUS

C-1.1 Muffle Furnace

C-1.2 Platinum Dish − 50-100 ml capacity, alternatively any other suitable dish of similar capacity may be used.

C-1.3 Desiccator

C-2 REAGENTS

C-2.1 Dilute Sulphuric Acid - 10 percent (*m*/*v*).

C-3 PROCEDURE

Transfer about 2 g of the sample, accurately weighed, to a platinum dish **(C-1.2)** and add sufficient sulphuric acid to moisten the entire sample. Heat gently, until the sample is thoroughly charred. Continue heating until all of the sample is volatilised or nearly all the carbon has been oxidised. Cool, moisten the residue with 0.1 ml sulphuric acid, and heat in the same manner until the remainder of the sample and any excess sulphuric acid has been volatilised. Finally, ignite in a muffle furnace at (800 ± 25) °C for 5 min. Cool in a desiccator and weigh.

C-4 CALCULATION

Sulphated ash content, percent by mass = $\frac{M_1}{M} \times 100$

where,

M_1 = mass, in g, of the residue; and
M = mass, in g, of the sample taken for the test.