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BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

भारतीय मानक मसौदा

अमेट्रिन, तकनीकी — विशिष्टि

Draft ***Indian Standard***

AMETRYN, TECHNICAL — SPECIFICATION

ICS 65.100.30

Pesticides Sectional Committee, FAD 01 **Last date of comments:** 9 November 2025

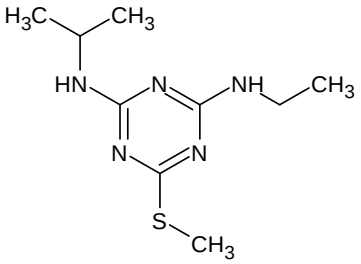
FOREWORD

(*Formal clauses would be added later*)

Ametryn, technical is formulated into products for pre-emergence and post-emergence use, providing longer-term weed control.

Ametryn is the accepted common name by the International Organization for Standardization (ISO) for 2-ethylamino-4-isopropylamino-6-methylthio-1,3,5-triazine.

The empirical and structural formulae and molecular mass of ametryn are given below:

Empirical Formula	*Structural Formula*	*Molecular Mass*
$C_9H_{17}N_5S$		227.33

In the preparation of this standard, due consideration has been given to the provisions of the *Insecticide Act*, 1968, and the rules framed thereunder. However, this standard is subject to the restrictions imposed under the *Insecticides Act* and rules, 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)*'. 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 ametryn, technical.

2 REFERENCES

The standards given below 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 edition of these standards:

IS No.	*Title*
IS 1070 : 2023	Reagent grade water – Specification (*fourth revision*)
IS 6940 : 2025	Pesticides and their formulations – Methods of test (*second revision*)
IS 8069 : 2023	Textiles — High Density Polyethylene (HDPE)/Polypropylene (PP) Woven Sacks for Packing Pesticides — Specification (*third 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 colored free flowing powder It shall be free from extraneous impurities.

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

Table 1 Requirements for Ametryn, Technical
(*Clauses* 3.2 and 7.1)

Sl No.	Characteristic	Requirement	Method of Test Ref to
(1)	(2)	(3)	(4)
i)	Ametryn content, percent by mass, *Min*	95.0	Annex A
ii)	Moisture content, percent by mass, *Max*	0.50	IS 6940
iii)	Ionic chloride content (as NaC1), percent by mass, *Max*	0.60	Annex B

4 PACKING

4.1 The material shall be packed in mild steel containers or DW tarpaulin laminated jute bags or HDPE woven sacks with LDPE liner (*see* IS 8069). The containers shall also comply with general requirements as specified in IS 8190 (Part 1).

5 MARKING

5.1 The containers shall 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 ametryn 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 according to IS 10946.

7 TESTS

7.1 Tests shall be carried out by the methods referred to in col (4) of the Table 1.

7.2 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)]
DETERMINATION OF AMETRYN CONTENT

A-1 GENERAL

Either of the two methods, namely, the high performance liquid chromatographic method (*see* **A-2**) or the gas chromatographic method (*see* **A-3**) may be used for determination of ametryn content in ametryn, technical.

A-2 HIGH PERFORMANCE LIQUID CHROMATOGRAPHIC METHOD

A-2.1 Principle

A high performance liquid chromatograph unit with an ultraviolet (UV) detector is used for the determination of ametryn content.

A-2.2 Reagents

A-2.2.1 *Methanol* **–** HPLC Grade

A-2.2.2 *Water* **–** HPLC Grade

A-2.2.3 *Ametryn Reference Standard* – of known purity

A-2.3 Apparatus

A-2.3.1 The HPLC equipped with a suitable chromatographic software and UV detector is used for this determination. The operative condition suggested below are typical, which can be changed provided that standardization is done:

Chromatographic separation parameters	
Column	C18, [150 mm length x 4.6 mm internal diameter (i.d.) x 5 µm particle size]
Mobile phase	Water : Methanol {35:65 (*v*/*v*)}
Detector	265 nm
Temperature	Ambient
Flow rate	0.8 ml/min
Injection volume	10 µl
Run Time	15 min

A-2.4 Procedure

A-2.4.1 *Preparation of Standard solution*

Weigh out accurately 25 mg of ametryn reference standard into a 50 ml volumetric flask. Dissolve the content with methanol, make up volume up to the mark with same solvent.

A-2.4.2 *Preparation of Sample solution*

Weigh out accurately an equivalent amount of sample containing 25 mg of active ingredient into a 50 ml volumetric flask. Dissolve the content with methanol, make up volume up to the mark with same solvent.

A-2.4.3 *Estimation*

Inject 10 µl of the standard solution and sample solution. Calculate the ametryn content as given in **A-2.5**.

A-2.5 Calculation

$$\text{Ametryn content, percent by mass} = = \frac{M_1 \times A_2}{M_2 \times A_1} \times P$$

where,

M_1 = mass, in g, of standard ametryn in reference standard solution;

A_2 = peak area of ametryn in the sample solution injected;

M_2 = mass, in g, of sample taken for the test;

A_1 = peak area of ametryn in the reference standard solution injected; and

P = percent purity of ametryn reference standard

A-3 GAS CHROMATOGRAPHIC METHOD

A-3.1 Principle

Ametryn content is determined by gas chromatography with FID detector using internal standard technique.

A-3.2 Reagents

A-3.2.1 *Chloroform* – AR Grade

A-3.2.2 *Ametryn Reference Standard* – of known purity

A-3.2.3 *Internal Standard Solution (Dioctyl Phthalate)* – AR Grade

A-3.3 Apparatus

GC equipped with a flame ionization detector. The operative condition suggested below are typical, which can be changed provided that standardization is done:

Coloumn:	SS/Glass, 1 meter length, 3 mm i.d, packed with 5 % OV-101 on Chromosorb WHP /100/120 mesh
Gas flow: Nitrogen Carrier gas Hydrogen Air	 30.0 ml/min 30.0 ml/min 300.0 ml/min
Injector Temperature:	260 ºC
Oven Temperature	Programmed
Temperature programme	215 ºC - hold 1 min – 10 ºC/min - 240 ºC - 7 min

Detector Temperature:	270 ^{o}C
Injection Volume	2 µl

A-3.4 Procedure

A-3.4.1 *Preparation of Internal Standard Solution*

Weigh 0.9 g of dioctyl phthalate in a 50 ml volumetric flask, dissolve and make up with chloroform.

A-3.4.2 *Preparation of Standard Solution*

Weigh out accurately 0.14 – 0.15 g of ametryn reference standard into a 25 ml volumetric flask. Dissolve the content with chloroform, add 5 ml of internal standard solution and make up volume up to the mark with chloroform.

A-3.4.3 *Preparation of Sample Solution*

Weigh out sample accurately equivalent to 0.14 – 0.15 g of ametryn into a 25 ml volumetric flask. Dissolve the content with chloroform, add 5 ml of internal standard solution and make up volume up to the mark with chloroform.

A-3.5 Estimation

Inject 2 µl of the standard solution and sample solution.

Retention times (Guide values):

Ametryn 1.18 min

IS (DOP) 4.58 min

A-3.6 Calculation

R_f (Standard or sample) = Area of sample or standard / Area of Internal Standard

$$\text{Ametryn, percent by mass} = \frac{Mass\ of\ std \times R_f\ of\ sample \times Purity\ of\ std}{Mass\ of\ sample \times R_f\ of\ std}$$

ANNEX B

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

DETERMINATION OF IONIC CHLORIDE CONTENT (As NaCl)

B-1 REAGENTS

B-1.1 Silver Nitrate Solution – 0.1 N

B-1.2 Ferric Alum – Indicator

B-1.3 Standard Potassium thiocyanate solution – 0.1 N

B-1.4 Nitric acid solution – 10 percent (*v*/*v*)

B-2 PROCEDURE

Weigh accurately 10 about 1.0 g of the sample in a 250 ml Erlenmeyer flask add 50 ml water and 10 ml dilute nitric acid. Then add 25 ml silver nitrate with a pipette and add 2 ml of the ferric alum indicator solution. Titrate against standard potassium thiocyanate solution till faint red color appears. Carry out a blank determination.

B-3 CALCULATION

Ionic chloride (as NaCl) percent by mass = $\frac{(V_1 - V_2)\text{ x }5.846\text{ x N}}{\text{M}}$

Where,

V_2 = volume, in ml, of standard potassium thiocyanate solution titration for sample;

V_1= volume used, in ml, of standard potassium thiocyanate solution used for blank determination;

N = normality of standard potassium thiocyanate solution used

M = mass, in g, of the sample taken for the test.