भारतीय मानक

Indian Standard

IS 13332 : 2024

मेट्रिब्यूज़िन, तकनीकी — विशिष्टि

(पहला पुनरीक्षण)

Metribuzin, Technical — Specification

(First Revision)

ICS 65.100.20

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

February 2024 **Price Group 3**

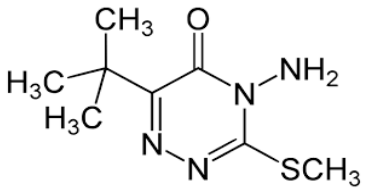
Pesticides Sectional Committee, FAD 01

FOREWORD

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

Metribuzin, technical is employed in the preparation of pesticidal formulations.

Metribuzin is the accepted common name by the International Organization for Standardization (ISO) for 4-amino-6-tertbutyl-3-(methylthio)-1,2,4-triazin-5(4H)-one. The empirical and structural formulae and molecular mass of metribuzin are given below:

Empirical Formula	*Structural formula*	*Molecular Mass*
$C_8H_{14}N_4OS$		214.29

This standard was first published in 1992. 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 and *Standards of Weights and Measures* (*Packaged Commodities*) *Rules,* 1977. 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.

Indian Standard

METRIBUZIN, TECHNICAL — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for metribuzin, technical.

2 REFERENCES

The standards given below 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 edition of these standards:

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 8069 : 1989	High density polyethylene (HDPE) woven sacks for packing pesticides — Specification (*second 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

3 REQUIREMENTS

3.1 Description

The material shall be in the form of white to off-white powder. It shall be free from extraneous impurities or added modifying agents.

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

4 PACKAGING

Material shall be packed in mild steel/double hessian jute bags (*see* IS 8117) having LDPE liners of thickness not less than 0.062 mm/3 layer sack kraft paper bags of 3 gsm × 70 gsm having LDPE liners of thickness less than 0.062 mm. The container shall also comply with the requirements given under IS 8190 (Part 1).

5 MARKING

5.1 The container 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 metribuzin content, percent by mass; and
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 the method prescribed in IS 10946.

7 TESTS

7.1 Tests shall be carried out as prescribed in col (4) of 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.

Table 1 Requirements for Metribuzin, Technical

(*Clauses* 3.2 *and* 7.1)

Sl No.	Characteristic	Requirements	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Metribuzin content, percent by mass, *Min*	88.0	Annex A
ii)	Melting point, °C	120 to 125	IS 6940
iii)	Moisture content, percent by mass, *Max*	1.0	IS 6940
iv)	Material insoluble in acetone, percent by mass, *Max*	0.5	IS 6940
v)	Acidity (as H_2SO_4), percent by mass, *Max*	1.0	IS 6940

ANNEX A

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

DETERMINATION OF METRIBUZIN CONTENT

A-1 PRINCIPLE

Metribuzin content is estimated on a gas chromatograph using a flame ionization detector. Dibutyl sebacate is used as internal standard.

A-2 APPARATUS

A-2.1 Microlitre Syringe — 5 µ1 to 10 µ1 capacity

A-2.2 Gas Chromatograph (GLC)

The instrument is equipped with a flame ionization detector and may be coupled to a printer-plotter cum integrator. The operative parameters are suggested below, which can be changed, in any other instrument employed, provided standardization is done:

Column	Glass, 183 cm length and 3 mm i.d. (internal diameter) packed with 10 percent OV 17 on chromosorb WHP (100 to 200 mesh)
Temperature	Column oven – 210 °C
	Injection port – 250 °C
	Detector – 300 °C
Gases and corresponding flow rates	Nitrogen (carrier) – 20 ml per minute
	Hydrogen – 30 ml per minute
	Air – 350 ml per minute

A-3 REAGENTS

A-3.1 Acetone — AR grade

A-3.2 Internal Standard Solution (Dibutyl Sebacate) — AR grade

A-3.3 Metribuzin Reference Standard — of known purity

A-4 PROCEDURE

A-4.1 Preparation of Internal Standard Solution

Weigh accurately 3.0 g dibutyl sebacate in a 100 ml volumetric flask and make up the volume with acetone. Shake well to homogenize.

A-4.2 Preparation of Reference Standard Solution

Weigh accurately 0.25 g metribuzin reference standard in a 50 ml volumetric flask and add to it 5 ml of internal standard solution and finally make up the volume with acetone. Shake well to homogenize.

A-4.3 Preparation of Sample Solution

Weigh accurately a quantity of the sample equivalent to 0.25 g of metribuzin in a 50 ml volumetric flask, add to it 5 ml of internal standard solution and finally make up the volume with acetone. Shake well to homogenize.

A-4.4 Determination

Inject 2 µl reference standard solution into the gas chromatograph with the help of a microliter syringe. From the integrator, print out and note the peak areas of internal standard and metribuzin. Similarly, inject the same volume of sample solution and note down the peak areas. Compute the percentage of metribuzin content in the sample.

A-5 CALCULATION

Metribuzin content, percent by mass

$$= \frac{M_1 \times A_2 \times A_3 \times P}{M_2 \times A_4 \times A_1}$$

where

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

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

A_3 = peak area of internal standard in the reference standard solution injected;

P = percent purity of metribuzin reference standard;

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

A_4 = peak area of internal standard in the sample solution injected; and

A_1 = peak area of metribuzin in the reference standard solution injected.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

This Indian Standard has been developed from Doc No.:FAD 01 (23356).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices: *Telephones*

Central : 601/A, Konnectus Tower -1, 6th Floor, DMRC Building, Bhavbhuti Marg, New Delhi 110002 { 2323 7617

Eastern : 8th Floor, Plot No 7/7 & 7/8, CP Block, Sector V, Salt Lake, Kolkata, West Bengal 700091 { 2367 0012 2320 9474

Northern : Plot No. 4-A, Sector 27-B, Madhya Marg, Chandigarh 160019 { 265 9930

Southern : C.I.T. Campus, IV Cross Road, Taramani, Chennai 600113 { 2254 1442 2254 1216

Western : Plot No. E-9, Road No.-8, MIDC, Andheri (East), Mumbai 400093 { 2821 8093

Branches : AHMEDABAD. BENGALURU. BHOPAL. BHUBANESHWAR. CHANDIGARH. CHENNAI. COIMBATORE. DEHRADUN. DELHI. FARIDABAD. GHAZIABAD. GUWAHATI. HIMACHAL PRADESH. HUBLI. HYDERABAD. JAIPUR. JAMMU & KASHMIR. JAMSHEDPUR. KOCHI. KOLKATA. LUCKNOW. MADURAI. MUMBAI. NAGPUR. NOIDA. PANIPAT. PATNA. PUNE. RAIPUR. RAJKOT. SURAT. VISAKHAPATNAM.

Published by BIS, New Delhi