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मानक

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IS 15409 (2003): Clomazone, Technical [FAD 1: Pesticides and Pesticides Residue Analysis]



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“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

क्लोमाजोन, तकनीकी — विशिष्टि

Indian Standard

CLOMAZONE, TECHNICAL — SPECIFICATION

ICS 65.100.20

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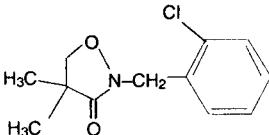
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FOREWORD

This Indian Standard 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.

Clomazone, technical is used in herbicidal formulations.

Clomazole is the common name accepted by the International Organization for Standardization (ISO) for 2-[2-chlorophenylmethyl]-4,4-dimethyl-3-isoxazolidinone.

Empirical Formula	Structural Formula	Molecular Mass
$C_{12}H_{14}ClNO_2$		239.7

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 the 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 : 1960 'Rules for rounding off numerical values (*revised*)'. The 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

CLOMAZONE, TECHNICAL — SPECIFICATION

1 SCOPE

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

2 REFERENCES

The following standards 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 editions of the standards indicated below:

IS No.	Title
1070 : 1992	Reagent grade water (<i>third revision</i>)
6940 : 1982	Methods of test for pesticides and their formulations (<i>first revision</i>)
1783 (Part 1) : 1993	Drums, large, fixed ends: Part 1 Grade A drums (<i>third revision</i>)
8190 (Part 2) : 1988	Requirements for packing of pesticides: Part 2 Liquid pesticides (<i>second revision</i>)
10946 : 1996	Methods of sampling for technical grade pesticides (<i>first revision</i>)

3 REQUIREMENTS

3.1 Description

The material shall be in the form of light brown viscous liquid free from extraneous matter and added modifying agents.

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

Table 1 Requirements for Clomazone, Technical

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of this Standard	Clause No. of IS 6940
(1)	(2)	(3)	(4)	(5)
i)	Clomazone content, percent by mass, <i>Min</i>	90.0	A	—
ii)	Material insoluble in acetone, percent by mass, <i>Max</i>	0.5	—	9.1
iii)	Acidity (as H ₂ SO ₄), percent by mass, <i>Max</i>	0.5	—	11.3.2

4 PACKING

The material shall be packed in clean and dry MS drums [conform to IS 1783(Part 1)], properly and suitably lacquered from inside. The container shall also comply with general requirements as stipulated in IS 8190 (Part 2).

5 MARKING

5.1 The containers shall bear legibly and indelibly the following information in addition to any other information as required under the *Insecticides Act*, 1968 and Rules framed thereunder:

- 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 mass of contents;
- g) Nominal clomazone content, percent (*m/m*);
- h) A cautionary notice as worded in the *Insecticides Act*, 1968 and Rules framed thereunder; and
- j) Any other information required under the *Standards of Weights and Measures (Packaging Commodities) Rules*, 1977.

5.2 BIS Certification Marking

The product may also be marked with the Standard Mark.

5.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the *Rules and Regulations* made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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 in col 4 and 5 of Table 1.

7.2 Unless specified otherwise, pure chemicals and reagent grade 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, Item (i), Col 4]

DETERMINATION OF CLOMAZONE CONTENT

A-0 METHODS

A high performance liquid chromatographic method for the determination of clomazone content in technical and formulation samples have been prescribed.

A-1 HIGH PERFORMANCE LIQUID CHROMATOGRAPHIC METHOD

A-1.1 Principle

Content of clomazone in the sample is determined in comparison to an internal standard, acetophenone. The test solution contains a known concentration of acetophenone. The clomazone content is obtained by comparing the relative peak area of the clomazone to the peak area of the acetophenone, taking into account the amount of clomazone sample being analyzed.

A-1.2 Apparatus

A-1.2.1 High Performance Liquid Chromatograph

A high performance liquid chromatograph with ultra-violet (UV) detector and PC based data system is used for this determination. The suggested operative parameters are as follows, but can be changed if necessary, provided standardization is done:

Column	: Flexit C18-Spherisorb, 4.6 mm i.d. × 250 mm long, S.S.
Mobile phase	: Methanol + Water + Tetrahydrofuran (48+40+12, v/v)
Flow rate	: 1.0 ml/min
Wave length	: 254 nm
Sensitivity	: 0.04 AUFS
Injection volume	: 5 µl
Retention time	: Clomazone (a.i.) : 7.2 min (approximately) Acetophenone : 4.6 min (approximately) (Internal standard)

NOTE — The AUFS value has to be adjusted for obtaining peaks at 60-80 percent of full scale.

A-1.2.2 Microlitre Syringe

A-1.3 Reagents

A-1.3.1 *Internal Standard, Acetophenone* — AR grade.

A-1.3.2 *Methanol* — HPLC grade.

A-1.3.3 *Water* — HPLC grade.

A-1.3.4 *Tetrahydrofuran* — HPLC grade

A-1.4 Procedure

A-1.4.1 Preparation of Internal Standard Solution

Weigh accurately 0.1 g of acetophenone into a 100 ml volumetric flask and make up the volume with methanol.

A-1.4.2 Preparation of Standard Solution

Weigh accurately 0.1 g of clomazone standard into a 50 ml volumetric flask, add 5 ml of internal standard solution and make up to volume with methanol.

A-1.4.3 Preparation of Sample Solution

Weigh accurately a quantity of sample equivalent to 0.100 g of clomazone into a 50 ml volumetric flask, add 5 ml of internal standard solution and then make up to the volume with methanol.

A-1.4.4 Estimation

Successively inject 5 µl each of standard and sample solutions and measure the areas of clomazone and internal standard peaks in respective chromatograms.

A-1.5 Calculations

Clomazone content, percent w/w = $\frac{W_1 \times A_2 \times I_1}{W_2 \times A_1 \times I_2} \times P$
where

W_1 = weight of standard clomazone;

W_2 = weight of clomazone sample;

A_1 = area of clomazone peak in standard;

A_2 = area of clomazone peak in sample;

I_1 = area of internal standard peak in standard;

I_2 = area of internal standard peak in sample;
and

P = percent purity of clomazone standard.

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This Indian Standard has been developed from Doc : No. FAD 1 (1158).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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