IS 15982 (2013): Tricyclazole, Technical - Specification
[FAD 8: Food and Agriculture]

भारतीय मानक

ट्राईसाईक्लाजोल, तकनीकी — विशिष्टि

Indian Standard

TRICYCLAZOLE, TECHNICAL — SPECIFICATION

ICS 65.100.30

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

May 2013 **Price Group 2**

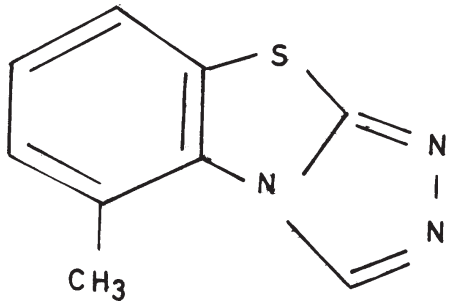
FOREWORD

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

Tricyclazole, technical is employed in the preparation of fungicidal formulations for agricultural use.

Tricyclazole is the accepted common name by the International Organization for Standardization (ISO) for 5 – methyl – 1, 2, 4 – triazolo [3,4 – b] [1,3] benzothiazole.

The empirical and structural formula and molecular mass of tricyclazole are given below:

Empirical Formula	*Structural Formula*	*Molecular Mass*
$C_9H_7N_3S$		189.2

In the formulation of this standard, due consideration has been given to the provisions of *Insecticides 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 : 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

TRICYCLAZOLE, TECHNICAL — SPECIFICATION

1 SCOPE

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

2 REFERENCES

The Indian Standards listed 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 editions of the standards indicated below:

IS No.	*Title*
1070 : 1992	Reagent grade water — Specification (*third revision*)
6940 : 1982	Methods of test for pesticides and their formulations (*first revision*)
7601 : 1983	Fibreboard drums for general purposes (*first revision*)
8190 (Part 1) : 1988	Requirement for packing of pesticides: Part 1 Solid pesticides (*second revision*)
10946 : 1996	Method of sampling for technical grade pesticides (*first revision*)

3 REQUIREMENTS

3.1 Description

The material shall be in the form of light to dark tan coloured crystalline powder. It shall be free from extraneous impurities and hard lumps.

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

Table 1 Requirements for Tricyclazole, Technical

Sl No.	Characteristic	Require-ment	Method of Test, Ref to	
			Annex	Clause No. of IS 6940
(1)	(2)	(3)	(4)	(5)
i)	Tricyclazole content, percent by mass, *Min*	95.0	A	—
ii)	Moisture content, percent by mass, *Max*	0.50	—	**4**
iii)	Material insoluble in acetone percent by mass, *Max*	0.50	—	**9**
iv)	Acidity (as H_2SO_4), percent by mass, *Max*	0.50	—	**11.3.2**

4 PACKING

The material shall be packed in fibreboard drums provided with LDPE liner of thickness not less than 0.062 mm. Fibreboard drum shall conforms to IS 7601. The container shall also meet the general requirements given in IS 8190 (Part 1).

5 MARKING

5.1 The containers shall be securely closed and the following information shall be marked legibly and indelibly on each container in addition to any other information as is necessary 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 quantity;
g) Nominal tricyclazole content, percent (*m/m*);
h) Cautionary notice worded as in the *Insecticides Act*, 1968 and Rules framed thereunder; and
j) Any other information required under the *Standards of Weights and Measures (Packaged 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 as prescribed in IS 10946.

7 TESTS

7.1 Tests shall be carried out by the methods referred to in col 4 and 5 of Table 1.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and reagent grade water (*see* IS 1070) shall be employed in the 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 TRICYCLAZOLE CONTENT

A-1 PRINCIPLE

Tricyclazole content is determined by gas chromatography using internal standard technique.

A-2 APPARATUS

A-2.1 Gas chromatograph (GLC) equipped with flame ionization detector (FID) and coupled to a printer-plotter-cum-integrator or 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	:	Glass column, 2 m length, 2.5 mm i.d., packed with 3 percent OV-17, Mesh 80/100, CH-W/HP		
Temperature conditions	:	a)	Oven	— 230ºC
		b)	Injector	— 250ºC
		c)	Detector	— 280ºC
Gas flow rate	:	a)	Nitrogen (carrier)	: 30 ml/min
		b)	Hydrogen	: 30 ml/min
		c)	Air	: 300 ml/min
Injection volume	:	2 µl		

A-2.2 Microlitre Syringe

A-2.3 Analytical Balance

A-2.4 Standard Glassware

A-3 REAGENTS

A-3.1 Tricyclazole Analytical Standard, of known purity.

A-3.2 Chloroform, A.R grade or equivalent.

A-3.3 Bis (2-Ethyl Hexyl) Adipate (Internal Standard), A.R. grade or equivalent.

A-4 PROCEDURE

A-4.1 Preparation of Internal Standard Solution

Weigh accurately 5 g of Bis (2-ethyl hexyl) adipate into a 1 000 ml-volumetric flask. Dissolve in 100 ml of chloroform and shake well. Finally make up the volume up to the mark with chloroform. This will be 0.5 percent solution. Shake well to homogenize.

A-4.2 Preparation of Standard Solution

Weigh accurately 0.17 g tricyclazole of known purity into a 50 ml-volumetric flask. Add by pipette 25 ml of internal standard solution and make up the volume up to the mark with chloroform. Stopper and shake well until the clear solution is obtained.

A-4.3 Preparation of Sample Solution

Weigh accurately a sample quantity so as to contain about 0.17 g of active ingredient into a 50 ml-volumetric flask. Add by pipette 25 ml of internal standard solution and make up the solution up to the mark with chloroform. Stopper and shake for 10 min and filter to a clear solution.

A-5 ESTIMATION

A-5.1 Inject 2 µl of reference standard solution until the area quotients of internal standard/reference standard of two successive chromatograms do not deviate from each other by more than 2 percent. Then use the following injection sequence:

$$\ldots\ldots\ldots C\,S_1\,S_1,\,C\,S_2\,S_2,\,C\,S_3\ldots\ldots\ldots$$

where

C = standard solution; and

S = sample solution (1, 2,.. .... n).

From the chromatograms of the standard solution and sample solution, measure the peak areas of the internal standard and tricyclazole peaks, and compute the percentage of the tricyclazole as given in **A-6**.

A-5.2 Retention Times (Guide Values)

a) Bis (2-ethyl hexyl) adipate — 3.57 min (approximately).

b) Tricyclazole — 5.48 min (approximately).

A typical GC chromatogram of tricyclazole with internal standard is given in Fig. 1.

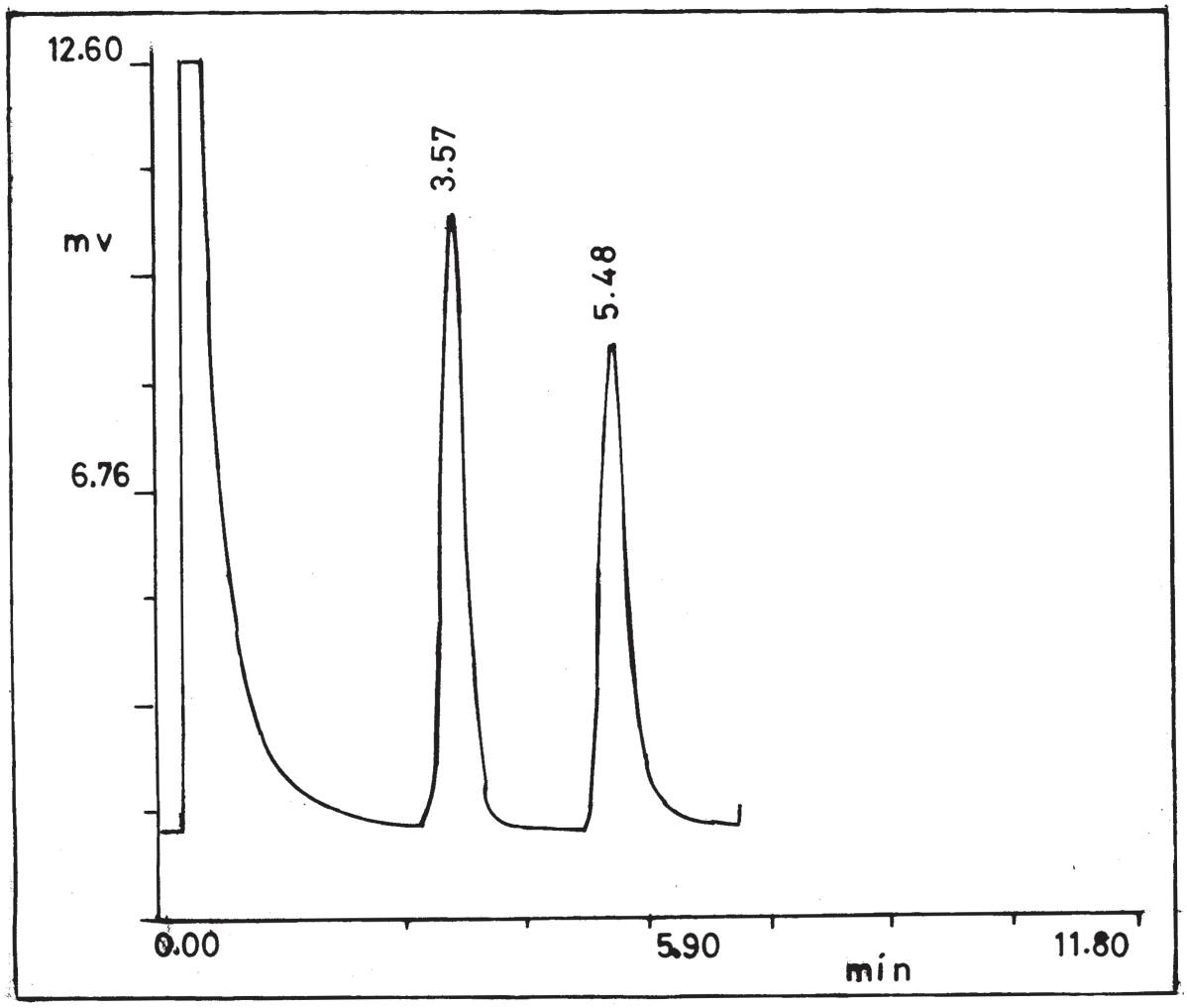


FIG. 1 A TYPICAL CHROMATOGRAM

A-6 CALCULATION

$$\text{Tricyclazole content, percent by mass} = \frac{M_1 \times A_1 \times A_3}{M_2 \times A_2 \times A_4} \times P$$

where

M_1 = mass, of tricyclazole in standard solution, in mg;

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

A_1 = peak area of internal standard in the standard solution;

A_3 = peak area of tricyclazole in the sample solution;

A_2 = peak area of tricyclazole in the standard solution;

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

P = percentage purity of tricyclazole analytical standard.

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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 latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc No.: FAD 1 (1918).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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