

National Center for Vector Borne Diseases Control, Delhi

Technical Specification of Synthetic Pyrethroids (wdp) under Kala-Azar

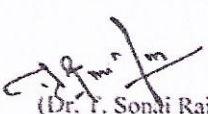

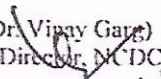
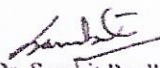
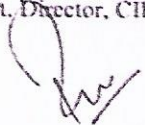
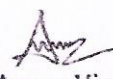
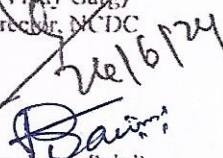
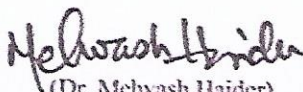
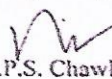
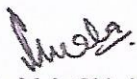

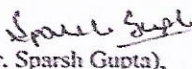
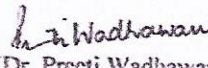
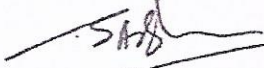
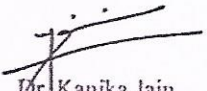
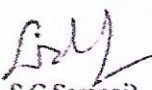


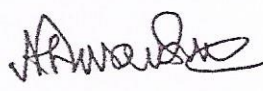
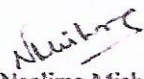
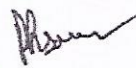
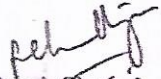
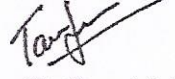
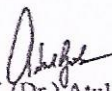
14.06.2024

A. The Central Insecticide Board (CIB) has approved the following Insecticides for Public Health use:

1. Deltamethrin 2.5% WP
2. Cyfluthrin 10% WP
3. Lambda-cyhalothrin 10% WP
4. Alphacypermethrin 5% WP
5. Bifenthrin 10% WP

The details of the description, active ingredient, physical properties, wet sieve test, wettability, persistent foam, storage stability etc should be as per BIS specification [refer Annexure - i to v for each insecticide(s)] mentioned at A above.

Above Technical Specification of Synthetic Pyrethroid (wdp) - KA under NVBDCP has been approved by Technical Specification Committee in the meeting held on 06.05.2024.

(Ms. Akansha Jain) AGM(QA), CMSS	 (Dr. T. Sonali Rajan) Asst. Director, CIB&RC	 (Dr. Shahwar Kazmi) NPO-VI, WHO	 (Dr. Vijay Garg) Jt. Director, NCDC
 (Dr. Sambit Pradhan) Asst. Director & Member Secretary	 (Dr. Rinku Sharma) Jt. Director, NCVBDC	 (Dr. Annam Visala) JDC(I), CDSO	 (Dr. Prashanta Saini) Scientist C, VCRC
 (Dr. Mehvash Haider) Asst. Prof., VMMC-SJI	 (Dr. M.P.S. Chawla) Cons. Prof. & HoD(Med.) ABVIMS & RMLII	 (Dr. Mala Chhabra) Cons. (Microb.) ABVIMS & RMLII	 (Dr. Anand Kumar) Addl. Prof. (Med.) AIIMS
 (Dr. Sparsh Gupta), Prof. (Pharm.), VMMC- SJI	 (Dr. Preeti Wadhawan) CMO(SAG), I/c, MSO	 (Dr. Sagar Borker) Asst. Prof. (PSM), ABVIMS & RMLII	 Dr. Kanika Jain Asst. Prof. (Hosp.) AIIMS
 (Dr. S.C. Sarangi) Addl. Prof. (Pharm.) AIIMS	 Dr. Ajay Kumar Sci. B, RMRIMS, Patna	 (Dr. Roshan K Topno) Sci. E, RMRIMS, Patna	 (Dr. Abhinav Sinha) Scientist F, NIMR, Delhi
 (Dr. Neelima Mishra), Scientist G, ICMR	 (Sh. Rakesh Kumar) DDG(Stat.), Dte. GHS	 (Dr. Rupak Chatterjee) Advisor, MSO	 (Dr. Tanu Jain) Director, NCVBDC
 Prof. (Dr.) Atul Goel Director General, Dte. GHS & Chairperson			

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Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

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Mazdoor Kisan Shakti Sangathan

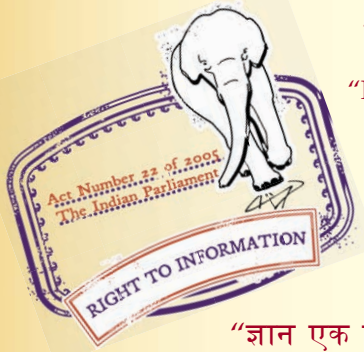
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“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 13457 (1992): Pesticide - Deltamethrin WP [FAD 1: Pesticides and Pesticides Residue Analysis]



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Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS 13457 : 1992

भारतीय मानक

कीटनाशक — डेल्टामैथारिन डब्ल्यू पी — विशिष्ट

Indian Standard

PESTICIDE — DELTAMETHRIN WP —
SPECIFICATION

UDC 632.951 DEL

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

June 1992

Price Group 1

**AMENDMENT NO. 1 MAY 1994
TO
IS 13457 : 1992 PESTICIDE — DELTAMETHRIN
WP — SPECIFICATION**

(Page 2, Table 1):

- a) *Sl No. (ii), col 2* } — Delete the words 'after accelerated storage'.
b) *Sl No. (iii), col 2* }

(FAD 1)

Reprography Unit, BIS, New Delhi, India

**AMENDMENT NO. 2 JANUARY 1996
TO
IS 13457 : 1992 PESTICIDE — DELTAMETHRIN WP —
SPECIFICATION**

(Page 1, clause 2) — Substitute '1070 : 1992 Reagent grade water (*third revision*)' for '1070 : 1977 Water for general laboratory use (*second revision*)'.

(Page 1, clauses 3.1.1 and 3.1.2) — Substitute 'deltamethrin technical' for 'deltamethrin, technical'.

(Page 1, clause 3.3.1) — Substitute the following for the existing:

'3.3.1 Deltamethrin content shall be declared. When tested by the method prescribed in Appendix A of IS 12005 : 1987, the observed deltamethrin content, percent (m/m) of any of the samples shall not differ from the declared nominal value by more than the tolerance limits indicated below (see also clause 6):

<i>Nominal Value, Percent</i>	<i>Tolerance Limit, Percent</i>
Up to 9	{ + 10 - 5
Above 9 and below 50	± 5
50 and above	{ + 5 - 3

(Page 1, clause 4) — Substitute the following for the existing:

'4 PACKING

The material shall be packed in HM-HDPE or mild steel containers provided with LDPE liners of thickness not less than 0.062 mm. It shall also conform to the general requirements given in IS 8190 (Part 2) : 1988.'

(Page 1, clause 5) — Add the following at the end:

'5.1 BIS Certification Marking

The product may be marked with Standard Mark.

Amend No. 2 to IS 13457 : 1992

5.1.1 The use of the Standard Mark is governed by the provisions of 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 Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

[Page 2, Table 1 (see also Amendment No. 1)] — Substitute the following for the existing:

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Appendix of IS 12005 : 1987	Cl No. of of IS 6940 : 1982
(1)	2)	(3)	(4)	(5)
i)	Deltamethrin content, percent by mass	Nominal value as declared on the container (see 3.3.1)	A	—
ii)	Sieving (material passing through 45-micron IS Sieve), percent by mass, <i>Min</i> [see IS 460 (Part 1) : 1985]	99.0	—	11.1
iii)	Suspensibility, percent by mass, <i>Min</i>	75.0	—	11.2
iv)	Acidity (as H ₂ SO ₄) or alkalinity (as NaOH), percent by mass, <i>Max</i>	0.5	—	11.3
v)	Wettability in seconds, <i>Max</i>	120	—	11.4

(Page 2, clause 7.3) — Substitute '1070 : 1992' for '1070 : 1977'.

(FAD 1)

Reprography Unit, BIS, New Delhi, India

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.

Deltamethrin WP is largely used in the control of insect pests in public health and grain storages.

Deltamethrin WP is generally manufactured to contain 2.5 percent (*m/m*) of deltamethrin.

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

PESTICIDE — DELTAMETHRIN WP — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for deltamethrin WP.

2 REFERENCES

The Indian Standards listed below are necessary adjuncts to this standard:

IS No.	Title
460 (Part 1) : 1985	Test sieves : Part 1 Wire cloth test sieves (<i>third revision</i>)
1070 : 1977	Water for general laboratory use (<i>second revision</i>)
6940 : 1982	Methods of test for pesticides and their formulations (<i>first revision</i>)
8190 (Part 1) : 1988	Requirements for packing of pesticides : Part 1 Solid pesticides (<i>second revision</i>)
10627 : 1983	Method for sampling of pesticidal formulations
12005 : 1987	Deltamethrin, technical

3 REQUIREMENTS

3.1 Constituents

3.1.1 The material shall consist of deltamethrin, technical together with suitable carrier(s), stabilizer(s) and other formulants(s).

3.1.2 Deltamethrin, technical, employed in the manufacture of the material, shall conform to IS 12005 : 1987.

3.2 Description

The material shall be fine, free flowing, whitish, homogeneous powder, free from visible extraneous matter and hard aggregates. It shall wet readily on mixing with water, providing a suspension suitable for use as spray.

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

3.3.1 When determined by the method prescribed in Annex A of IS 12005 : 1987, the observed deltamethrin content, percent (*m/m*) of any of the samples shall not differ from the declared nominal value by more than tolerance limits indicated below:

Nominal Value, Percent	Tolerance Limit, Percent	
Up to 9	+ 10 } - 5 }	of the nominal value
Above 9 and below 50	± 5 }	
50 and above	+ 5 } - 3 }	

4 PACKING

The material shall be packed in 300 g capacity LDPE bags of thickness not less than 0.062 mm, which then be packed in HMHDPE or mild steel containers provided with LDPE liners of thickness not less than 0.062 mm.

5 MARKING

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

- a) Name of the material;
- b) Indication of the source of manufacture;
- c) Date of manufacture and date of expiry;
- d) Batch number;
- e) Net mass of contents;
- f) Nominal deltamethrin content, percent (*m/m*); and
- g) The cautionary notice worded as in *Insecticides Act, 1968* and Rules.

6 SAMPLING

When a bulk quantity of the material is offered for inspection, representative samples of the material shall be drawn as prescribed in IS 10627 : 1983 and tested within 90 days of its manufacturing. The criteria for conformity shall be as given in IS 10627 : 1983. However,

Table 1 Requirements for Deltamethrin WP

(Clause 3.3)

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of IS 12005 : 1987	Cl No. of IS 6940 : 1982
(1)	(2)	(3)	(4)	(5)
i)	Deltamethrin content, percent by mass	Nominal value as declared on the container (see 3.3.1)	B	—
ii)	Sieving, after accelerated storage (material passing through 45-micron IS Sieve), percent by mass, <i>Min</i> [see IS 460 (Part 1) : 1985] (see Note also)	99.0	—	11.1
iii)	Suspensibility, after accelerated storage, percent by mass, <i>Min</i> (see Note)	75.0	—	11.2
iv)	Acidity (as H ₂ SO ₄), percent by mass, <i>Max</i>	0.5	—	11.3
	or			
	Alkalinity (as NaOH), percent by mass, <i>Max</i>	0.5	—	11.3
v)	Wettability in seconds, <i>Max</i>	120	—	11.4

NOTE — The material need not be subjected to accelerated storage treatment if it has crossed half of its shelf-life as ascertained from its dates of manufacture and expiry declared on the container.

when the material is offered for inspection after 90 days of its manufacturing, sampling shall be done according to IS 10627 : 1983 and the criteria for conformity of the material when tested, shall be the limits of tolerances, as applicable over the declared nominal value, given under 3.3.1 of this standard.

7 TESTS

7.1 Tests shall be carried out by the methods referred to in col 4 and 5 of Table 1 and 7.2.

7.2 Suspensibility Test

7.2.1 For carrying out suspensibility test, weigh to the nearest one mg into a 100-ml beaker a amount of the treated sample to form 250 ml of suspension to contain 0.05 g/l of deltamethrin

and proceed as described in 11.2.3.2 of IS 6940 : 1982.

7.2.2 After conducting suspensibility test, transfer the bottom 25 ml of suspension and sediment quantitatively into a 50-ml volumetric flask, rinsing several times with acetonitrile. Dilute to the mark. Filter rapidly through a G4 Gooch crucible to avoid any loss of solvent or centrifuge. Take the extract for determination of deltamethrin content as described in Annex A of IS 12005 : 1987.

7.3 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (see IS 1070 : 1977) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

Standard Mark

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 Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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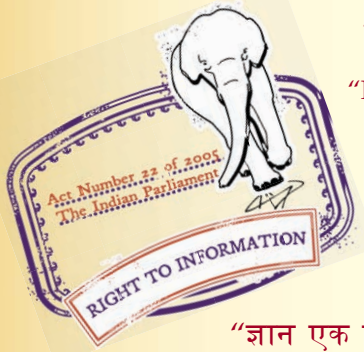
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Jawaharlal Nehru

“Step Out From the Old to the New”

IS 15603 (2005): Alphacypermethrin. WP [FAD 1: Pesticides and Pesticides Residue Analysis]



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“Knowledge is such a treasure which cannot be stolen”

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अल्फासाइपरमैथरिन, डब्लू.पी. — विशिष्टि

Indian Standard

ALPHACYPERMETHRIN, WP — SPECIFICATION

ICS 65.100.10

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

FOREWORD

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

Alphacypermethrin, WP is used as an insecticidal formulation.

The material is generally manufactured to contain 5 percent (*m/m*) of alphacypermethrin, technical.

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

ALPHACYPERMETHRIN, WP — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for alphacypermethrin, WP.

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:

<i>IS No.</i>	<i>Title</i>
460 (Part 1) : 1985	Specification for test sieves: Part 1 Wire cloth test sieves (<i>third revision</i>)
1070 : 1992	Water for general laboratory use (<i>third revision</i>)
6940 : 1982	Methods of tests for pesticides and their formulations (<i>first revision</i>)
8190 (Part 1) : 1988	Requirement for packing of pesticides: Part 1 Solid pesticides (<i>second revision</i>)
10627 : 1983	Methods for sampling of pesticides formulations
15616 : 2005	Alphacypermethrin, technical — Specification

3 REQUIREMENTS

3.1 Constituents

3.1.1 The material shall consist of a homogeneous mixture of alphacypermethrin, technical together with filler(s) and other necessary formulants(s) and with or without stabilizer(s).

3.1.2 Alphacypermethrin, technical employed in the formulation of this material shall conform to IS 15616.

3.2 Description

3.2.1 The material shall be in the form of a homogeneous powder, free flowing, whitish powder that wets readily on mixing with water.

3.2.2 Sieving Requirement

When determined by the method specified in that of

IS 6940, the amount of material passing through 75 micron IS sieve [IS 460 (Part 1)] should not be less than 98 percent by mass.

3.2.3 Suspensibility Test

The suspensibility when determined by the method prescribed in Annex A shall be minimum 70 percent by mass.

3.2.4 Wettability

The time when the whole material gets completely submerged in water should not exceed 120 seconds when tested by the method specified in 11.4 of IS 6940.

3.3 Chemical

3.3.1 Alphacypermethrin Content

When determined by the method prescribed [Method A of IS 15616], the observed alphacypermethrin content, percent (*m/m*), of any of the samples shall not differ from the declared nominal value by more than the percent tolerance limits indicated below:

<i>Nominal Value</i> Percent	<i>Tolerance Limit</i> Percent	
Up to 9	+ 10 - 5	} of the nominal value
Above 9 and below 50	+ 5	
50 and above	+ 5 - 3	

3.3.1.1 The actual value of alphacypermethrin content in the formulations shall be calculated to the second decimal place and then rounded off to the first decimal place before applying the tolerance given in 3.3.1.

3.3.1.2 The average alphacypermethrin content of all samples taken shall not be less than the declared nominal content.

3.3.2 Acidity or Alkalinity

When determined by the method prescribed in IS 6940 the acidity (calculated as H_2SO_4) or alkalinity (calculated as NaOH) of the material shall be maximum 0.15 percent w/w.

4 PACKING

The material shall be packed according to the general requirements given in IS 8190 (Part 1).

5 MARKING

5.1 The containers shall bear legibly and indelibly the following information in addition to the 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 mass of contents;
- g) Nominal alphacypermethrin content, percent (*m/m*);
- h) The cautionary notice as worded in *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

When freshly manufactured material in bulk quantity and/or the retail pack of the formulated product is/are offered for inspection, representative sample of the material shall be drawn and tested as prescribed in IS 10627 and if tested within 90 days of its date of manufacture, the criteria for conformity shall be the contents in percent (*m/m*), shall not be less than the declared nominal value. The upper limit for conformity shall be the same as those given in 3.3.1.

When the material is offered for inspection after 90 days of its manufacture, sampling shall be done as prescribed in IS 10627, however, the criteria for conformity of the material, when tested, shall be the limits of tolerances, as applicable over the declared nominal value and given under 3.3.1.

7 TESTS

7.1 Tests shall be carried out by the methods referred to in 3.2.2 to 3.2.4 and 3.3.1 to 3.3.2.

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

(*Clause 3.2.3*)

DETERMINATION OF SUSPENSIBILITY

A-1 PROCEDURE

Weigh 4.5 g of WP and carry out suspensibility as per IS 6940.

Proceed with the retained one tenth of the suspension, including the sediment for the determination of active ingredient, as follows:

Filter the sediment including suspension using distilled water by suction. Quantitatively transfer the sediment into 100 ml volumetric flask initially with the help of small quantities of toluene (up to 25 ml) and then with the mobile phase being used for determination of the active ingredient described in Annex A of IS 15616. Add 10 ml of internal standard by pipette. Make up the volume upto the mark using mobile phase. Mix well to ensure complete dissolution of alphacypermethrin present in the sediment. Filter

through a suitable disc filter.

Determine alphacypermethrin content of the filtered solution by HPLC as described in Annex A of IS 15616.

A-2 CALCULATION

$$\text{Suspensibility percent} = \frac{1000(M-m)}{9 \times M}$$

where

M = mass of alphacypermethrin present in sample used for test (calculated from mass of sample and its percent alphacypermethrin content), in g; and

m = mass of alphacypermethrin found in suspension including the sediment remaining in the graduated cylinder, in g.

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This Indian Standard has been developed from Doc : No. FAD 1 (1344).

Amendments Issued Since Publication

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मानक

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Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

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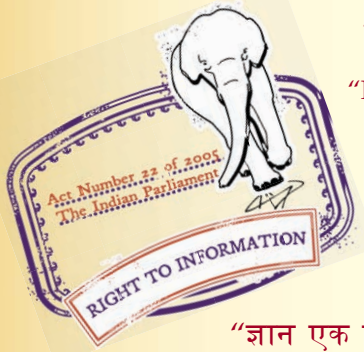
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Jawaharlal Nehru

“Step Out From the Old to the New”

IS 14158 (1994): Cyfluthrin WP [FAD 1: Pesticides and Pesticides Residue Analysis]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS 14158 : 1994

भारतीय मानक

सिफलुथ्रिन, घुलनशील पाउडर — विशिष्टि

Indian Standard

CYFLUTHRIN WP — SPECIFICATION

UDC 632.951 CYF

© BIS 1994

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

July 1994

Price Group 2

AMENDMENT NO. 1 DECEMBER 1995
TO
IS 14158 : 1994 CYFLUTHRIN WP — SPECIFICATION

(Foreword, paras 2 and 3) — Substitute the following for the existing:

‘Cyfluthrin WP is used in the control of pests of household and public health importance.

Cyfluthrin WP is generally manufactured to contain 10 percent (m/m) cyfluthrin.’

(Page 1, clause 3.1.1) — Substitute ‘cyfluthrin technical’ for ‘cyfluthrin, technical’.

[Page 1, Table 1, Sl No. (i), col 3] — Substitute ‘(see 3.4)’ for ‘(see 3.4 and 7.2)’.

[Page 1, Table 1, Sl No. (iii), col 4] — Substitute ‘7.2 and B’ for ‘B’.

(FAD 1)

Reprography Unit, BIS, New Delhi, India

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.

Simazine WP is used as a herbicide.

Simazine WP is generally manufactured to contain 50 percent (*m/m*) of simazine.

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 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

CYFLUTHRIN WP — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for cyfluthrin WP.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

<i>IS No.</i>	<i>Title</i>
1070 : 1992	Reagent grade water (<i>third revision</i>)
6940 : 1982	Methods of test for pesticides and their formulations (<i>first revision</i>)
8190 (Part 1) : 1988	Requirement for packing of pesticides: Part 1 Solid pesticides (<i>second revision</i>)
10627 : 1983	Methods for sampling of pesticidal formulations
14156 : 1994	Pesticide — Cyfluthrin, technical

3 REQUIREMENTS

3.1 Constituents

3.1.1 The material shall consist of cyfluthrin, technical, together with suitable carrier(s), stabilizer(s) and other formulants.

3.1.2 Cyfluthrin, technical employed in the formulation of this material shall conform to IS 14156 : 1994.

3.2 Description

The material shall be in the form of a homogeneous powder, buff in colour and shall wet readily on mixing with water providing a suspension for suitable use as spray. The material shall be free from extraneous matter and/or modifying agents and hard aggregates.

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

3.4 Cyfluthrin Content

When determined by the method prescribed in Annex A of this standard and IS 14156 : 1994 the observed cyfluthrin content, percent (*m/m*) of any of the samples shall not differ from the declared nominal value by more than the tolerance limits given below.

Table 1 Requirements for Cyfluthrin WP
(Clause 3.3)

SI No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of this Standard	Clause of IS 6940 : 1982
(1)	(2)	(3)	(4)	(5)
i)	Cyfluthrin, content, percent by mass (<i>m/m</i>)	Nominal value as declared on the container (see 3.4 and 7.2)	A	—
ii)	Sieving (material passing through 75-micron IS Sieve), percent by mass (<i>m/m</i>), <i>Min</i>	98.0	—	11.1
iii)	Suspensibility, percent by mass (<i>m/m</i>), <i>Min</i>	50.0	B	—
iv)	Acidity (as H ₂ SO ₄), percent by mass, (<i>m/m</i>), <i>Max</i>	1.0	—	11.3
OR				
	Alkalinity (as NaOH), percent by mass, (<i>m/m</i>), <i>Max</i>	0.5	—	11.3
v)	Wettability, in seconds, <i>Max</i>	120	—	11.4

Nominal Value, Percent	Tolerance Limits, Percent	
Up to 9	+ 10	} of the nominal value
	- 5	
Above 9 and below 50	± 5	
50 and above	+ 5	
	- 3	

4 PACKING

The material shall be packed in mild steel drums or fibre board containers lined with polyethylene of thickness not less than 0.062 mm. It shall also conform to the general requirements given in IS 8190 (Part 1) : 1988.

5 MARKING

5.1 The containers shall be securely closed and bear legibly and indelibly the following information and any other information as is necessary under the *Insecticides Act, 1968* and Rules framed thereunder:

- a) Name of the material;
- b) Name of the manufacturer;
- c) Batch number;
- d) Date of manufacture;
- e) Date of expiry;
- f) Net mass of the contents;
- g) Cyfluthrin 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 Standard Mark.

5.2.1 The use of the Standard Mark is governed by the provisions of *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 Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING

When freshly manufactured material is offered for inspection, representative samples shall be drawn and tested as prescribed in IS 10627 : 1983, within 90 days of its manufacturing. When the material is offered for inspection after 90 days of its manufacturing, sampling shall be done as prescribed in IS 10627 : 1983. However, the criteria for conformity of the material when tested, shall be the limits of tolerances, as applicable over the declared nominal value and given under 3.4 of this standard.

7 TESTS

7.1 Tests shall be carried out by the appropriate methods referred to in 3.3, 7.2 and col 4 and 5 of Table 1.

7.2 For carrying suspensibility test start with 1.25 percent (*m/m*) of concentration. Transfer quantitatively 25 ml portion of suspension and sediment to a 250-ml separating funnel and proceed as described in Annex B.

7.3 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1992) 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 3.3; Table 1, Item (i)]

DETERMINATION OF CYFLUTHRIN CONTENT

A-1 PROCEDURE

Weigh accurately a quantity of sample so as to contain 0.5 g of cyfluthrin (5 g for cyfluthrin 10 WP) into a 100-ml beaker. Stir 4 times adding 20 ml acetone and filter under vacuum through a G4 crucible containing a bed of a filter aid. Take 5 ml

of aliquot into 50-ml volumetric flask and add 5 ml of the internal standard solution prepared as described in IS 14156 : 1994. Make up the volume up to the mark with acetone and shake well to homogenize. Proceed for the estimation of cyfluthrin content as described in IS 14156 : 1994.

ANNEX B

(Clause 7.2)

DETERMINATION OF SUSPENSIBILITY

B-1 METHOD

B-1.1 Weigh out accurately an amount of sample to form a suspension containing 1.25 percent of cyfluthrin 10 WP. Add 30 ml of standard hard water and proceed as described in 11.2 of IS 6940 : 1982.

B-1.2 Transfer the bottom 25 ml of the suspension in B-1.1 quantitatively into a 100-ml separating funnel using 25 ml of ether for washing the cylinder. Extract the cyfluthrin 2 times with 25 ml of each of ether. Filter the ether extracts under vacuum through a G4 crucible containing a bed of anhydrous sodium sulphate directly into a 100-ml conical flask. Evaporate the ether on a water bath. Dissolve the residue in acetone in a 100-ml volumetric flask add 5 ml of the internal standard solution prepared as described in IS 14156 : 1994. Make up the volume to the mark with acetone. Shake well to homogenize. Proceed further as described in IS 14156 : 1994.

B-2 CALCULATION

Mass in g of cyfluthrin in the suspension including the sediment = $\frac{A_3 \times A_2 \times m_1}{A_4 \times A_1 \times 100} \times P$

where

A_1 = peak area of cyfluthrin in standard solution;

A_2 = peak area of cyfluthrin in sample solution;

A_3 = peak area of internal standard in standard solution;

A_4 = peak area of internal standard in sample solution;

m_1 = mass, in g, of cyfluthrin in standard solution; and

P = percent purity of cyfluthrin reference standard.

Suspensibility, percent by mass = $\frac{1\ 000 (M - m)}{9 M}$

where

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

m = mass, in g, of cyfluthrin percent in the suspension including the sediment (B-1.2).

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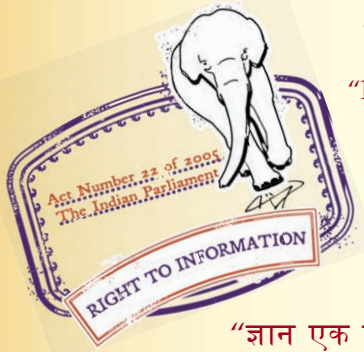
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IS 14510 (1997): Lambda-cyhalothrin WP [FAD 1: Pesticides and Pesticides Residue Analysis]



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लेम्बडा-साइहेलोथ्रिन घुलनशील पाउडर — विशिष्टि

Indian Standard

**LAMBDA-CYHALOTHRIN WP —
SPECIFICATION**

ICS 65.100

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

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.

Lambda-cyhalothrin WP is used for control of pests relating to public health. The product is registered under the provisions of *Insecticides Act*, 1968 and *Rules* framed thereunder.

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 : 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

LAMBDA-CYHALOTHRIN WP — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the method of sampling and test for lambda-cyhalothrin wettable powder (WP).

2 REFERENCES

The following 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
460 (Part 1) : 1985	Test sieves : Part 1 Wire cloth test sieve (<i>third revision</i>)
1070 : 1992	Reagent grade water (<i>third revision</i>)
6940 : 1982	Methods of test for pesticides and their formulations (<i>first revision</i>)
8190 (Part 3) : 1979	Requirement for packing of pesticides : Part 3 Household pesticides (<i>second revision</i>)

IS No.**Title**

10627 : 1983	Methods for sampling of pesticidal formulations
14509 : 1997	Lambda-cyhalothrin technical—Specification

3 REQUIREMENT**3.1 Constituents**

3.1.1 The material shall consist of lambda-cyhalothrin technical together with suitable carrier(s), stabilizer(s) and other formulants(s).

3.1.2 Lambda-cyhalothrin technical employed in the manufacture of the material, shall conform to IS 14509.

3.2 Description

The material shall be fine, free flowing, off white to pale yellow brown homogeneous powder. The material shall be free from visible extraneous matter and hard aggregates and shall wet readily on stirring with water providing a suspension suitable for use as a spray.

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

Table 1 Requirement for Lambda-Cyhalothrin WP

Sl No.	Characteristics	Requirement	Method of Test, Ref to	
			Annex of this Standard	Cl No. of IS 6940
(1)	(2)	(3)	(4)	(5)
i)	Lambda-cyhalothrin content, percent by mass	Nominal value as declared on the label [see 3.3.1 and 5.1 (g)]	A	—
ii)	Material passing through 75 micron IS sieve [see IS 460 (Part 1)] percent by mass, <i>Min</i>	98.0	—	11.1
iii)	Suspensibility, percent by mass, <i>Min</i>	50.0	B	—
iv)	Wettability in seconds, <i>Max</i>	120	—	11.4
v)	Acidity (as H ₂ SO ₄), percent by mass, <i>Max</i>	1.0	—	11.3.2
OR				
	Alkalinity (as NaOH), percent by mass, <i>Max</i>	1.0	—	11.3.3

3.3.1 When determined by the method prescribed in Annex A, the observed lambda-cyhalothrin content, percent by mass of any of the samples shall not differ from the declared nominal value by more than tolerance limits indicated below:

Nominal Value, Percent	Tolerance Limit, Percent
Up to 9	+10 -5
Above 9 and below 50	±5
50 and above	+5 -3

4 PACKING

The material shall be packed in water soluble polyvinyl alcohol sachet or aluminium foil laminate sachet. The bulk quantity shall be packed in mild steel drum. It shall also conform to the general requirements given in IS 8190 (Part 3).

5 MARKING

5.1 The container shall be marked legibly and indelibly with the following information:

- Name of the material;
- Name and address of the manufacturer;
- Batch No. or code number;
- Date of manufacture;
- Date of expiry;
- Net mass of contents;
- Nominal lambda-cyhalothrin content, percent by mass, as registered under the *Insecticides Act, 1968 and Rules* framed thereunder; and

- Any other information as required under the *Insecticides Act, 1968 and Rules* framed thereunder and *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 *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 Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING

When freshly manufactured material is offered for inspection, representative samples of the materials shall be drawn as prescribed in IS 10627 and tested within 90 days of manufacture. The criteria for conformity shall be as given in IS 10627. However, when the material is offered for inspection after 90 days of its manufacture, sampling shall be done according to IS 10627 and the criteria for conformity of the material when tested, shall be the limits of tolerances, as applicable over the declared nominal value, given under 3.3.1 of this standard.

7 QUALITY OF REAGENT

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in various 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 LAMBDA-CYHALOTHRIN CONTENT

A-1 PROCEDURE

Weigh accurately sufficient sample to contain 0.05 g equivalent lambda-cyhalothrin into a 150 ml conical flask. Add 20 ml of chloroform by pipette to the flask and shake thoroughly for 5-10 minutes to dissolve the lambda-cyhalothrin. Allow the insoluble material to settle and filter the

supernatant liquid through an appropriate filter paper. Take the filtrate into 50 ml volumetric flask and 10 ml of the internal standard solution prepared as desired in IS 14509. Make up the volume up to the mark with chloroform and shake well to homogenize. Proceed for the estimation of lambda-cyhalothrin as described in IS 14509.

ANNEX B

[Table 1, Sl No. (iii)]

DETERMINATION OF SUSPENSIBILITY

B-1 METHOD

B-1.1 Weigh accurately into a 100 ml beaker, an amount of the sample which could form 250 ml of suspension containing 0.05 g of active ingredient. Add a volume of standard hard water at $30 \pm 1^\circ\text{C}$ equal to at least twice the mass of the sample taken for test and proceed as described in 11.2 of IS 6940.

B-1.2 Transfer the bottom one-tenth of suspension from the suspensibility test quantitatively to a 250 ml glass-stoppered separating funnel. Use a maximum volume of 25 ml of distilled water to rinse the 250 ml graduated cylinder and combine the suspension and washings. Add 25 ml of dichloromethane to the separating funnel, stopper, and shake for 1 min. Formation of an emulsion at this stage may be overcome by adding 1 g of sodium chloride crystals to the aqueous layer reshaking the contents of the funnel. Run the separating dichloromethane layer through phase-separating paper into a clean, dry 250 ml round bottom flask. Repeat the extraction with a further three 25 ml aliquat of dichloromethane, combining all four extracts. Remove the dichloromethane under reduced pressure at 60°C using a rotary evaporator and dissolve the residue in a 250 ml flask in 2 ml of internal standard

solution, and make up to 25 ml with chloroform and proceed as described in IS 14509.

B-2 CALCULATION

Mass in g of lambda-cyhalothrin in the suspension including the sediment (m)

$$= \frac{A_3 \times A_2 m_1}{A_4 \times A_1 \times 100} \times P$$

where

A_1 = peak area of lambda-cyhalothrin in standard solution;

A_2 = peak area of lambda-cyhalothrin in sample solution;

A_3 = peak area of internal standard in standard solution;

A_4 = peak area of internal standard in sample solution;

m_1 = mass, in g, of lambda-cyhalothrin in standard solution; and

P = percent purity of lambda-cyhalothrin reference standard.

$$\text{Suspensibility, percent by mass} = \frac{1000(M - m)}{9M}$$

where

M = mass, in g, of lambda-cyhalothrin present in the sample taken for the test; and

m = mass, in g, of lambda-cyhalothrin present in the suspension including sediment.

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IS 15939 (2011): Pesticide - Bifenthrin Wettable Powder
[FAD 1: Pesticides and Pesticides Residue Analysis]



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Indian Standard

PESTICIDE — BIFENTHRIN WETTABLE
POWDER — SPECIFICATION

ICS 65.100.10

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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.

Bifenthrin wettable powder (WP) is used as an insecticidal formulation. It is generally manufactured to contain 10 percent (*m/m*) of bifenthrin.

In the preformulation 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

PESTICIDE — BIFENTHRIN WETTABLE POWDER — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for bifenthrin, WP.

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>)
8190 (Part 1) : 1988	Requirement for packing of pesticides: Part 1 Solid pesticides (<i>second revision</i>)
10627 : 1983	Methods for sampling of pesticidal formulations
15936 : 2010	Pesticide — Bifenthrin, technical — Specification

3 REQUIREMENTS

3.1 Constituents

3.1.1 The material shall consist of bifenthrin technical, together with suitable carrier(s), stabilizer(s), binder(s), and other formulants(s).

3.1.2 Bifenthrin technical, employed in the formulation of this material shall conform to IS 15936.

3.2 Description

The material shall be in the form of a fine, free flowing, beige or off-white to brownish white homogeneous powder, free from lumps and extraneous impurities. It shall wet readily on mixing with water providing a suspension for suitable use as spray.

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

3.4 Bifenthrin Content

When determined by the method described in Annex A, the observed bifenthrin content percent (*m/m*) of any of the samples shall not differ from the declared nominal value by more than the tolerance limits given below:

Nominal Value Percent	Tolerance Limits Percent
Up to 9	+10 - 5
Above 9 and below 50	± 5
50 and above	+5 -3

} of the nominal value

4 PACKING

The material shall be packed in polyethylene pouches. Bulk quantity shall be packed in mild steel drums or fibre board containers lined with polyethylene liner. Closures provided shall be such as not to allow any materials to leak through them. These shall be leak proof and pilfer proof. In addition, the packing shall also comply with the general requirements as specified in IS 8190 (Part 1).

Table 1 Requirements for Bifenthrin, WP
(Clause 3.3)

Sl No.	Tests	Requirements	Methods of Test, Ref to	
			Annex of this Standard (4)	Annex/Clause of IS No. (5)
(1)	(2)	(3)	(4)	(5)
	i) Bifenthrin content, percent by mass	Nominal value as declared on the container (<i>see 3.4</i>)	—	Annex A of IS 15936
	ii) Sieve test (particle retained on 300 mesh)	Maximum 3.0 percent (<i>w/w</i>)	—	11.1 of IS 6940
	iii) Wettability, in seconds, <i>Max</i>	120	—	11.4 of IS 6940
	iv) <i>pH</i> of 5 percent suspension in distilled water	7.0 to 9.0	A	—
	v) Alkalinity (as NaOH), percent by mass, <i>Max</i>	0.3	—	11.3 of IS 6940
	vi) Suspending ability, percent by mass, <i>Min</i>	60.0	—	11.2 of IS 6940

5 MARKING

5.1 The container shall be marked legibly and indelibly with the following information and other additional information, as is 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 or Code number;
- d) Date of manufacture;
- e) Date of expiry;
- f) Nominal bifenthrin content, percent (*m/m*);
- g) Net quantity;
- h) A cautionary notice as worded in *Insecticides Act*, 1968 and Rules framed thereunder; and
- j) Any other information required under *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 the 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

6.1 When freshly manufactured material in bulk quantity and/or the retail pack of the formulated product is/are offered for inspection, representative sample of the material shall be drawn as prescribed in IS 10627 and if tested within 90 days of its date of manufacture, the criteria for conformity shall be the contents in percent (*m/m*), shall not be less than the declared nominal value. The upper limit for conformity shall be the same as those given in **3.4**.

6.2 When the material is offered for inspection after 90 days of its manufacture, sampling shall be done as prescribed in IS 10627, however, the criteria for conformity of the material, when tested, shall be the limits of tolerances, as applicable over the declared nominal value and given under **3.4**.

7 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 3.4*; and *Table 1*, *Sl No.* (iv)]

DETERMINATION OF pH IN BIFENTHRIN WETTABLE POWDER

A-1 GENERAL

This procedure is applicable for aqueous suspensions of wettable powder.

A-2 PRINCIPLE

The pH is determined using a pH meter having a range of 0-14 with a precision of 0.1 pH.

A-3 APPARATUS

A-3.1 pH Meter — Direct reading, with glass electrode and a calomel reference electrode or any other suitable electrode along with temperature compensation.

A-3.2 Balance (Analytical) — Sensitive to 0.1 g.

A-3.3 Buffer Tablets — Tablets of pH 4.0, 7.0 and 9.2.

A-3.4 Standard Glassware Beaker

A-3.5 Wash Bottle — Containing distilled water.

A-4 PROCEDURE

From the buffer tablets, prepare 4.0, 7.0 and 9.2 pH buffer solutions, following the prescribed instruction given with the tablets.

Standardize the pH meter using the buffers as follows:

Immerse the electrodes of the pH meter in 7.0 pH buffer solution and adjust the meter to read 7.0 pH. Remove the buffer solution from the electrodes, wash these with water and wipe the electrodes free from water.

Replace with pH buffer solution 9.2 and adjust the meter to read 9.2 pH. Remove the buffer solution from the electrodes, wash these with water and wipe the electrodes free from water.

Weigh accurately about 5.0 g of the sample and add 100 ml of distilled water. Mix the sample thoroughly to get a uniform suspension in a beaker. Measure the pH of the suspension.

Report result to nearest 0.1 pH.

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