



**PRODUCT MANUAL FOR
SPECIFICATION FOR CYPERMETHRIN EC
ACCORDING TO IS 12016:1987**

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	Product	:	IS 12016:1987
	Title	:	CYPERMETHRIN EC
	No. of Amendments	:	4
2.	Sampling Guidelines:		
a)	Raw material	:	i)Cypermethrin EC Shall be manufactured from Cypermethrin Technical concentrate and or Cypermethrin technical conforming to IS 12017:1987 and IS 12015:1987 respectively.
b)	Grouping guidelines	:	N.A.
c)	Sample Size	:	Minimum 250 ml. (Original sealed container of full pack size)
3.	List of Test Equipment	:	Please refer ANNEX –A
4.	Scheme of Inspection and Testing	:	Please refer ANNEX –B
5.	Possible tests in a day :		
	i) Description ii) Cold Test iii) Flash Point (Abel) iv) Emulsion Stability v) Cypermethrin Content vi) Acidity/Alkalinity		
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 12016:1987 with the following scope:		
	Name of the product	:	Cypermethrin -----% EC.

ANNEX-A
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List of Test Equipments

Major test equipment required to test as per the Indian Standard.

Sl No	Test Equipment/ Glassware's/Reagents	Least Count & Range	Test Used	Clause of Standard
1	Glass beaker with a cork or stopper Ice Box with Ice Thermometer Glass stirrer	100 ml capacity Range: - 10 °C to 50 °C L.C – 1 °C	Cold Test	Clause 13.1 of IS 6940:1982
2	Abels Flash point Apparatus with thermometer	Range : -10 °C to 80 °C L.C – 0.5 °C	Flash Point(Abel) Test	Clause 13.2 of IS 6940:1982 and Clause 5 & Clause 7.2 of IS 1448(Part 20):1998
3	Glass Beaker Mohr-type pipette	250 ml capacity 2ml/ 5 ml capacity Range:0-100	Emulsion Stability	Clause 13.3 of IS 6940:1982

	<p>Dropping Funnel</p> <p>Glass rod (stirrers)</p> <p>Graduated Cylinder</p> <p>Water Bath with thermometer or digital temp indicator to maintain at $30 \pm 1^{\circ}\text{C}$</p> <p>Stop Watch</p> <p>Standard hard water</p>	<p>ml/1 ml</p> <p>Range: - 10°C to 50°C</p> <p>L.C – 1°C</p> <p>Range: 0-60 min</p> <p>L.C : 1 sec</p>		
4	<p>HPLC with UV Detector as per Annex A-1 of IS 12015:1987</p> <p>or</p> <p>Gas Liquid Chromatograph (GLC) as per Annex A-2 of IS 12015:1987</p> <p>Analytical Balance</p>	<p>as per Annex A-1 of IS 12015:1987</p> <p>as per Annex A-2 of IS 12015:1987</p> <p>Range: 0-100/200 g</p> <p>L.C : 0.1 mg</p>	Cypermethrin Content	<p>A-1 of IS 12015:1987</p> <p>A-2 of IS 12015:1987</p>
5	<p>Glassware's and Chemicals/Reagents for HPLC Method</p> <p><i>Volumetric Flask</i></p> <p><i>Pipettes (graduated)</i></p> <p>Di-n-butyl <i>Phthalate</i> - AR</p>	<p>50-ml and 100-ml capacity.</p> <p>2-ml, 5-ml and 10-ml</p>	Cypermethrin Content	A-1 of IS 12015:1987

	<p>Grade (Internal standard).</p> <p><i>Carbon Tetrachloride</i> - Spectroscopic grade.</p> <p><i>Chloroform</i> - Spectroscopic grade.</p> <p><i>Standard Cypermethrin</i> - Of known purity</p>	<p>capacity.</p>		
6	<p>Glassware's and Chemicals/Reagents for GLC Method</p> <p><i>Volumetric Flask</i> -</p> <p><i>Separating Funnel</i></p> <p><i>Microsyringe</i> -</p> <p><i>Cypermethrin Standards of known purity</i></p> <p><i>Di (2-ethylhexyl) Phthalate (DBP) - AR</i> grade.</p> <p><i>Chloroform</i> - Spectroscopic grade.</p>	<p>50-ml and 100-ml capacity.</p> <p>100-ml capacity.</p> <p>10 ~1 syringe with a needle of sufficient length to introduce the sample close to the top of the column packing.</p>	<p>Cypermethrin Content</p>	<p>A-2 of IS 12015:1987</p>

7	<p>Analytical Balance</p> <p>Hot plate/ Heating mantle/ Water bath</p> <p>Whitman Filter</p> <p>Glasswares:</p> <p>Conical Flask</p> <p>Graduated Cylinder</p> <p>Burette and Pipette</p> <p>Reagents:</p> <p>Methyl red indicator solution-aqueous – 1percent (m/v)</p> <p>Bromocresol purple indicator solution</p> <p>Standard Sodium Hydroxide Solution – 0.5 N</p> <p>Standard Hydrochloric acid</p> <p>Acetone</p> <p>Distilled water</p>	<p>Range: 0- 100/200 g</p> <p>L.C : 0.1 mg</p> <p>200 ml</p> <p>Capacity 0- 100 ml/</p> <p>L.C 1ml</p>	Acidity(as H ₂ So ₄)	13.5.2 of IS 6940:1982
8	<p>Analytical Balance</p> <p>Test Tube</p> <p>Litmus paper</p>	<p>Range: 0- 100/200 g</p> <p>L.C : 0.1 mg</p>	Qualitative test for Alkalinity	13.5.1.1 of IS 6940:1982

Note: The list above is indicative only and may not be treated as exhaustive.

ANNEX- B
TO PRODUCT MANUAL FOR
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(SCHEME OF INSPECTION AND TESTING)

1. **LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.
 - 1.1 The manufacturer shall prepare a calibration plan for the test equipment.
2. **TEST RECORDS** –The manufacturer shall maintain test records for the tests carried out to establish conformity.
3. **PACKING AND MARKING** – The Standard Mark as given in Schedule of the licence and Licence Number (i.e. CM/L.....) shall be incorporated, and the packing and marking shall be done as per the provisions of the India Standard, provided always that the product thus marked conforms to all the requirement of the specification. In addition, details of BIS website shall be marked as follows: “For details of BIS certification please visit www.bis.gov.in”
 - 3.1 In addition, Batch Number identifying the control unit shall be marked on each product.
4. **CONTROL UNIT** - For the purpose of this scheme, the entire quantity of the material processed in a mixer in one operation shall constitute a control unit (Batch).
5. **LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.
 - 5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.
 - 5.2 On the basis of tests and analysis reports, the decision regarding conformity or otherwise of a control unit to a given requirement shall be made as follows:
 - 5.2.1 The sample taken for test from the control unit shall satisfy all the requirements of the specification. If the sample fails in any of the requirements tested other than Cypermethrin content and emulsion stability, the entire control unit represented by the sample shall be considered as unfit for the purpose of marking.

- 5.2.2 In case the sample taken from the control unit fails in either Cypermethrin technical content or emulsion stability, or both, the entire material may be suitably reprocessed and the defect rectified. Such reprocessed material, when tested again shall satisfy all the requirements of specification.
- 5.2.3 In respect of all other clauses of the specification and at all stages of manufacture, the firm shall maintain appropriate control and checks to ensure that their product conform to the various requirements of the specification.
6. **REJECTIONS** – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016. Any rejected material which is potentially resalable shall be deformed in such a manner that it cannot be used for any other purpose. A separate record shall be maintained giving information relating to all such rejections/defective/substandard material of the production not conforming to the requirements of the Specification and the method of its disposal. Such material shall in no case be stored together with that conforming to the Specification. The Standard Mark (if already applied) on rejected material should be defaced.

**Table 1 (Levels of Control)
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(Scheme of Inspection and Testing)

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S:Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
3.2.1	Description	2.2.1 Visual	IS 12016	R	One	Every Control Unit	Please see Clause 5.2.1 of SIT
3.2.2	Cold Test	13.1	IS 6940	R	-do-	-do-	-do-
3.2.3	Flash Point (Abel)	-	IS 1448 (Pt-20)	R	-do-	-do-	-do-
3.2.4	Emulsion Stability	13.3	IS 6940	R	-do-	-do-	Please see Clause 5.2.2 of SIT
3.3.1 & 6	Cypermethrin Content	Annex A	IS 12015	R	-do-	-do-	-do-
3.3.2	Acidity/ Alkalinity	11.3/ 13.5	IS 6940	R	-do-	-do-	Please see Clause 5.2.1 of SIT