FOREWORD

(*Formal clause would be added later)*

Fluxapyroxad 75 g/l + Difenoconazole 50 g/l Suspension Concentrate is used as a Fungicide in Agriculture.

Fluxapyroxad + Difenoconazole Suspension Concentrate is generally manufactured to contain Fluxapyroxad 75 g/l and Difenoconazole 50 g/l.

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 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*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1 SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for Fluxapyroxad + Difenoconazole Suspension Concentrate.

2 REFERENCES

The standards, given 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.

IS No.	*Title*
8190 (Part 2) : 1988	Requirements for packing of pesticides Part 2 liquid pesticides (*second revision*)
1070 : 1992	Reagent grade water - Specification (*third Revision*)
6940 : 1982	Methods of test for pesticide and their formulations (*first Revision*)
9754 : 1981	Specification for High Density Polyethylene Containers for Packing of Liquid Pesticides
10627 : 1983	Methods for sampling of pesticidal formulations

3 REQUIREMENTS

3.1 Constituents

The material shall consist of Fluxapyroxad technical and Difenoconazole technical, together with suitable ingredients.

3.2 Physical

3.2.1 *Description* **—** The material shall be in the form of white coloured liquid free from extraneous impurities

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

TABLE 1 REQUIREMENTS FOR FLUXAPYROXAD + DIFENOCONAZOLE SUSPENSION CONCENTRATE

(*Clause* **3.2.1** and **7.1**)

Sl. No.	**Characteristics**	**Requirement**	**Method of Test**
(1)	**(2)**	**(3)**	**(4)**
i.	Fluxapyroxad content , percent by mass, *Min*	75	Annex A
ii.	Difenoconazole content, percent by mass, *Min*	50	Annex A
iii.	*p*H of 1% aq. Solution (25±0.5°C)	4.0 to 8.0	IS 6940
iv.	Pourability, percent by mass, *Max*	5	IS 6940
v.	Spontaneity of dispersion, percent by mass, *Min*	85	IS 6940
vi.	Suspensibility , percent by mass, *Min*	70	IS 6940
vii.	Persistent foam (ml), *Max*	60 sec	IS 6940
viii.	Wet sieve test (maximum % Passed through 75µm test sieve)	99.9	IS 6940
ix.	Density	1.08 g/cm3	-

3.3 Chemical

3.3.1 *Fluxapyroxad and Difenoconazole content*

When determined by the method prescribed (enclosed), the observed Fluxapyroxad and Difenoconazole content (w/w), of any of the sample shall not differ from the declared nominal value by more than the percent tolerance limits indicated below :

Nominal V*alue, Percent*	*Tolerance, Percent*	
Up to 9	+10	
	-5	
10 and below 50	±5	of the nominal
50 and above	+5	value
	-3	

3.3.1.1 The actual value of Fluxapyroxad and Difenoconazole 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 Fluxapyroxad and Difenoconazole content of all samples taken shall not be less than the declared nominal content.

4 PACKING

4.1 The product shall be packed in 200 ml, 250 ml, 320 ml, 400 ml,500 ml, 1 lit,1.2 lit,2 lit,4 lit and 5 lit HDPE containers with minimum 1 mm thickness, which shall be further packed in corrugated fiber board boxes as transport packing. The specifications for the containers shall be as agreed between the supplier and the manufacturer.

5 MARKING

5.1 The containers shall be securely closed and shall be 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 content, percent (*m/m*);

g) Nominal Fluxapyroxad and Difenoconazole content, percent (*m/m*);

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

6.1 When freshly manufactured material in bulk quantity is offered for inspection, representative samples of the material shall be drawn and tested as prescribed in IS 10627 within 90 days of its manufacture. 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 he the limits of tolerances, as applicable over the declared nominal value and given under clause **3.3.1** of the standard.

7 TESTS

7.1 Tests shall be carried out by the appropriate methods referred to Table **1**

7.2 Quality of Reagent

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

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

DETERMINATION OF FLUXAPYROXAD AND DIFENOCONAZOLE CONTENT

A-1 PRINCIPLE

Fluxapyroxad and Difenoconazole content in Fluxapyroxad 75 g/ l + Difenoconazole 50 g/l SC formulation was determined by a HPLC- UV method . The identity of the active ingredient was established by comparison with the equivalent authentic standards and quantified the active contents by external standardization method .

A-2 REAGENTS

Acetonitrile - HPLC grade
Milli-Q-Water
Fluxapyroxad Analytical Standard
Difenoconazole Analytical Standard
Orthophosphoric acid
Internal Standard –Di isobutyl phthalate

A-3 PROCEDURE

A-3.1 Preparation of internal standard solution

Weighed approximately 30mg ± 5 mg of Di-isobutyl phthalate into a 100ml volumetric flask.The content of the flask was dissolved and volume was brought upto the mark with acetonitrile.

A-3.2 Preparation of Standard Solution (C2)

Weighed approximately 30 ± 5mg of Fluxapyroxad (purity 99.7%) and 58 ± 2mg of Difenoconazole (purity 99.5%) reference standards into a 100 mL volumetric flask. A 10ml of internal standard solution was added into the flask. The content of the flask was dissolved and the volume was brought up to the mark with acetonitrile.

A-3.3 Preparation of sample solution

Weighed approximately 400 ± 20 mg of formulation sample into two different (S1 and S2) 100 mL volumetric flasks. A 10 mL aliquot of internal standard solution was added to each flask. The content of the flask was dissolved and the volume was brought up to the mark with acetonitrile. The sample solution was passed through 0.45 µm syringe filters prior to HPLC analysis.

A-3.4 Sample analysis

Injected in the sequence C2, SIR, SlR2, C2, S2Rl, S2R2 and analysed for Fluxapyroxad and Difenoconazole content.

A-3.5 Chromotographic Separation Parameter

Instrument		HPLC 1200 series High Performance Liquid Chromatography operated with Chem station software
Column used		C18 (2) (250 x 4.60 mm x 5 mm)
Mobile Phase		0.1% Ortho phosphoric acid: Acetonitrile (40: 60 *v/v*)
Detecter		DAD
Wave Length		260 nm
Column oven temperature		40 °C
Injection Volume		20 µL
Flow rate		1.0 ml/min
Retention time (approximately)	Fluxapyroxad	4.5 min
	Pyraclostrobin	9.6 min

A-4 CALCULATIONS

A-4.1 Fluxapyroxad

Fluxapyroxad content, percent by mass = $\frac{H_{WA} \times M_A \times P_A \times Ir}{H_{SA} \times w \times Iq}$

Fluxapyroxad content (% *w/v)* = Fluxapyroxad content (% *m/m)* × Density of item g/cm^3

Where,

H_{WA} = Peak area of Fluxapyroxad in the sample solution (mAU∗sec)

M_A = Mass of Fluxapyroxad in the Standard solution (mg)

P_A = Purity of Fluxapyroxad reference standard (%)

Ir = Peak area of internal standard in the calibration solution (mAU∗sec)

H_{SA} = Peak area of Fluxapyroxad in the Standard solution (mAU∗sec)

w = Mass of sample taken (mg)

Iq = Peak area of internal standard in the sample solution (mAU∗sec)

A-4.2 Difenoconazole

Difenoconazole content, percent by mass = $\frac{H_{WB} \times M_B \times P_B \times Ir}{H_{SB} \times w \times Iq}$

Difenoconazole content (% *w/v)* = Difenoconazole content (% *w/w)* × Density of item g/cm^3

Where,

H_{WB} = Peak area of Difenoconazole in the sample solution (mAU*sec)

M_B = Mass of Difenoconazole in the Standard solution (mg)

P_B = Purity of Difenoconazole reference standard (%)

I_r = Peak area of internal standard in the calibration solution (mAU*sec)

H_{SB} = Peak area of Difenoconazole in the Standard solution (mAU*sec)

w = Mass of sample taken (mg)

I_q = Peak area of internal standard in the sample solution (mAU*sec)