FOREWORD

(*Formal clause would be added later)*

Triticonazole 80 g/l + Pyraclostrobin 40 g/l Flowable Concentrate for Seed Treatment (FS) is used as a Fungicide in Agriculture.

Triticonazole 80 g/l + Pyraclostrobin 40 g/l Flowable Concentrate for Seed Treatment (FS) is generally manufactured to contain Triticonazole 80 g/l + Pyraclostrobin 40 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

This standard prescribes the requirements and the methods of sampling and testfor Triticonazole 80 g/l + Pyraclostrobin 40 g/l Flowable Concentrate for Seed Treatment (FS).

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*
1070 : 1992	Water for general laboratory *use (Third revision*)
6940 : 1982	Methods of test for Pesticides and their formulations (*first revision*)
8190 (Part 1) : 1988	Requirements for packing of Pesticides : Part 1 Solid Pesticides (*Second revision*)
10627 : 1993	Methods of sampling pesticidal formulations
9754 : 1981	Specification for High density Polyethylene containers for Packing of Liquid pesticides
2771 (Part 1) : 1990	Corrugated Fiber board Boxes – Specification – Part I: General Requirements (*second revision*)

3 REQUIREMENTS

3.1 Constituents

The material shall consist of Triticonazole technical and Pyraclostrobin technical, together with suitable adjuvants and colouring agent.

3.2 Physical

3.2.1 *Description* **—** The material shall be in the form of red colour liquid with free flowable suspension

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

TABLE 1 REQUIREMENTS FOR TRITICONAZOLE 80 g/l + PYRACLOSTROBIN 40 g/l FS

(*Clause* **3.2**)

i)	Triticonazole content percent by mass, *Min*	80.00	Annex A
ii)	Pyraclostrobin content % (g/l)	40.00	AnnexA
iii)	pH of 1% aq. Solution (at 25 ±1°C)	4 - 8	IS 6940
iv)	Persistent foam (ml) after 1minute	60 ml maximum	IS 6940
v)	Pourability (%)	A maximum of 5% residue should be found upon pouring of the formulation out of the bottle. (If the maximum of pourability is >5%, then the rinsed residue should be less than 0.25%)	IS 6940
vi)	Wet sieve test	Maximum 0.5% ofthe formulation shall be retained on a 75 μm test sieve.	IS 6940
vii)	Suspensibility (%)	A minimum of 80% found in the preparation shall be in suspension after 30 min	IS 6940

3.3 Chemical

The material shall comply with the chemical requirements specified in **3.3.1**.

3.3.1 *Triticonazole and Pyraclostrobin content*

When determined by the methodprescribed (enclosed as **Annexure-I**), the observed Triticonazole and Pyraclostrobin content (w/v), of any of the sample shall not differ from the declarednominal value by more than the percent tolerance limits indicated below:

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

3.3.1.1 The actual value of Triticonazole and Pyraclostrobin 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**33.1**.

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

4 PACKING

4.1 The product shall be packed in 50 ml, 100 ml, 150 ml, 250 ml, 500 ml, 750 ml and 1 litre HDPE containers. Which shall be further packed in corrugatedfiber board boxes as per IS specifications No. IS: 2771 (Part 1) to form a transport pack. The specifications forthe 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 Triticonazole and Pyraclostrobin 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 and/or the retail pack ofthe 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 contentsin percent (*m/m*), shall not be less than the declared nominal value. The upperlimit 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, asapplicable over the declared nominal value and given under **3.3.1**.

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 TRITICONAZOLE AND PYRACLOSTROBIN CONTENT

A-1 PRINCIPLE

The active ingredient of Triticonazole and Pyraclostrobin content in Triticonazole 80 g/l + Pyraclostrobin 40 g/l FS formulation was determined by a HPLC-UV method. The identity of the active ingredient was established in comparison to the equivalent authentic standard.

A-2 REAGENTS

Acetonitrile HPLC grade

Water deionised

Triticonazole standard of known purity

Pyraclostrobin standard of known purity

Acetic acid

A-3 PROCEDURE

A-3.1 Preparation of Calibration Solution for Triticonazole and pyraclostrobin

Approximately 60 mg of the Triticonazole and Pyraclostrobin analytical standards were weighed in duplicate into a separate 100 mL volumetric flask and added small amount of acetonitrile. The flask was sonicated for 5 minutes. The solution was allowed to cool to room temperature. The flask was filled up to the mark using acetonitrile and mixed well. From this solution 10.0 mL was pipetted and transferred into a 50 mL volumetric flask, diluted and filled up to the mark using acetonitri

A-3.2 Preparation of sample solution for Triticonazole and pyraclostrobin

Approximately 60 mg of test item was weighed into a 100 mL volumetric flask. A small amount of water was added to suspend the sample. A 75 mL of acetonitrile was added into the flask and the flask was sonicated for 5 minutes. Added water to just below mark and mixed well. The flask was shaked for several times. The solution was allowed to cool to room temperature. The flask was filled up to the mark using water and mixed well. From this solution 10.0 mL was pipetted and transferred into a 50mL volumetric flask, diluted and filled up to the mark using mobile phase. The solution was centrifuged and transferredinto a HPLC vial for analysis.

A-3.3 Sample analysis

Injected in the sequence of CS1, S1R1, S1R2, CS2, S2R1, S2R2 and calculated fortriticonazole and pyraclostrobin content.

A-3.4 Chromotographic Separation Parameter

Instrument		HPLC 1200 series system
Detector		UV detector
Column used		C_{18}(250mm x 4.60 mm x 5.0 µm)
Mobile Phase		Acetonitrile: 0.1% Acetic acid in milli-Q-water (75:25)
Wave Length		270 nm, B.W is 4 nm
Column Temperature		40 ^{o}C
Injection Volume		20 µL
Flow rate		1 ml/min
Retention time (approximately)	Triticonazole	4.3 min
	Pyraclostrobin	6.4 min

A-4 CALCULATION

Triticonazole / Pyraclostrobin Content (g/L) = Triticonazole / Pyraclostrobin content (%w/w) x Density x 10

Density (D) = 1.115 g/L

Triticonazole / Pyraclostrobin content (g/L) $= \frac{H_w \times M}{H_s \times w} \times P \times D \times 10$

where

HS = Peak area of the caliberation solution (mAU*sec)

Hw = peak area of sample solution (mAU*sec)

M= Mass of the calibration solution (mg)

w = Mass of sample taken (mg)

P = Purity of the standard (%)