

## PRODUCT CODE

## ORGANIC NUTRITION BF4 – LIQUID / GRANULES (JAIVIZYME)

### Composition

Ingredient	Liquid	Granules	Powder
Potassium Humate	10.00% w/v min.	05.00% w/w min.	05.00% w/w min.
Aqua media	90.00% w/v max.	–	–
Humus matter granules	–	95.00% w/w max.	–
Humus matter carrier	–	–	95.00% w/w max.

Humates being extracted from the highly bio-active substrate, inherently contain several important nutrients. Typically following nutrients are present in Potassium Humate along with almost 18 to 22% Organic Carbon.

N (%)	0.0300	Mg (%)	0.0080	Mn (%)	0.0008
P (%)	1.5020	Fe (%)	0.0085	B (%)	0.0006
K (%)	3.5000	Zn (%)	0.0005	Mo (%)	0.0050
Ca (%)	0.0340	Cu (%)	0.0002		

### Application

As a premium nutritional growth stimulant and supplement for healthier crops and yields.

### Mode of Action

A truly novel formula combining potassium humate with inherent nutrients to obtain optimum crop output. Derived from organic matter which is rich in mineral and organic substances provides the nutrients essential for healthier plant growth.

### How to Apply

**Liquid:** Mix the recommended quantity thoroughly in sufficient amount of water & spray on both sides of the leaves / affected areas.

**Granules:** Directly broadcast the recommended quantity to the soil with uniform distribution over the coverage area.

### Shelf Life

5 years from the date of manufacture.

### Antidote

No specific antidote. Treat symptomatically.

### Dosage

**Liquid:** 2 ml per litre of water

**Granules:** 4-8 kg per acre



Safe Agriculture, Since 1998!

**Studies Done  
Bio-efficacy**

Product	University	Disease Studied
BP4 Liquid	University of Agricultural Sciences, Dharwad	Crop: Tomato Plant Height No. of branches / plant Leaf Area No. of flower clusters No. of fruits / cluster Percent fruit set Fruit Yield
BF4 Liquid	GKVK, University of Agricultural Sciences, Bangalore	Crop: Maize, soyabean and Cowpea Root Growth Shoot Growth Leaf Area
BF4 Liquid Jaivizyme	Mahatma Phule Krishi Vidyapeeth, Rahuri	Crop: Tomato Plant Height No. of branches / plant Avge Fruit Weight Fruit Yield
BF4 Granules Jaivizyme GR	Mahatma Phule Krishi Vidyapeeth, Rahuri	Crop: Chilli Plant Height Days to 50% Flowering Fruit Length Fruit breadth Avge weight of fruit Fruit Yield

**Organic Approval as per  
NPOP (by APEDA)**

1. IMO Control (Liquid)
2. VOCA (Liquid & Granules)



## DETERMINATION OF EUGENOL

Determine by gas chromatography (2.4.14). Reference: IP 2007 p: 1395

Test solution (a). A 0.2 per cent w/v solution of the oil under examination in ethanol (95 per cent).

Test solution (b). A 0.2 per cent w/v solution of the oil under examination and 0.15 w/v of 1-decanol (internal standard) in ethanol (95 per cent).

Reference solution. A solution containing 0.2 per cent w/v solution of eugenol RS and 0.15 per cent w/v of the internal standard in ethanol (95 per cent).

### Chromatographic system

– a glass column 1.5 m x 4 mm, packed with 3 per cent w/w of dimethyl silicone fluid on acid-washed diatomaceous support (120 mesh),

– temperature:

column. 110° for 18 minutes, then increased to 170° at a rate of 12° per minute and maintained at this temperature for 2 minutes, inlet port. 220°,

detector. 300°,

– flow rate 40 ml per minute of the carrier gas.

Calculate the eugenol content in the oil under examination using the ratios of the area of the peak corresponding to eugenol to the area of the peak due to the internal standard in the chromatogram obtained with test solutions (b) and the reference solution.

## DETERMINATION OF TOTAL SOLIDS

### Scope and Application

Total Solids are defined as the material residue left in a vessel, after evaporation of moisture from a sample.

### Equipment and Supplies

1. Petri dish or suitable moisture dish.
2. Drying oven equipped with thermostatic control capable of maintaining temperature within 2°C range
3. Desiccator - with desiccant
4. Analytical balance - capable of weighing to 0.1 mg

### Preparation

Petri dish / Moisture dish Preparation: Place prenumbered dishes into a 180°C drying oven and dry for five days to a constant weight.

Transfer dried dishes to desiccator(s) and allow to stabilize overnight.

Record dish numbers to be used on the Data Summary and Weight Record data sheets.

### Method of Analysis:

1. Tare the balance to zero.
2. Weigh clean, dry, empty dish.
3. Record weight on the Weight Record data sheet.
4. Add approximately 5 gm or 5 ml of sample to the dish and record the exact weight.
5. Place the petri dishes with sample in a hot air oven preset at 110°C.
6. Allow the sample to dry for 3 - 4 hours till uniform dryness.
7. Take out the petri dish with dried sample and place in a desiccator and allow to cool.
8. Weight the dish and record the weight.
9. Determine the TS content of liquid samples or TS content of solid samples by using following formula:

$$\text{TOTAL SOLIDS} = \frac{W3 - W1}{W2 - W1} \times 100 \%$$

Where, W1 = Weight of empty dish

W2 = Weight of dish + sample

W3 = Weight of dish + dried sample

10. Express the results as % TDS for liquids or % TS for solids

## DETERMINATION OF POTASSIUM

Reference: IS 6092 (Part 4) Methods of sampling and test for Fertilizers Part 4 – Determination of Potassium

### SODIUM TETRAPHENYLBORON GRAVIMETRIC METHOD

#### Reagents

1. Sodium tetraphenylboron ( approximately 1.5 percent ). Dissolve 7.5 g of STPB in 475 ml of water. Add 4 ml of 20 percent sodium hydroxide and 20 ml of 10 percent solution of magnesium chloride hexahydrate. Stir well for 10-15 min and filter through a fine textured filter paper. The solution shall be stored in dark in polythene bottles for 4-5 weeks and should be filtered before use.  
STPB wash solution - Dilute one volume of the STPB solution with 10 volumes of water.
2. EDTA Disodium Salt Solution (4 Percent) - Dissolve 4.0 g of the pure salt in water and make up to 100 ml.
3. Magnesium Chloride Solution (10 Percent) - 10 g of  $MgCl_2 \cdot 6H_2O$  dissolved in water and made up to 100 ml.
4. Formaldehyde Solution (30 Percent) - Filter if needed before use.
5. Phenolphthalein Indicator - 0.5 g of phenolphthalein dissolved in 100 ml of 95 percent ethyl alcohol.

**Procedure** - Transfer with a pipette a suitable aliquot of the test solution containing 30 to 50 mg of  $K_2O$  to a 250 ml beaker and adjust the volume to about 50 ml by evaporation or dilution. To this, add 20 ml of EDTA solution and few drops of phenolphthalein indicator. Add drop by drop the sodium hydroxide solution for the red colour to appear and then add 2 ml of this in excess. Boil for 15 min.

NOTE - Too high concentration of sodium hydroxide may cause precipitation of ferric iron (if present in the test solution) and coprecipitation of STPB, during boiling.

Run down 10 ml of formaldehyde solution and if necessary a few drops of sodium hydroxide solution until the red colour persists. Cover the beaker with a watch glass and keep on a steam bath for about 15 min. The solution should remain red. If necessary add the NaOH solution drop by drop to restore the red colour.

Remove the beaker from the steam bath and add immediately drop by drop while stirring 40 ml of STPB solution. Stir for 2 min more and cool rapidly to below  $20^\circ C$  in running or iced water and allow to stand for 10 min.

Take a previously dried (in oven at  $120^\circ C$ ) and weighed, filter crucible (sintered glass or porcelain disc of porosity  $P_{20}$ ) fitted with a mild suction and decant the supernatant liquid through it. Wash the precipitate in the beaker with 40 ml of wash solution and decant again and repeat this procedure. Transfer the precipitate quantitatively, rinse with two 20 ml portions of

wash liquid followed by 5 ml of cold water. Dry the crucible with precipitate in oven at 120°C for 14 h, allow to cool in desiccator and weigh again. Carry out a blank test at the same time.

## Calculations

Potassium content, expressed as K or K<sub>2</sub>O as percentage by mass

$$= \frac{[(M2 - M1) - (M4 - M3)] \times F \times V_o \times 100}{M_o \times V1}$$

where

M<sub>o</sub> = mass in g of the test portion of the material;

M<sub>1</sub> = mass in g of the dry filter crucible;

M<sub>2</sub> = mass in g of crucible plus precipitate (dry);

M<sub>3</sub> = mass in g of the crucible used for blank;

M<sub>4</sub> = mass in g of the crucible in blank test with precipitate (if any);

V<sub>o</sub> = volume in ml of the test solution (volume finally made up);

V<sub>1</sub> = volume in ml of the aliquot of the test solution taken for the precipitation; and

F = factor, if expressed as K = 0.109 1, if as K<sub>2</sub>O = 0.1314.