

BASIC PHYSICOTECHNICAL INFORMATION ABOUT AGRICULTURAL CHEMICAL

1. Name of the agricultural chemical: microelemented humic acid-based fertilizer "Bioplant Flora" (hereinafter Bioplant Flora or BF)

2. Manufacturer: LLC "Plant". Address: 142100, Moscow oblast, Podolsk, Fevralskaya street 59, tel/fax: (495) 505-68-67, 920-05-16.

3. Chemical group and field of application, purpose of BF

The fertilizer consists of humic acids and microelements.

Field of application: agricultural enterprises, private households, landscape-gardening, planting plots of municipal objects.

Purpose of agricultural chemical: nutrition of plants with humates and related microelements.

Croppers for which the agricultural chemical is used: grain, grain legumes, hoed crops, root vegetables, vegetables, fruit trees, shrubbery, drupaceous, decorative, floral, lawn grass.

4. Recommended procedures of agricultural chemical application:

- *time of agricultural chemical application:* the entire growing season;

- *time of application and processing methods:* preplant treatment, fall tillage, spring douching, root and foliar dressing, application in drop irrigation systems;

- *norms (dosage) and application frequency:* depending on cultures – 1 to 3 liters for 1 ha with 1-3-fold application, for seed material processing – 0,1 to 1 liter of preparation for one ton of seeds.

- douche the plants with water solution of fertilizer with concentration from 1:100 to 1:500;

- precess the seeds by soaking in water solution with concentration 1:50 to 1:100;

- seeds pretreatment by dressing in water solution of fertilizer with concentration 1:20 to 1:50.

5. Protective measures:

No special protected measures are required: Bioplant Flora is a marginally hazardous substances (hazard class – IV). In case of contact with eyes or skin, wash with water.

6. Documents confirming quality and safety:

- Safety data sheet of agricultural chemical;

- Test sheet №35 of October 09, 2008. (Independent institute for expertise and certification. Laboratory test centre);

- Test sheet №56 of October 1, 2007 (Independent institute for expertise and certification. Laboratory test centre);

- Expert opinion about production №15506 of 03.06.2005 (Federal State Health Protection Institution "Centre for hygiene and epidemiology in Moscow);

- Sanitary and epidemiological inspection report № 77.01.03.989.T.16799.06.5 of 14.06.2005 (Department of Federal Service for Supervision of Consumers Protection and Welfare in Moscow).

7. Registration in other contries –not available.

8. Technical documentation for preparation: TU 9899-007-75292641-2005. Notification №1 about change of TU 9899-009-75292641-2008.

Manufacturing process procedure

General information

1. Qualitative and quantitative composition of the agricultural chemical (principal and minor components)

Table: Content of principal substances in the feedstock (organic loadings)

Name of Substance	Normative Document for test methods	Measuring unit	Test result
Organic substance	GOST 27980-88	mg/l	2520,0
Humic acids	GOST 26213-91	mg/l	2100,0
Fulvoacids	GOST 26213-91	mg/l	280,0
Humic acids carbon	GOST 26213-91, Precipitation humic acids according to method of M.M. Kononova and N.P. Belchikova.	mg/l	1180,0
Fulvic acids carbon		mg/l	120,0
Sum of humic and fulvic acids		mg/l	2380,0

Principal component: humic acids.

Minor components: microelements Fe, Zn, Mg, Mn, Mo, Co, B, spores of beneficial soil microflora in biohumus.

2. Content of toxic and hazardous substances:

- heavy metals and arsenic (mg/l): lead – 0,01 (MPC 32,0); mercury - 0,003 (MPC 2,1); cadmium - 0,0021 (MPC 3,0), arsenic – less than 0,0023 (MPC 3,0);

- organic compounds (mg/kg) – not found;

- radionuclides of natural or technogenic origin: Radium: -226 – < 10 Bq/l; Thorium-232 – 11 ± 5 Bq/l; Kalium -40 – 220 ± 50 Bq/l; Caesium-137 – < 3 Bq/l; Strontium -90 – < 5 Bq/l; total effective specific activity of natural radioactive nuclides in the ground – 52 Bq/kg (MPC 370 Bq/kg).

3. Pathogenic flora, including salmonella (index) – not found.

4. Viable larva and eggs of helminthes (ex/kg) – not found.

5. Cysts of enteric pathogenic protozoa (ex/100 g) – not found).

6. Larvae and chrysalis of synantropic flies (ex/kg) – not found).

7. Disinfection method (for manure, dung, sewage sludge, etc.):

fermentation at a temperature not lower than 70⁰ C for not less than 3 hours.

8. balance of principal fertilizer elements N-P-K (0,0189-0,0031-0,031) in percents (by weight).

Toxicological characterization of agricultural chemical

1. Hazard class - IV (marginally hazardous substances).

2. Negative effect on human – not found.

3. MPC in the working zone area - not restricted.

Hygienic characterization of agricultural chemical

1. Information about agricultural chemical behaviour in the environmental medium (soil, water, air)

Hazardous metabolites forming property – not found.

Due to beneficial soil microflora Bioplant Flora activates natural microbiological processes in the soil. The nitrogen-holding microflora converts the nitrogen compounds

into forms available for the plants. Phosphor and kalium as well as activating bacteria convert the phosphor and kalium compounds into forms available for the plants. The proliferating symbiotic microflora which is present in the biohumus displaces the phytopathogenic bacteria and fungi. No formation of hazardous metabolites is found in the soil.

2. Impact on quality and nutrition value of foods

According to CSIIAS research, the impact of humates and beneficial soil microflora results in increase of content of vitamins and bioactive substances in a plant. The content of heavy metals, radionuclides and pesticides is lower than MPC norms for agricultural soils. Bioplant Flora is environmentally safe, hazard class IV (marginally hazardous substances).

3. Information about content of nitrates in the agricultural production after application of nitrogen fertilizers

Bioplant Flora is not a nitrogen fertilizer. On application of Bioplant Flora the plants receive integrated balanced nutrition, at that the nitrate concentration in the fruits is reduced, that is confirmed by better storability of fruits.

4. Safe storage, transportation and application recommendations

Bioplant Flora is bottled into lidded tubes, bottles or canisters made of polymeric material GOST R 50962-96 containing 1,25 ml, 0,25, 0,5, 1, 3, 5, 10 and 20 l. The package may be polyethylene canisters, polyethylene buckets, bags, pasteboard boxes or thermosetting film. Selling the preparation in metal or plastic barrels or customer's tare is also permissible.

BF may be transported by all modes of transport with observation of shipping rules for this mode of transport.

The packed BF must be stored indoors at a temperature from 0 °C to 35 °C. The unpacked Bioplant Flora is stored in process tanks with volume of 25 m³.

BF is compatible with pesticides and other plant protecting agents. Keep away from children, food and medicines. It is advisable to work with gloves on, wash with water in case of contact with eyes. Utilize package and rests together with household wastes.

5. First aid for poisoning

In case of contact with skin or eyes, wash the skin or eyes with large quantities of circulating water.

In case of contact with respiratory organs, cough, rinse the throat and nose with water, take expectorant drugs, move out to the fresh air.

In case of penetration into alimentary tube, lavage the stomach with large quantities of water (nauseate possible), take several tablets of absorbent carbon, drink milk.

In case of grave affect, consult the corresponding doctors: dermatologist, oculist, pulmonologist or toxicologist, and demonstrate the "Recommendations on transportation, storage and application of organic fertilizer "Bioplant Flora". In such situation, medical assistance must be provided immediately.

6. Toxic admixtures detection methods in the agricultural chemical and environmental objects

Mass concentration of heavy metals: lead, mercury, cadmium, nickel, chrome, arsenic* - Procedural Guidelines on detection of heavy metals in agricultural soils and plant production. Moscow, CSIIAS, 1992.

Specific activity of natural and technogenic radioactive nuclides (Cs₁₃₇ and Sr₉₀) *

- Metering methods of gamma-emitting radioactive nuclides by scintillation and semiconductor gamma-ray spectrometer GP VNIIFTRI 14.12.1994. MU “Strontium90 concentration detection in soils, and plants with radiochemical method”.

Concentration of pathogenic flora, viable eggs and larvae of helminthes* - Procedural guidelines on helminthological investigation. Moscow., Minzdrav, 1976. Procedural guidelines on sanitary and microbiological investigation of soil. Moscow, 1977.

**Controlled in feedstock by concentration of the specified elements in biohumus. TU 9899-007-75292641-2005.*

Ecotoxicological characterization of the agricultural chemical

The microelemented humic acid-based fertilizer “Bioplant Flora” is an environmentally safe product. It is produced according to TU 9899-009-75292641-2008.

Weight fraction of nutritive substances in the dry extract – up to 89%.

Composition: contains microhumates, physiologically active salts of humic and other natural organic acids, microelements Mg, Mn, Mo, Fe, Co, Zn, S, natural biologically active substances, water.

The principal component for BF fertilizer production are organic loadings, produced by way of processing of organic raw material by bacteria.

Carbon mineralization and nitrogen transformation processes flow naturally.

LLC “Plant” is a developer and manufacturer of “Bioplant Flora” fertilizer.