

SECTION 32 01 90.16 Amending Soils BioPrime™ Sustained-Release Biostimulant

GENERAL

1.01 SUMMARY

- A. This section specifies the hydraulically-applied BioPrime™ Sustained-Release Biostimulant designed to enhance long-term plant vitality. With a guaranteed nutritive analysis of 18-0-0 (N-P-K), its four active ingredients include slow-release Nitrogen, seaweed extract, humic acid, and endo mycorrhizae. The Nitrogen's proprietary sustained-release technology is ideally suited for revegetation of disturbed or denuded sites. Depending on site precipitation amounts and biological soil activity, the Nitrogen is released for up to 17 months.
- B. Related Sections: Other Specification Sections, which directly relate to the work of this Section include, but are not limited to the following:
 - 1. *Section 01 57 00 – Temporary Erosion and Sediment Control*
 - 2. *Section 02 24 23 – Chemical Sampling and Analysis of Soils*
 - 3. *Section 31 00 00 – Earthwork*
 - 4. *Section 31 25 00 – Erosion and Sedimentation Controls*
 - 5. *Section 31 91 00 – Planting Preparation*
 - 6. *Section 32 92 00 – Turf and Grasses*

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions. Include required substrate preparation, list of materials and application rate.
- B. Certifications: Manufacturer shall submit a letter of certification that the product meets or exceeds all technical and packaging requirements and is made in the USA.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products in weather-resistant factory labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage, weather, excessive temperatures and construction operations.

PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. PROFILE Products LLC
750 Lake Cook Road – Suite 440
Buffalo Grove, IL 60089
International - +1-847-215-1144
United States and Canada – 800-366-1180 (Fax 847-215-0577)
www.profileproducts.com

2.02 MATERIALS

A. The Sustained-Release Biostimulant shall be BioPrime and conform to the following typical property values:

Performance Properties	Test Method	Unit	Tested Value
Vegetation Establishment	ASTM D7322	%	≥ 400
Environmental Properties	Test Method	Unit	Tested Value
Ecotoxicity	EPA 2021.0	n/a	Non-Toxic

2.03 COMPOSITION

A. All components of the Sustained-Release Biostimulant shall be a micronized powder, pre-packaged by the manufacturer to assure both material performance, optimal mixing and compliance with the following values. No chemical additives with the exception of hydraulic mulch, fertilizer, soil neutralizers, biotic soil media, and additional biostimulant materials should be added to this product.

1. Guaranteed Analysis – 18-0-0

- a) Total Nitrogen 18%
 - I. 1% Urea Nitrogen
 - II. 10.5% Water Insoluble Nitrogen
 - III. 6.5% Other Water Insoluble Nitrogen*
* 6.5% controlled release Nitrogen from methylenediurea and dimethylenetriurea
- b) 1% Seaweed Extract
- c) 1% Humic Acid
- d) 1% Endo mycorrhizae fungi:
 - I. *Glomus intradices*
 - II. *Glomus aggregatum*
 - III. *Glomus mosseae*
- e) 79% Inorganic Mineral (clay)

2.04 PACKAGING

A. Bags: Net Weight – 40 lb (18.1 kg), weather-resistant
Pallets: Weather-proof, stretch-wrapped with pallet cover
Pallet Quantity: 50 bags/pallet or 1 ton (909 kg)/pallet

EXECUTION

3.01 SOIL TESTING

- A. Soil Samples shall be taken and sent to a third-party, independent lab for analysis and in compliance with Section 02 24 23 – Chemical Sampling and Analysis of Soils, if applicable.
- B. The tests shall include analysis and interpretation of results.
- C. The soil testing methods used shall be compliant with recognized agronomic testing standards, as outlined in Section 02 24 23 The soil testing methods used shall be compliant with recognized agronomic testing standards, as outlined in Section 02 24 23 – Chemical Sampling and Analysis of Soils, for revegetation of disturbed sites.

D. Soil Analysis shall include results for:

1. Soil pH
2. Soluble Salts
3. Excess Carbonate
4. Organic Matter
5. Nutrient readings for:
 - i. Nitrogen, Phosphorus, Potassium
 - ii. Magnesium, Calcium, Sodium, Manganese, Sulfur, Zinc, Copper, Iron, Boron
6. Cation Exchange Capacity
7. Percent Base Saturation Sodium

E. ProGanics™ BSM™, JumpStart™, Aqua-pHix™ and NeutraLime™ Dry or other amendments shall be specified according to *Section 32 01 90.16 – Amending Soils* and applied with the hydroseeding slurry at Manufacturer recommended rates based on soil test results.

3.02 VEGETATION SPECIES SELECTION

A. Once soils have been analyzed for agronomic potential and amendment recommendations, selection of suitable plant species for achieving sustainable growth and effective erosion control shall be determined by a qualified seed supplier, consulting professional and/or regulatory agency. Species selection and establishment shall be compliant with *Section 32 92 00 – Turf and Grasses*, if applicable.

B. Site and project specific information considered for species selection shall include:

1. Project Location and Planning
 - i. Climate
 - ii. Elevation
 - iii. Aspect
 - iv. Slope/Gradient
 - v. Permanent or Temporary Planting
 - vi. Installation Date(s)
2. Soil Conditions
 - i. Soil Texture
 - ii. Soil pH
 - iii. Toxicities/Deficiencies noted in the previous section.
3. Site Maintenance Requirements
 - i. Mowing
 - ii. Irrigation
 - iii. Animal grazing preference
4. Preferred Vegetation
 - i. Drought Tolerant
 - ii. Native Vegetation
 - iii. Shrub Species
 - iv. Turf Grasses
 - v. Cool Season
 - vi. Warm Season
 - vii. Blend of Cool and Warm Season
 - viii. Legume Species
 - ix. Cover Crops

3.03 EROSION CONTROL SELECTION

- A. Use Profile Soil Solutions Software (PS³) or other reputable software program to facilitate design and selection of erosion control techniques.
- B. Separate analysis shall be conducted for slope and channel erosion protection criteria, if necessary.
- C. Selection of erosion and sediment control techniques shall be detailed and in compliance with *Section 31 25 00 – Erosion and Sedimentation Controls*, if applicable

3.04 SUBSTRATE PREPARATION

- A. Examine substrates and conditions where materials will be applied. Apply product to geotechnically stable slopes that have been designed and constructed to divert runoff away from the face of the slope. Do not proceed with installation until satisfactory conditions are established.
- B. Depending upon project sequencing and intended application, prepare seedbed in compliance with other specifications under Section 1.01 B

3.05 INSTALLATION

Strictly comply with manufacturer's installation instructions and recommendations. Use approved hydroseeding machines to apply Sustained-Release Biostimulant. No chemical additives with the exception of hydraulic mulch, fertilizer, soil neutralizers, biotic soil media, and additional biostimulant materials should be added to this product. Install materials at the application rates based on the main limiting factor provided by the soil test data in the following chart:

Soil Characteristics						Product Application Rates	
EC ¹	TDS ²	SAR ³	CEC ⁴	Organic Matter	Organic Acids	BioPrime™	BioPrime™
mmhos/cm	ppm	n/a	% Sodium	%	%	lb/ac	kg/ha
< 0.4	< 256	< 2.0	< 2.5	≥ 5	≥ 5	Ideal Range	
≥ 0.4 & < 0.75	≥ 256 & < 480	≥ 2.0 & < 3.0	≥ 2.5 & < 4.0	≥ 2.0 & < 5.0	≥ 2.5 & < 5.0	40	45
≥ 0.75 & < 1.5	≥ 480 & < 960	≥ 3.0 & < 4.0	≥ 4.0 & < 6.0	≥ 1.5 & < 2.0	≥ 1.7 & < 2.5	80	90
≥ 1.5 & < 3.0	≥ 961 & < 1,920	≥ 4.0 & < 5.0	≥ 6.0 & < 7.0	≥ 0.75 & < 1.5	≥ 1.0 & < 1.7	120	134
≥ 3.0 & < 7.0	≥ 1920 & < 4,480	≥ 5.0 & < 7.0	≥ 7.0 & < 15	< 0.75	< 1.0	160	179
≥ 7.0	≥ 4,480	≥ 7.0	≥ 15	N/A	N/A	Contact Manufacturer	

1. Electrical Conductivity 2. Total Dissolved Solids 3. Sodium Adsorption Ratio 4. Cation Exchange Capacity – Percent Sodium

3.06 CLEANING AND PROTECTION

- A. After application, thoroughly flush the tank, pumps and hoses to remove all material. Wash all material from the exterior of the machine and remove any slurry spills. Once dry, material will be more difficult to remove.
- B. Clean spills promptly. Advise owner of methods for protection of treated areas. Do not allow treated areas to be trafficked or subjected to grazing.

3.07 INSPECTION AND MAINTENANCE

- A. All inspections and maintenance recommendations shall be conducted by qualified professionals consistent with the owner, engineer/specifier and regulatory entity(s) expectations.

- B. Initial inspections shall insure installations are in accordance with the project plans and specifications with material quantities and activities fully documented. Refer to Section 32 92 00 – Turf and Grasses for any additional details.
- C. Subsequent inspections shall be conducted at pre-determined time intervals and corrective maintenance activities directed after each significant precipitation or other potentially damaging weather or site event.

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Revision Date: 12/2016