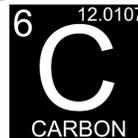


U.S. Patent US9,139,482 B2

BIOTIC SOIL PARTICLE

PermaMatrix® Particle Information



PermaMatrix Inc. certifies that PermaMatrix® BSP contains the following properties and characteristics



PermaMatrix® BSP
FOUNDATION

Cultivate Sustainability

Composition — What It Is and What It Does.

PermaMatrix® BSP (Biotic Soil Particle) Foundation uniquely combines rock dust (minerals), humic compounds (organics), carbon and micro-biological elements into one dissolvable soil granule! Research indicates that by combining these components the process of **pedogenesis** (topsoil creation) is kick started. The replenishment of minerals and introduction of beneficial soil bacteria produce healthy vegetation (biomass) and improved agricultural yields. Healthy biomass further improves soil structure by reducing erosion and providing the necessary organics for the succeeding generation of plant life. **PermaMatrix® BSP Foundation** is the **Carbon Link™** that creates a conduit for nutrient delivery from soil to plant. This linkage is essential for nutrient transfer. With over-fertilized soils producing excess nitrogen runoff, ecological balance cannot be restored without carbon linking. **PermaMatrix® BSP Foundation** creates that linkage as the ideal alternative solution to the over-use of synthetic and chemical fertilizers.

Description—Where and How to Use

PermaMatrix® BSP Foundation is useful in ALL soils to increase soil health and improve plant performance. It is particularly suited to nutrient deficient soils and soils with nutrient runoff problems. **PermaMatrix® BSP Foundation** is easily applied using a drill seeder, broadcast or drop spreader or simply by hand. Blend it into existing potting soils and planting beds at the recommended rates. Because it is 100% organic, it is not toxic to plants so may be applied at higher concentrations. **Foundation** increases the efficiency of both organic and inorganic fertilizers saving time and money on additional inputs.

Physical Characteristics

Toxicity	Non-Toxic Organic
Applied Color	Black
Particle Sizing (SGN)	
Regular:	SGN-280
Mini:	SGN-150
PH	6.6
C:N Ratio	27:1

Physical Properties

Mineral	Chelated Organic Basalt
Organics	DOM (dissolved organic matter)
Carbon	Biochar (High Temp. 500°C)
Mycorrhizae	Endo/Ecto Blend
Microbial Loop	Nutrient Cycling Bacteria

Application— Rate

Apply **PermaMatrix® BSP Foundation** at a rate of 500 pounds per acre or 12 pounds per 1,000 square feet in topical applications. Apply at 6 pounds per cubic yard of bulk potting soil. These rates provides the necessary soil building compounds to help establish seed and sustain vegetative cover.

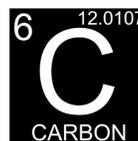
PermaMatrix® BSP Foundation can also be used with standard hydro seeding mulches to add beneficial microbial and mycorrhizae communities to the seed mix. For additional application rates please see **PermaMatrix® BSP Foundation** application rates at: www.PermaMatrixBSP.com/Foundation/apprates

PermaMatrix Application Rate

Per Acre	500 lbs.
Per 1,000 Square Feet	10-12 lbs.
Per Cubic Yard Bulk Soil Mix	6-10 lbs.

WARRANTY

PermaMatrix Inc. warrants that its products are free from defects and will perform as stated in this document. PermaMatrix Inc. warranty does not extend unlimited environmental circumstances caused by variables such as the soil surface condition, installation methods, and/or adverse weather conditions.





PermaMatrix® BSP FOUNDATION

Cultivate Sustainability

Key Component — Mineral

PermaMatrix® BSP Foundation contains soil minerals that play a vital role in soil fertility and nutrient storage. The mineral in **PermaMatrix® BSP Foundation** is ground from the highest quality volcanic basalt rock. Massive stones from Central Oregon's legendary Cascade Mountains are milled to produce a finely ground product that releases essential minerals and nutrients that your plants need to flourish. By mimicking the slow process of the Earth's own method for producing healthy soil, **PermaMatrix® BSP Foundation** aids in the regeneration of your soil and works to kick-start the biological processes required for optimal and sustainable plant growth.

Key Component — Biochar

PermaMatrix® BSP Foundation is rich in biological carbon—biochar. Biochar is the carbon remains of pyrolyzed biomass—the thermal decomposition of organic material at elevated temperatures made in the absence of oxygen. Used as a soil enhancement, biochar is also a carbon sequestration methodology that reduces the impacts of climate change. Biochar provides habitat for a variety of agriculturally important microorganisms resulting in greatly improved soil microbiological properties. The pore space in biochar provides ideal protection for microorganisms from predators and greatly improves the moisture retention capacity of the soil.

WARRANTY: PermaMatrix Inc. warrants that its products are free from defects and will perform as stated in this document. PermaMatrix Inc. will not warrant that the product will perform under unlimited circumstances that are caused by variables such as the soil surface condition, installation methods, and/or weather conditions.

Key Component — Organics

PermaMatrix® BSP Foundation is high in organic matter that performs several critical soil functions. Organic matter enhances water holding capacity, provides plant nutrients and improves root development through Mycorrhizal relationships developed in the soil. Organic soils create healthy plants that can help reduce the severity and costs of natural phenomena such as drought, flood, and disease.

PermaMatrix BSP Foundation
General Purpose Biotic Soil Amendment for All Plants

CONTAINS NON-PLANT FOOD INGREDIENTS
ACTIVE INGREDIENTS 3.5%

Microbial Inoculants (Nitrogen Fixers):

Azospirillum lipoferum.....	2.76x108 CFU/lb
Azospirillum brasilense.....	2.76x108 CFU/lb

Microbial Inoculants (Biochemical Decomposers):

Bacillus subtilis.....	9.12x1011 CFU/lb
Bacillus licheniformis.....	7.30x1011 CFU/lb
Bacillus amyloliquefaciens.....	1.82x1011 CFU/lb

Endomycorrhizal Fungi:

Glomus intraradices.....	1.1 propagules/g
Glomus mosseae.....	1.1 propagules/g
Glomus aggregatum.....	1.1 propagules/g
Glomus etunicatum.....	1.1 propagules/g

Ectomycorrhizal Fungi:

Pisolithus tinctorius.....	3,964 propagules/g
Rhizopogon villosullus.....	110 propagules/g
Rhizopogon luteolus.....	110 propagules/g
Rhizopogon amylopogon.....	110 propagules/g
Rhizopogon fulvigleba.....	110 propagules/g
Scleroderma cepa.....	220 propagules/g
Scleroderma citrinum.....	220 propagules/g

OTHER SOIL AMENDING INGREDIENTS 96.5%

Soil Amending Ingredients: Basalt, Reed Sedge Peat, Doug Fir Forest Biochar

Directions for use: Broadcast, Drill or Apply by Hand to all soils to enhance biological activity

Application Rates: See www.permamatrixbsp.com/apprates

Purpose: Nitrogen fixation and Biochemical Decomposition

Storage: Store in a cool dry place

PermaMatrix Inc. PO Box 1210, Fairview, OR 97024 www.permamatrixbsp.com
Information regarding the contents and levels of metals in this product is available on the internet at <http://www.aapfco.org/metals.htm>