

Competitive Comparison

Profile Outperforms ALL Other Amendments by Delivering High Porosity, High CEC, High Stability and by Meeting USGA® Particle Size Recommendations

Profile:

Engineered from a blend of minerals, which are primarily silica and illite clay. The mineral is kiln fired in a computer controlled process changing into a Porous Ceramic. Excellent stability, uniform particle size and dust-free. The mineral make up of Profile provides a high CEC.

Zeolite:

Non kiln fired mineral that can be dusty and brittle affecting stability. High CEC, but varies tremendously by deposits and mining practices. Many zeolites are high in raw clay or sodium. Zeolites do not provide high internal porosity, which is balanced between capillary and non capillary pore space. Zeolites are often sold as cat litter and pool or fish tank filtration.

Diatomaceous earth:

DE is primarily made of prehistoric diatoms (single celled algae). Some DE is kiln fired and some is not. DE can be dusty and brittle, but may be extruded to reduce dust and increase stability. DE provides good pore space, but is less stable than Profile especially non-fired DE. DE has a lower CEC than Profile. Non-fired DE may have CEC due to raw clay content which can effect percolation rates. DE is often used in filtration systems.

Kiln fired shales and granite:

These products are typically dark gray in color. Shale and granite are made primarily of quartz and are very similar to sand. The porosity is low. They usually have a very low CEC. The materials are often very dusty. Shale is generally stable.

The following charts provide recent test results of materials promoted as soil amendments in 1996. Amendments represent the leading products sold for each category.

Profile Has Excellent Stability

Product Stability: BME Geotechnical Labs

% Degradation is simulated over 20 year time span. USGA requires stability of at least 12.5%

	Profile	Zeolite	DE Fired	DE Non-Fired	Shale/Granite
ASTM C88 Stability	2.8%	5.1%	8.6%	13.5%	3.1%
Static Degradation	3.5%	10.5%	10.2%	20.0%	1.6%

Profile Increases Water Holding And Drainage

USGA® Physical Analysis: Tifton Physical Soil Testing Laboratory, Inc.

Only Profile increased drainage and water holding at the same time—consistent with Ohio State research.

90/10 Sand/Amendment Mix

	100% Sand	w/Peat	w/Profile	w/Zeolite	w/DE Fired	w/DE Non-Fired	w/Shale or Granite
<i>Perk Rate inches/hour</i> Saturated Hydraulic Conductivity USGA	26.6	20.8	29.7	18.4	21.2	18.2	23.8
Non Capillary Pore USGA	21.4	20.7	22.8	23.5	23.3	22.2	23.7
Capillary Pore Space USGA	18.1	21.1	19.4	18.4	20.2	20.6	18.3
Total Pore Space USGA	39.5	41.8	42.2	41.9	43.5	42.8	42
Bulk Density USGA	1.6	1.5	1.5	1.5	1.5	1.5	1.5
Water Retention At Field Capacity USGA	11.3	13.8	12.7	12.1	13.6	13.7	12.0

80/20 Sand/Amendment Mix

	100% Sand	w/Peat	w/Profile	w/Zeolite	w/DE Fired	w/DE Non-Fired	w/Shale or Granite
<i>Perk Rate inches/hour</i> Saturated Hydraulic Conductivity USGA	26.6	14.0	33.0	14.5	16.8	14.8	21.5
Non Capillary Pore USGA	21.4	17.5	24.1	25.4	25.1	23.1	26.1
Capillary Pore Space USGA	18.1	26.6	20.7	18.7	22.4	23.2	18.5
Total Pore Space USGA	39.5	44.1	44.8	44.1	47.5	46.3	44.6
Bulk Density USGA	1.6	1.5	1.5	1.5	1.4	1.4	1.4
Water Retention At Field Capacity USGA	11.3	18.3	14.3	12.9	16.4	16.6	12.8

Test conducted in 1996

Profile Meets USGA® Particle Size Distribution Recommendations

USGA Physical Analysis: Tifton Physical Soil Testing Laboratory, Inc.

Profile meets USGA® particle size distribution recommendations for a greensmix.

Fraction Size Name	Particle Diameter	Recommend	Profile	Zeolite	DE Fired	DE Non-Fired	Shale/Granite
Fine Gravel	2.0-3.4 mm	< 10% combined	0.0	0.0	0.0	0.0	0.1
Very Coarse Sand	1.0-2.0 mm	< 3% Gravel	0.1	13.6	36.5	6.6	11.8
Coarse Sand	0.5-1.0 mm		52.0	63.3	44.1	76.1	45.1
Medium Sand	0.25-0.50 mm	> 60%	46.6	22.0	18.1	12.0	20.9
Fine Sand	0.15-0.25 mm	< 20%	1.2	0.3	0.6	1.8	10.5
Very Fine Sand	0.05-0.15 mm	Total < 10%	0.1	0.8	0.7	3.5	11.6

Samples tested 1/21/97

 = Out of recommended range

Profile Provides High CEC

CEC Cation Exchange Analysis: South Dakota School of Mines

Analysis of 5 minerals important to root development.

	Profile	Zeolite	DE Fired	DE Non-Fired	Shale/Granite
Phosphorus	0.5	0.5	0.5	0.5	0.5
Iron	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Magnesium	2.5	2.5	0.5	0.1	0.1
Calcium	10.15	11.15	0.9	8.8 from clay	0.6
Sodium	0.2	1.3	0.3	0.3	0.15
Potassium	1.1	2.05	0.3	1.35 from clay	0.25
CEC	14.5	17.55	2.55	11.1	1.65



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