

NORLITE BIO-RETENTION SYSTEM FILL MATERIALS

1.0 GENERAL

- A. Provide three LAYERS of components listed below that will meet the ASTM standards.
1. Drainage Layer: ¾" Expanded Shale
 2. Choker Layer: 3/8" Expanded Shale
 3. Root Zone Media Layer

2.0 PRODUCTS

A. Drainage Layer: ¾" x No. 4 Expanded Shale

1. ASTM C29 Unit Dry Weight loose (38 lbs/cf to 48 lbs/cf)
2. ASTM C127 Specific Gravity to meet 1.25 to 1.40 Dry Bulk
3. ASTM C330 to meet the ASTM Gradation ¾" - #4 size

¾" to #4	
Sieve Size	% Passing
1"	100
¾"	90 - 100
3/8"	20-50
#4	0 – 10

4. The expanded shale must contain **no** clay lumps or any organic impurities.

B. Choker Layer: 3/8" - #8 Rotary Kiln Expanded Shale

1. ASTM C29 Unit Dry Weight loose (40 lb./cf to 48 lb./cf)
2. ASTM C127 Specific Gravity: 1.30 to 1.50 Dry Bulk
3. ASTM C330: ASTM Gradation 3/8" - #8 size

3/8" - #8	
Sieve Size	% Passing
1/2"	100
3/8"	80 -100
#4	5 - 40
#8	0 - 20
#16	0 – 10

4. The expanded shale must contain **no** clay lumps or any organic impurities.

C. ROOT ZONE COMPONENTS

1. Fine Fraction

Sieve Size	% Retained
#4	0-3%
#8	15-30%
#16	45-60%
#30	60-70%
#50	75-83%
#100	83-86%

2. Approved Yard Waste Compost

Mixing Procedure For Root Zone Mix:

Norlite Fines 80%

Approved Compost 20%

* Increase or decrease volume to meet porosity requirement.

A. Final Mixing With Norlite Expanded Shale

1. Saturate the Norlite Expanded Shale with water to ensure proper soil distribution.
2. Mechanically mix 4 parts of the Norlite with one part compost until a uniform distribution of the components is achieved.
3. When stockpiling the finished mix, cover the pile with a plastic tarp to prevent drying out or soil separation from rain.
4. To reduce pH add 0.25 lb. Of elemental sulfur per cubic yard of soil mix to lower pH 0.5 to 1.0 unit.

3.0 Placement

A. Placement Of Drainage Layer

1. Place $\frac{3}{4}$ " Expanded Shale directly over the base layer at specified depth to meet fill and grade shape requirement.

B. Placement Choker Layer

1. Place the $\frac{3}{8}$ " expanded shale directly over the drainage ballast layer at specified depth to meet fill and grade shape requirement.

C. Placement of Root Zone Mix Layer

1. Place mix directly over the Choker layer at specified depth to meet fill and grade shape requirement.