



Foremost Environmental Solutions



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Field Inspection of Isolite®CG with Electron Microscope after Four Years

Subjects	2 mm Used for Four Years	Unused
Bulk Density	0.51	0.52
Individual granule pressure brittle strength KG	3.0	2.8
Water holding ratio %	59.5	59.2
Outward appearance - porous hole ratio %	58.2	57.6
pH	6.6	6.7
SiO ₂	77.9	78.1
Al ₂ O ₃	11.6	11.3
Fe ₂ O ₃	5.4	5.2

This Isolite®CG 2mm, was obtained from a 20% ISOLITE®CG soil mix in a street tree planting. The granules were analyzed and inspected with an electron microscope.

Construction period: 12/87

Study period: 10/92

Conclusion: Isolite®CG did not show any physical changes.

Architectural Specifications:

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Porous Ceramic: Main component is diatomaceous earth

Extruded & cylindrical, 1 mm or 2 mm in diameter

Specific Surface Area - B.E.T. method - 4.6 m² / g-- Mercury Intrusion Method - 20.42 m²/g

Bulk Weight is approximately 850 pounds per cubic yard, or 32 pounds per cubic foot

Porosity: 74% (minimum of 70%)

Chemical Composition

SiO₂: 78%

Al₂O₃: 12%

Fe₂O₃: 5%

All other chemicals (clay) present equal less than 5%, CaO <2.0%, MgO, K₂O, NaO and TiO₂

*Pore Size: <.5 microns = 6% -- .5 to 1 microns = 12% -- 1 to 3 microns = 43%-- >3 microns = 39%***

Pore Characteristics: Continuous, open ended and interconnecting (no dead-end pore space)

Bulk Density: <0.7 g/cc (compared with 1.2g/cc for fired clay, and 1.4g/cc for soil)

Particle Density: 2.27 (compared with 2.56 for sand)

Cation Exchange Capacity: <2 meq/100g

Electrical Conductivity: <0.5 mmhos/cm. (Isolite®CG has no interaction with sodium and is not a significantly charge particle)

Chemically Inert: Has no direct effect on soil chemistry (pH is 7)

ASTM-88 degradation % loss - < 3%

***Important: ISOLITE'S specifications are unique. Pore space distribution is important in determining water release and entry of bacteria. The bulk of the pore space must be greater than 1 microns for each of these functions.

Isolite®CG

Isolite®CG Properties

- **Manufacturing Processes:** made from **diatomaceous earth** and small amount of clay particles (porous ceramic), extruded for size consistency, and dried using proprietary combustion

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- **Water Retention:** absorbs and wicks water exceedingly well - does not swell or soften, water is released slowly
- **Chemically inert Particle Density:** 2.27 (compared to 2.56 for sand)
- **Pore characteristics:** continuous, interconnected and open ended; thereby permitting easy inoculation with microbes
- **Pore size:** 0.1 to 2 microns with 30% being over 1 micron
- **Life Expectancy:** has an indefinite lifetime and can be reused