

Foremost Environmental Solutions



Office: 303.985.0609
Cell: 720.363.0548
www.foremostsolutions.com
isolite@ix.netcom.com
Lakewood, Colorado

ISOLITE®CG FOR NURSERIES AND GREENHOUSES

ISOLITE®CG - POROUS CERAMIC

Trees & Shrubs

Soil Type	Sandy	Clay	
Size of plant			Pounds of Isolite®CG to be used
1 gallon	X		1/2 lb.
1 gallon		X	1 lb.
5 gallon	X		3 lbs.
5 gallon		X	5 lbs.
2" caliper tree	X		15 lbs. (One-third of 44 lb. bag)
2" caliper tree		X	30 lbs. (Two-thirds of 44 lb. bag)
4" caliper tree	X		44 lbs. (Full bag)
4" caliper tree		X	88 lbs. (Two full 44 lb. bags)
8' Evergreen type	X		15 lbs.
8' Evergreen type		X	30 lbs.
12' Evergreen type	X		44 lbs.
12' Evergreen type		X	88 lbs.

This is a permanent soil amendment that is extruded and combusted. In sandy-type soils it holds and makes water available to plants, while in clay-type soils, ISOLITE®CG opens up the soil and allows for better percolation rate. It is a one-time application. Note: Many other product representatives will often tell you their product is cheaper than ISOLITE®CG, but often fail to tell you their application rate is three times as high. Note: ISOLITE®CG is diatomaceous earth-based. Many other products are clay-based -- look at C.E.C. and pore size distribution. The majority of the pores in any product for soil amending should be larger than 1 microns. If the pores are smaller than this number, microbes will not be able to get into them and water release may be difficult.

Isolite®CG Application Instructions For Nursery / Greenhouse Use

Nursery and greenhouse growers need information about the quantity of ISOLITE®CG they will need to incorporate into their mix. The next page will guide you and them through the process of being able to determine how much ISOLITE®CG, by weight, will be needed in various soil mixes. Most nurseries/greenhouses use 2 1/4", 4", 1 gallon and 5 gallon size pots. Some operations may work with different sized pots, but you should be able to determine the volume of ISOLITE®CG needed from the formula: $\pi r^2 h$, where π is 3.14, r^2 is the radius of the pot squared, and h is the height of the pot. In case of square or rectangular pots, you may also use $L \times W \times H$, where L is length, W is width, and H is the height of the pot (soil line height).

Keep in mind, however, that all percentage mixtures are by volume and the easy way to measure is with a scoop or container, etc. (i.e., 4 scoops to 1 scoop ISOLITE®CG for a 20% mixture, etc.)

Once it is known what an individual greenhouse or nursery costs are, return on investment can be calculated. ISOLITE®CG can eliminate the need for perlite, as well as a large portion of the vermiculite in most mixes. Additionally, ISOLITE®CG can shorten the time from planting to market, and it can increase shelf life. ISOLITE®CG increases flower production, as well as the roots/leaf surface area. This leads to a larger and higher-quality plant, which equates to increased profits.

Specification for Backfill of Street Trees or Shrubs

TREES

Caliper - inches/cm	Ball Size - inches/cm	ISOLITE - Pounds /Kg
1 1/2" / 3.81	22" 55.88	10 4.5
2" / 5.08	24" 60.96	13 5.89
2 1/2" / 6.35	28" 71.12	21 9.52
3" / 7.62	32" 81.28	32 14.51
3 1/2" / 8.89	36" 91.44	45 20.41
4" / 10.16	42" 106.68	72 32.65
4 1/2" / 11.43	44" 111.76	82 37.19
5" / 12.7	54" 137.16	152 68.94

SHRUBS

Height - Ft/m	Ball or Container Size	ISOLITE - pounds/Kg
1 1/2' to 2' / .457 to .609	5 gallon	1 .45
2' to 3' / .609 to .91	7 gallon	1.5 .68
3' to 4' / .91 to 1.21	15 gallon	2.5 1.13
4' to 5' / 1.21 to 1.52	15" 38.1	3 1.36
5' to 6' / 1.52 to 1.82	16" 40.64	4 1.81
6' to 8' / 1.82 to 2.43	18" 45.72	5.5 2.49

These rates are based on 10% by volume if the hole is dug double the size of the rootball and then backfilled with soil containing ISOLITE.

For bed areas, use 2 pounds Isolite/square foot, rototilled 6" deep.

ISOLITE weighs 850 pounds per cubic yard or 32 pounds per cubic foot.

APPLICATION RATE CHART GREENHOUSE USE FOR ISOLITE®CG

POT SIZE	10%	15%	20%
2 1/4" / 5.7 cm	.021 lb. .33 oz. 9.35 g	.032 lb. .51 oz. 14.45 g	.043 lb. .68 oz. 19.28 g
4" / 10.16 cm	.09 lb. 1.4 oz. 39.7 g	.14 lb. 2.24 oz. 63.5 g	.19 lb. 3 oz. 85 g
1 gallon / 3.78 L 6" / 15.24 cm	.31 lb. 27.2 oz. 771 g	.47 lb. 7.5 oz. 212.6 g	.63 lb. 10 oz. 283.5 g
Cubic Foot / .028 Meters	3.1 lbs. 49.6 oz. 1,406 g	2.6 lbs. 41.6 oz. 1,179 g	3.48 lbs. 55.7 oz. 1,579 g
Cubic Yard / .76 Meters	85 lbs. 1,360 oz. 38,550 g	130 lbs. 2,080 oz. 58,968 g	170 lbs. 2,720 oz. 77,112 g

ISOLITE®CG weighs approximately 32 lbs. (14.5 Kg) per cubic foot

Architectural Specifications:

Porous Ceramic: Main component is diatomaceous earth

Extruded & cylindrical, 1 mm or 2 mm in diameter

Specific Surface Area - B.E.T. method - $4.6 \text{ m}^2 / \text{g}$ -- Mercury Intrusion Method - $20.42 \text{ m}^2/\text{g}$

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, Na₂O 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 has no interaction with sodium and is not a significantly charge particle)

Chemically Inert: Has no direct affect 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 Properties

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