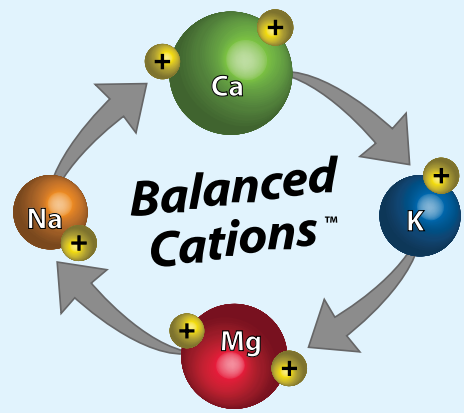


# Balanced Soil Is More Than JUST pH!



## FEED THE SOIL AND THE SOIL WILL FEED THE PLANT.

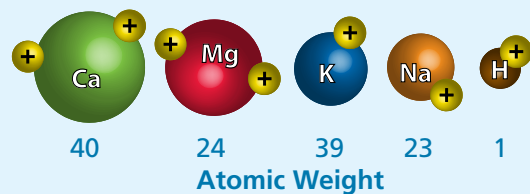
The percentage saturation for each of the cations will usually be within the following ranges for optimum performance:

- Calcium (Ca) . . . . . 65 - 70 %
- Magnesium (Mg) . . . 10 - 18 %
- Potassium (K) . . . . . 3 - 6 %
- Sodium (Na) . . . . . 1 - 2 %
- Hydrogen (H) . . . . . 10 - 15 %

The soil colloid has degrees of affinity for various basic cations. This bonding increases with larger atomic weight, ion size and amount of charge.

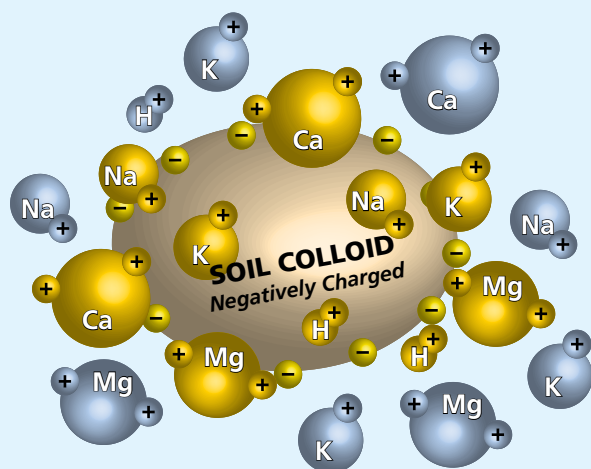
### CATION COMPARISON

Basic Cations



### THE CATIONIC EXCHANGE COMPLEX

The mixture of Water, Soil, Colloids and Cations



Exchangeable cations are those absorbed on the colloid. Water soluble cations are those ionized in the soil solution. CEC is determined by the number of negative sights on the colloids.

Understanding base saturation, one of the most important properties of soil, can help us better understand and manage our soil. Cation Exchange Capacity (CEC) measures the soil's ability to hold nutrients such as potassium (K), magnesium (Mg), and calcium (C), as well as the other positively charged ions such as sodium (Na) and hydrogen (H). The CEC of a soil is dependent upon the amounts and types of clay minerals and organic matter present. Although high CEC soils can hold more nutrients, good soil management is required if these soils are to be more productive. Percent base saturation refers to the proportion of the CEC occupied by a given cation (an ion with a positive charge such as Ca, Mg, or K) or combination of cations referred to as bases.\*

A properly balanced base saturation of the soil will provide optimum growing conditions for quality turf and reduced disease pressures.

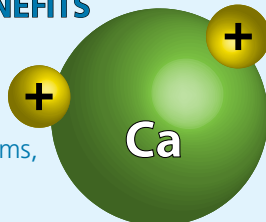
### IDEAL BASE SATURATIONS

C.E.C. meq / 100 gram	Calcium	Magnesium	Potassium
	base saturation ( ppm )	base saturation ( ppm )	base saturation ( ppm )
20	2720	288.0	390.0
18	2448	259.2	351.0
16	2176	230.4	312.0
14	1904	201.6	273.0
12	1632	172.8	234.0
10	1360	144.0	195.0
8	1088	115.2	156.0
6	816	86.4	117.0
4	544	57.6	78.0
2	272	28.8	39.0

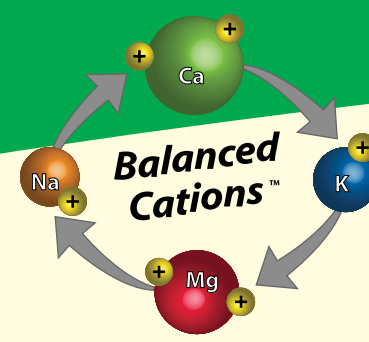
The process of cationic exchange begins when water and basic cations (Ca, Mg, K, Na) meet the soil colloid. Based on the soil colloid's degree of cation affinity, Calcium (Ca) will attach to the soil colloid releasing the smaller cations. The released cations (Mg<sup>++</sup>, Na<sup>+</sup>, K<sup>+</sup>, H<sup>+</sup>) are solubilized in the soil solution and made available to the plant or removed from the soil profile. As hydrogen is released from the soil colloid into the soil solution, acidity is reduced and pH is raised.

### CALCIUM BENEFITS

- Turf stresses are reduced
- Manages plant's rate of water uptake
- Integral part of cell walls in stems, roots and leaves
- Necessary for cell division
- Toxic substances within cells are neutralized
- Makes phosphorus and micro nutrients more readily available
- Assists in the utilization of nitrogen
- Soil texture is improved



\* A & L Plains Laboratories, Inc.



# VERDE-CAL<sup>®</sup>

Enhanced Calcitic Limestone

## 37% Calcium enhanced with thCa™

Calcitic limestone combined with thCa™, an organic complexing agent, converts insoluble Calcium (Ca) compounds to soluble and available Calcium (Ca). This allows for greater delivery of Calcium (Ca) to the exchange sites on the soil colloid. VERDE-CAL contains Aqua-Aid Penetrant which synergizes with thCa™ providing uniform nutrient movement into the entire soil profile. Aqua-Aid Penetrant also provides water management benefits with each VERDE-CAL application.

### FEATURES AND BENEFITS OF USING VERDE-CAL

- 500 pounds will yield results equivalent to 1 ton of typical lime
- Reduces Hydrogen (H), Sodium (Na), and Chlorine (Cl) in the plant and soil
- Improves germination, stimulates root growth, and enhances microbial activity
- Increases essential nutrient absorption and translocation
- Improves soil structure (flocculation, water infiltration)
- Supplies optimal Calcium (Ca) levels to plant cells to strengthen the plant's resistance to disease
- Balances the Ca/N ratio in the plant
- Quicker response at lower rates. Requires 1/4 the rate of standard lime per application

### APPLICATION RECOMMENDATIONS

To maintain optimum pH and growing conditions, apply VERDE-CAL at 5 pounds per 1,000 ft<sup>2</sup> or 220 pounds per acre (2.5 kg per 100 m<sup>2</sup> or 250 kg per hectare) at least twice per growing season, or as needed. Soil test recommendations should be used to determine liming needs.

To adjust pH, apply VERDE-CAL at 10 pounds per 1,000 ft<sup>2</sup> or 435 pounds per acre (5.0 kg per 100 m<sup>2</sup> or 500 kg per hectare), or as needed. In most soils this will raise the soil pH up to one full point. Retest and reapply, if needed, at this rate.

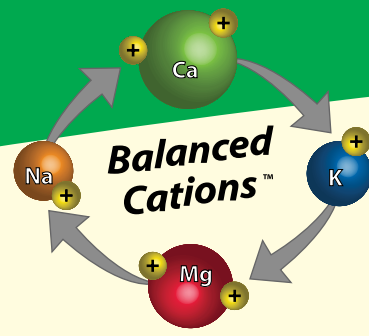
Available in Greens Grade (SGN 90) and Coarse Grade (SGN 210).

VERDE-CAL<sup>®</sup> Products of AQUA-AID

Distributed by:



5484 S. Old Carriage Road  
Rocky Mount, NC 27803  
800-394-1551 • 252-937-4107  
www.aquaaid.com



# VERDE-CAL® G

Enhanced Gypsum

## 22% Calcium enhanced with thCa™

### GUARANTEED ANALYSIS

Calcium (Ca) .....	22.50%
Sulfur (S) .....	19.00%
Calcium Sulfate (CaSO <sub>4</sub> •2H <sub>2</sub> O) .....	90.00%

Calcium Sulfate (gypsum) is combined with thCa™, an organic complexing agent, to make the Calcium (Ca) in gypsum more readily available for soil or plant use without effecting or raising pH. **VERDE-CAL G** contains Aqua-Aid Penetrant which synergizes with thCa™ providing uniform nutrient movement into the entire soil profile. Aqua-Aid Penetrant also provides water management benefits with each **VERDE-CAL G** application.

### FEATURES AND BENEFITS OF USING VERDE-CAL G

- 500 pounds will yield results equivalent to 1 ton of typical gypsum
- Leaches excessive amounts of Sodium (Na) and Magnesium (Mg) from soil colloids
- Supplies Calcium (Ca) without raising pH
- Helps loosen compacted, heavy clay soils
- Excellent source of Sulfate Sulfur. Readily available to the soil and plant
- Improves soil aeration and water percolation
- Ideal for turf, shrubs, and flowers
- Quicker response at lower rates. Requires 1/4 the rate of standard gypsum per application

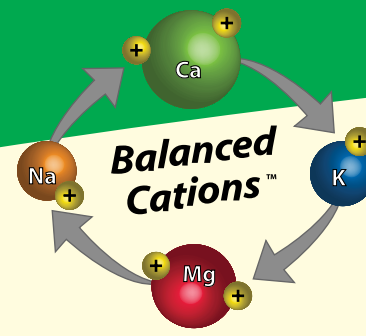
### APPLICATION RECOMMENDATIONS

For continued optimal growing conditions, apply **VERDE-CAL G** at 5 pounds per 1,000 ft<sup>2</sup> or 220 pounds per acre (2.5 kg per 100 m<sup>2</sup> or 250 kg per hectare) monthly through the growing season, or as needed. Soil test recommendations should be followed.

To correct high sodium or magnesium levels or to loosen clay soils, apply **VERDE-CAL G** at 10 pounds per 1,000 ft<sup>2</sup> or 435 pounds per acre (5.0 kg per 100 m<sup>2</sup> or 500 kg per hectare) once or twice per growing season, or as needed. A follow up soil test is recommended and reapply, if needed, at optimal growing condition rate.

To correct high sodium levels on Greens and Tees or when using effluent water, apply **VERDE-CAL G** at 8 pounds per 1,000 ft<sup>2</sup> (4.0 kg per 100 m<sup>2</sup>) every month during the growing season.

Available in Greens Grade (SGN 85)  
and Coarse Grade (SGN 185).



# 0-0-15

# VERDE-CAL® K PLUS

Sulfate of Potash plus VERDE-CAL G and L-Amino Acids

## 7% Calcium enhanced with thCa™ and L-Amino Acids

### GUARANTEED ANALYSIS

Soluble Potash (K <sub>2</sub> O) .....	15.00%
Calcium (Ca) .....	7.00%
Magnesium (Mg) .....	2.00%
Sulfur (S) .....	14.50%
Iron (Fe) .....	4.00%
Manganese (Mn) .....	0.25%

Sulfate of Potash blended with VERDE-CAL G (Enhanced Gypsum), thCa™ organic complexing agent, and L-Amino acids make **VERDE-CAL K PLUS** an ideal product that supplies essential nutrients of Potassium, Calcium, Magnesium, Sulfur, Iron (from Iron Humate), and Manganese all in one application. Great for periods of stress or monthly maintenance, **VERDE-CAL K PLUS** can be used on all turf and ornamentals.

### FEATURES AND BENEFITS OF USING VERDE-CAL K PLUS

- Provides premium Potassium (K), Magnesium (Mg), Calcium (Ca), Iron (Fe), and Manganese (Mn)
- Supplies Calcium (Ca) without raising pH
- 100% homogenous formulation
- Maintains optimal levels of essential nutrients: K, Ca, Mg, S, Fe, Mn
- Micro particle for maximum coverage
- Ideal for all turf and ornamentals

### APPLICATION RECOMMENDATIONS

Apply **VERDE-CAL K PLUS** monthly or bi-weekly.

For continued optimal growing conditions, apply **VERDE-CAL K PLUS** at 5 pounds per 1,000 ft<sup>2</sup> or 220 pounds per acre (2.5 kg per 100 m<sup>2</sup> or 250 kg per hectare) monthly through the growing season, or as needed. Soil test recommendations should be followed.

When applying bi-weekly, apply **VERDE-CAL K PLUS** at 4 pounds per 1,000 ft<sup>2</sup> or 174 pounds per acre (1.9 kg per 100 m<sup>2</sup> or 195 kg per hectare) every two weeks throughout the growing season.

Available in Greens Grade (SGN 85).