



Technical Data Sheet

Revised: 10/07

SapHGuard pH Buffer

Product Make-Up: Sodium Bicarbonate

Package: 2 lb. Bottle

Treats: ½ Cup Treats 1,000 Gallons

Toxic: Non-Toxic When Used As Directed

Warnings: Keep Out Of Reach Of Children, Not For Human Consumption, Store At Room Temp.

Shelf Life: 3 Years

MSDS Sheet: Available Upon Request

SapHGuard pH Buffer

All ponds are affected by pH. Alkalinity or acidity will determine whether the pH is high or low, respectively. In order to maintain pH at a constant it requires buffering the system, which means controlling the alkalinity of the water. Alkalinity is the capacity of a natural water system to resist change in pH and is measured in terms of bicarbonate and carbonate ions available in the aquatic system.

Mixtures of weak acids and their salts are called buffers. Carbonate is usually the most significant buffer system in natural waters and is the system that is usually responsible for pH maintenance in aquatic ecosystems. CrystalClear® SapHGuard is a pH buffer solution designed to resist pH change because of the ionization equilibrium between the weak acid and weak base changes in a manner that allows them to consume hydrogen ions or hydroxide ions that are added to the system. The initial pH of an aquatic system will be controlled by the ionization constant that exists, which depends on the relative concentration of acid or base and its salt. Solutions at pH below 7.0 are acid, those above 7.0 are basic (alkaline).

CrystalClear® SapHGuard resists changes in pH by releasing or absorbing hydrogen ion as necessary to maintain a steady state. The level of sodium bicarbonate and other buffering agents present in the system help establish the equilibrium pH. If a hydrogen ion, from respiration or the dissolution of atmospheric carbon dioxide, is added to a buffered water system, it will be captured by carbonate to form bicarbonate. Thus there will be no addition of free hydrogen ions to the system and the pH will not be reduced. As long as there is a source of hydrogen ions from bicarbonate, the pH of an aquatic system will not rise.

CrystalClear® SapHGuard will add alkalinity to an aquatic environment. As mentioned above alkalinity is the measure of carbonate concentration or the buffering capacity of water. It is essential for all water gardens and ponds to maintain a buffering capacity between 80-240 ppm for proper pH stabilization. A properly buffered system resists changes in pH due to acid rain and other external factors. Alkalinity is also essential for bacteria to complete the nitrification process which allows ammonia to be converted to nitrite and nitrite to nitrate.

CrystalClear® SapHGuard will help prevent wide pH swings which are very common from dawn to dusk due to respiration and photosynthesis. If buffering capacity is too low, CrystalClear® SapHGuard will increase pH stability and will increase buffering capacity. The use of sodium bicarbonate for the primary ingredient in CrystalClear® SapHGuard works extremely well for the water garden enthusiast. CrystalClear® SapHGuard is safe for fish and plants, it has a three year shelf life and it accomplishes its function (stabilizing pH) slowly and safely.