CLINOBRITE®

POOL FILTER MEDIUM

A NATURAL ZEOLITE FOR PURE AND POLISHED POOL WATER.

Sparkling healthy pool water with a significantly reduced Chlorine demand. It's a true **21 st century filter medium,** with unique ion exchange, molecular sieving, and particulate filtration properties. Discerning pool owners and industrial filter operators choose Clinobrite®.

WHY USE CLINOBRITE®?

Crystal clear swimming pool water!

- Easy to use - A direct replacement for outdated pool sand and glass
- Reduces Chlorine demand
- No more green pool water
- No more burning eyes
- No more unpleasant pool smell
- Absorb dangerous heavy metals thereby protecting your health
- Saves you money by removing Chlorine consuming Ammonia
- Environmentaly friendly

INSTRUCTIONS FOR POOL FILTERS

STEP 1

Fill half the filter tank with water.

STEP 2

Slowly add Clinobrite® to half the tank volume
&
close the lid.

STEP 3

In intervals of approximately 15 seconds, alternate several times between the backwash and the rinse cycle on your filter valve. This removes any fines generated during transport.

STEP 4

- Top up with Clinobrite® to the normal sand level and close the lid.
- Repeat step 3 (Alternate between the backwash and the rinse cycle).
- Before switching to the filter cycle, do a backwash water clarity check by either observing the clear window on the filter valve or examining the clarity of the water exiting your discharge pipe.

A DIRECT SUBSTITUTE FOR FILTER SAND

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Reduce Swimming Pool Chlorination Costs Using Pratley Clinobrite.

Clinobrite is a natural zeolite and a direct substitute for filter sand. Unlike sand, it will reduce chlorination costs by minimizing ammoniacal nitrogen in swimming pool water. In order to explain this, let's take a look at some swimming pool chemistry.

When chlorine gas, hypochlorites or chlor-isocyanurates are added to water, two important chemical species are produced: [**hypochlorite** ions OCl^-] and **hypochlorous acid [HOCl]**. Hypochlorous acid is about 80 to 100 times more efficient as a biocide compared to the hypochlorite ion.

Hypochlorous acid only exists below pH 8.3, and is the dominant chlorine species in water below pH 7.4. This is the reason that pool pH values have to be adjusted into a narrow pH band for chlorine-based biocides to work effectively, and accounts for all the sales of acids, soda ash, pH test kits, chlorine test kits etc.

When "Pool Chlorine Products" are added to water, some of the reactions are as follows:

$Ca(OCl)_2 = Ca^{++} + 2(OCl)^-$

(dissociation into calcium and hypochlorite ions)

$H^+ + (OCl)^- = HOCl$

(Formation of hypochlorous acid: – pH dependant, ideal at 7.2)

For hypochlorite to work properly, it **must** be dosed at optimum pH values. Municipal waters are often close to pH 7.2 **when added to the pool**. However, on standing, waters change pH, generally by losing carbon dioxide to the atmosphere. Carbon dioxide in water is weakly acidic, and if it is lost to the air, this causes pH to **rise**. Adding pool acid (usually 30% hydrochloric acid) drags the pH back **down** again. **But** the acid then reacts with bicarbonate ions in the water to liberate carbon dioxide: this gets lost to the atmosphere and the pH **goes up again.** Hypochlorite compounds themselves elevate the water's pH. The result is that pool water pH **NEVER REMAINS OPTIMAL FOR CHLORINATION!** It is always moving the wrong way.

Ammonia and its compounds in pool water react very rapidly with hypochlorous acid to form the chloramines:

$NH_3 + HOCl = NH_2Cl + H_2O$ monochloramine

$NH_2Cl + HOCl = NHCl_2 + H_2O$ dichloramine

The chloramines are **weak** but persistent disinfectants, and they are responsible for the so-called "chlorine" smell on the skin after bathing in a chlorinated swimming pool. The ammonia – hypochlorous acid reactions go faster as pH rises, thus further depleting the availability of the one strong disinfectant. For economical disinfection with chlorine based products, ammonia and its compounds **must** be removed from water. Since the ammonia content will rise with bathing loads, the removal needs to be accomplished continuously by the filtration process. However, sand filtration does not remove ammonia at all: this is best accomplished by **Clinobrite filters.**

Unlike sands, which physically trap dirt in interstices between adjacent angular grains as well as absorbing iron and manganese, Clinobrite can act as **filters on the molecular scale.** The Clinobrite can remove many types of ions and compounds from the water, including **ammonium, calcium, magnesium, iron, manganese, copper, zinc, lead and others**, by sorption and by ion-exchange. Physical dirt entrapment also occurs, and also true **micro-filtration**, where minute particles are trapped within Clinobrite pore spaces. In practice, a Clinobrite filter can remove **40 – 50% more physical dirt than a sand filter**, giving a longer service cycle between backwash operations. Because of its tiny pore spaces, Clinobrite is able to remove much finer particles than a sand filter, and can even trap the tiny cysts of *cryptosporidium* which are becoming a problem in municipal waters worldwide.

The use of Clinobrite can markedly reduce chlorine demand by eliminating ammonia and nitrogen compounds. The presence of ammonia, nitrogen and phosphorus in pool water leads to the development of algae – black and blue-green varieties. Thunder activity produces atmospheric nitrates which enter rainwater and thence pool water. Together with the ammonia compounds these nutrients allow rapid algal development, leading to green swimming pools and high chlorine demand. In short, no ammonia leads to less algae.

In a typical 50 000 litre swimming pool, the usual treatment regimen using granular hypochlorite (without stabilizers) is to add "a cup every day", with the cup being provided as the lid of the product container. This corresponds to approximately 90g granular hypochlorite daily:- between 3.6 and 4kg per month. (The density of the hypochlorite varies between manufacturers and with the progressive absorption of water)

Many factors contribute to chlorine demand, but a typical swimming pool installation will **save about 25 – 30% of the unstabilised granular chlorine usage** if ammoniacal nitrogen is minimized using Pratley Clinobrite. The saving could be even greater with high bathing loads.

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For more information on Pratley Clinobrite contact sales@pratley.co.za