
Algae Control With BromMax™ **(BromMax as an Effective Algaecide)**

PROBLEM

The issue is often raised about the efficacy of BromMax and other similar stabilized bromine products in regards to its chemical effectiveness against algae. Although good slime and bacterial control is self evident and proven, it appears some water treatment providers are still using algaecides such as TBZ and copper sulfate to supplement their stabilized liquid bromine applications. We herein suggest an alternative method of application that will greatly enhance the algae control issue, and will likely eliminate the need for supplemental additions of alternative algaecides such as WSCP, TBZ or copper sulfate.

BACKGROUND

Liquid bromine biocides, such as BromMax, show good-excellent slime, biofilm and bacteria control at levels of 0.5-1.5 ppm (reported as total chlorine). The typical dosing regime typically is a slug or intermittent dosing every one, two or three days (depending on the system) which gives acceptable microbiological control. This method involves using a timer which engages a diaphragm pump. The pump runs for a period of time until the residual rises to the predetermined limit and shuts off (usually 1-1.5 ppm as total chlorine).

CHEMISTRY

Liquid bromine products are very active in terms of biocidal control, but the compounds are weak oxidizers by nature; it is the inherent reason they are so much more stable over longer periods of time in these recirculating water systems. Algae, on the other hand, are quite robust and tolerant of low-level oxidizers. However, we have found that BromMax can be utilized as an effective algaestat and algaecide if the product attains a concentration high enough to overcome the algae's natural resistance to stabilized liquid bromine. It is a matter of increasing the concentration of BromMax above the *threshold* level for algae. This can be accomplished easily and at the same economic rate or costs as used in normal intermittent slug dosing. Our research has shown this resistance threshold to be around 2-3 ppm, reported as total chlorine.

ALTERNATIVE DOSING

Rather than the traditional chemical diaphragm pump used for most applications we suggest the water treatment specialist use an eductor (injector) to apply the liquid BromMax. By choosing the proper eductor, one can inject all the necessary biocide in a matter of seconds or minutes as opposed to one or two hours of feed time. The result is the same amount of biocide is injected into the system but the peak concentration may be 2-4 times higher than can be reached using the conventional methods. The BromMax will quickly achieve levels of 2-5 ppm as chlorine, which is quite sufficient to eliminate any troublesome algae that may be in the

treatment loop. In most cases the separate addition of a non-oxidizing algaecide has been eliminated entirely.

MECHANICAL HINTS

We recommend a company like Mazzei Injector Corp. as the source of the eductor. They can be contacted at 661-363-6500 or @www.mazzei-injector.com. Small systems may wish to use an eductor such as the model 484, for example. The motive (water) flow is 2.3 gpm and the liquid suction is 0.3 gpm (1,100 ml/min) at 20 psi water inlet pressure. Larger or smaller eductor-injectors are available to suit almost any system.

Rather than the timer turning on a chemical feed pump, the electrical outlet would instead open the water solenoid to the eductor, allowing water to flow and creating the suction vacuum which *pulls* chemical into the system, rather than being *pushed* by a diaphragm pump. The advantages are numerous:

- Vacuum systems are not subject to air or gas “vapor locking”, such as with mechanical pumps.
- Losing prime of the system or pump is not an issue, as the vacuum eductor overcomes loss of prime very quickly.
- One can achieve much higher residuals of the liquid bromine using the same amount of product, which will result in better over-all system control. In many cases the amount of product normally utilized can be reduced further. (However, remember that in all cases you will use 35%-40% less BromMax to achieve the same residual as the competitor’s product. But, in the case of Nalco’s product, you will use almost 50% less!)
- Eductors are very inexpensive. A typical eductor costs about \$60-\$70. We recommend they be replaced every 3rd year, as the internal orifice becomes worn with time, and loss of vacuum (chemical) will result.
- The only moving part would be the water solenoid, which is inexpensive.
- Eductor systems require less than half the level of service as electronic pump-based systems...as long as there is adequate inlet water pressure available!
- Do not submerge the end of the discharge pipe or tubing into or under the water. Otherwise, when the system is off the water may siphon back into the BromMax container.
- In most cases, if using an eductor, be sure to use a larger pipe size than is used on the discharge side of the eductor to reduce back-pressure (which will interfere with liquid suction efficiency).

Please feel free to contact us with your thoughts and feed-back. We are at your service always.

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