Blue Earth Products®

Clearitas Application Guidelines

Essential instructions for the planning and application of Clearitas water treatment.

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Note:

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General Information

Water quality degradation is a common problem in the distribution lines and tanks of municipal water systems and can take the form of taste and odor problems, increased disinfection byproducts, nitrification, and premature disinfectant residual loss. These problems are often caused by a mix of organic and inorganic films and deposits that build up and adhere to all wetted surfaces in distribution pipes and tanks.

The Clearitas water additive improves water quality by addressing a main source of the problem: distribution system fouling. Clearitas softens existing fouling and disrupts fouling mechanisms thereby reducing re-occurrences. Clearitas is not used as a disinfectant but is used alongside an existing disinfectant residual. Clearitas is compatible with all common potable water treatment program chemistries.

Dosage Selection

Clearitas is always dosed into a municipal system's finished water. The water to be treated must have a pre-existing disinfectant residual or a disinfectant must be dosed concurrently with Clearitas*. Disinfectant residuals (either free or combined) should be above 1.0 mg/L total chlorine at the location of Clearitas dosing. In older systems, systems with unlined cast iron pipe or excessively fouled systems, Clearitas should be introduced in a step-wise fashion, starting at a low dose (3 ppm for example) as product and working up to a more normal dose (10 ppm) over a period of weeks. To aid in dosage calculations a conversion table is provided below (Table 1).

Water Treated	Vol. of Clearitas (5 ppm Dosage)	Vol. of Clearitas (10 ppm Dosage)	Vol. of Clearitas (15 ppm Dosage)	Vol. of Clearitas (20 ppm Dosage)
100,000 gpd	0.50 gpd	**1.00 gpd**	1.50 gpd	2.00 gpd
150,000 gpd	0.75 gpd	**1.50 gpd**	2.25 gpd	3.00 gpd
200,000 gpd	1.00 gpd	**2.00 gpd**	3.00 gpd	4.00 gpd
250,000 gpd	1.25 gpd	**2.50 gpd**	3.75 gpd	5.00 gpd
300,000 gpd	1.50 gpd	**3.00 gpd**	4.50 gpd	6.00 gpd
350,000 gpd	1.75 gpd	**3.50 gpd**	5.25 gpd	7.00 gpd
400,000 gpd	2.00 gpd	**4.00 gpd**	6.00 gpd	8.00 gpd
450,000 gpd	2.25 gpd	**4.50 gpd**	6.75 gpd	9.00 gpd
500,000 gpd	2.50 gpd	**5.00 gpd**	7.50 gpd	10.00 gpd

Table 1 – Dosage in gallons based on daily water treated.

* An EPA registered version of Clearitas is available for very small systems without a disinfectant residual.

Product Application

Injection Location

The point of Clearitas injection should be located downstream from the point of primary or secondary disinfectant injection and far enough upstream of any branches to ensure through mixing (Figure 1).

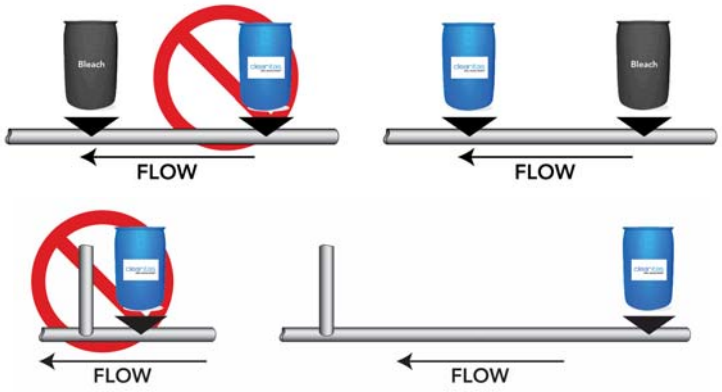

Figure 1 – Install after disinfectant injection and with sufficient distance to ensure mixing prior to pipe branches.

Installing Clearitas prior to a clearwell is advisable only after the clearwell has been chemically cleaned with Top Ultra or CSR Plus (Figure 2).

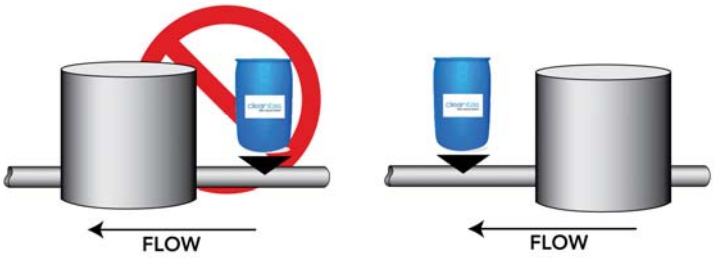

Figure 2 – Install after large soiled tanks and clearwells.

Clearitas can be deployed by metering the product out of a “day tank” or by metering directly out of the shipping container. Using a day tank reduces the number of times the pump loses prime. In either case, the product needs to be positioned close to the injection point, metering pump, and flow meter (if used).

Storage

If storing Clearitas outside, be aware that the product is UV sensitive and must be stored in opaque containers. All Clearitas shipping containers are opaque (Figure 3).

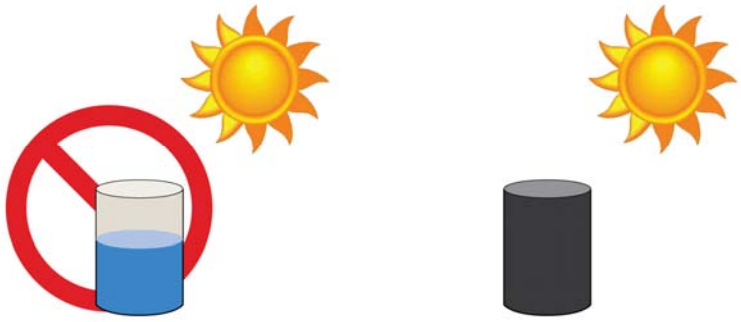

Figure 3 – Clearitas degrades rapidly when exposed to direct sunlight (UV).

Usage Measurement

In all cases the injection system must be designed with a mechanism for measuring product usage. Clearitas dosing cannot be measured as a Clearitas residual in the distribution system. Therefore, Clearitas dosing must be verified by dividing the water treated by the volume of Clearitas used. This can be accomplished with a dip stick, weight scale, level meter, or tick marks on an indoor transparent day tank (never use a transparent container where UV exposure is possible).

Constant or Variable Injection

Flow controlled proportional chemical injection is ideal. Proportional chemical dosing prevents the possibility of over or under dosing. However, fixed rate chemical dosing is acceptable in some situations especially when a flow switch is utilized or when the dosing pump is co-energized with a high service pump. Constant flow injection may also be an option when the effluent is captured by a large tank or clearwell (Figure 4).

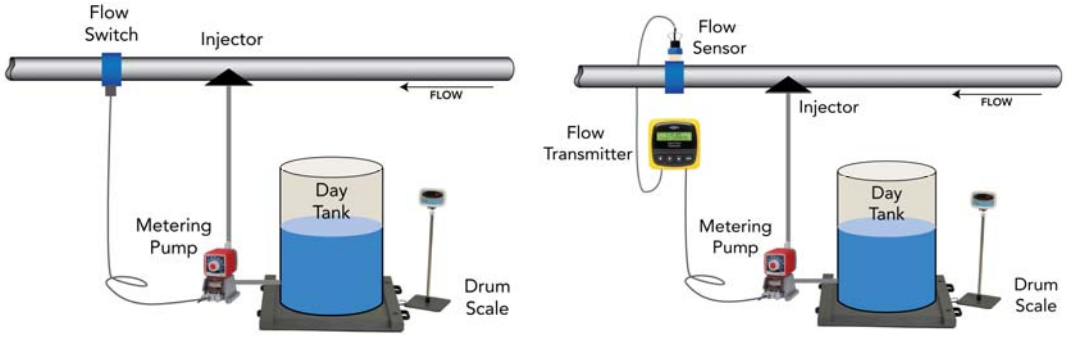

Figure 4 – Complete setup showing constant rate (left) or proportional (right) injection.

Pump Selection

Any pump with sodium hypochlorite compatible wetted materials will be suitable for use with Clearitas. The Clearitas product does not appreciably gas-off, therefore, vapor lock prevention is not required.

Program Operation

Data Collection

Clearitas works gradually over time. Therefore, the evaluation of the product's effectiveness requires consistent data collection and the comparison with historical baseline data. Depending on the needs of the system, the data collected may take several forms. The following parameters are general recommendations:

- Daily or weekly water production
- Daily or weekly Clearitas usage
- Disinfectant Residuals at several key locations in the system
- Disinfection byproducts
- Flushing duration and frequency
- Customer complaints
- Turbidity

Flushing

Clearitas is an excellent flushing aid, it helps soften surface fouling and can allow for more productive flushes when its dosage is increased in the month or two prior to scheduled flushing. Additionally, a struggling system's water quality may be improved more rapidly by utilizing a larger Clearitas dose along with an intense flushing program.

Quality Control Measures

- Ensure Clearitas is protected from sunlight.
- Verify Clearitas is being dosed properly by tracking usage.
- Track water quality data from before and during Clearitas use for similar seasons.
- Track quality and duration of flushing program.

Benefits and Results

- Improved disinfectant residuals deeper into the system
- Improved taste and odor and water clarity
- Reduction of disinfection byproducts
- Reduced nitrification
- Reduced customer complaints

Important Safety Notice

Before handling Clearitas read and understand the Safety Data Sheet (SDS). Handling chemical containers present both a physical and chemical hazard. Ensure that the proper Personal Protective Equipment (PPE) is used. Follow all local, state, and federal requirements and guidelines when using this product.