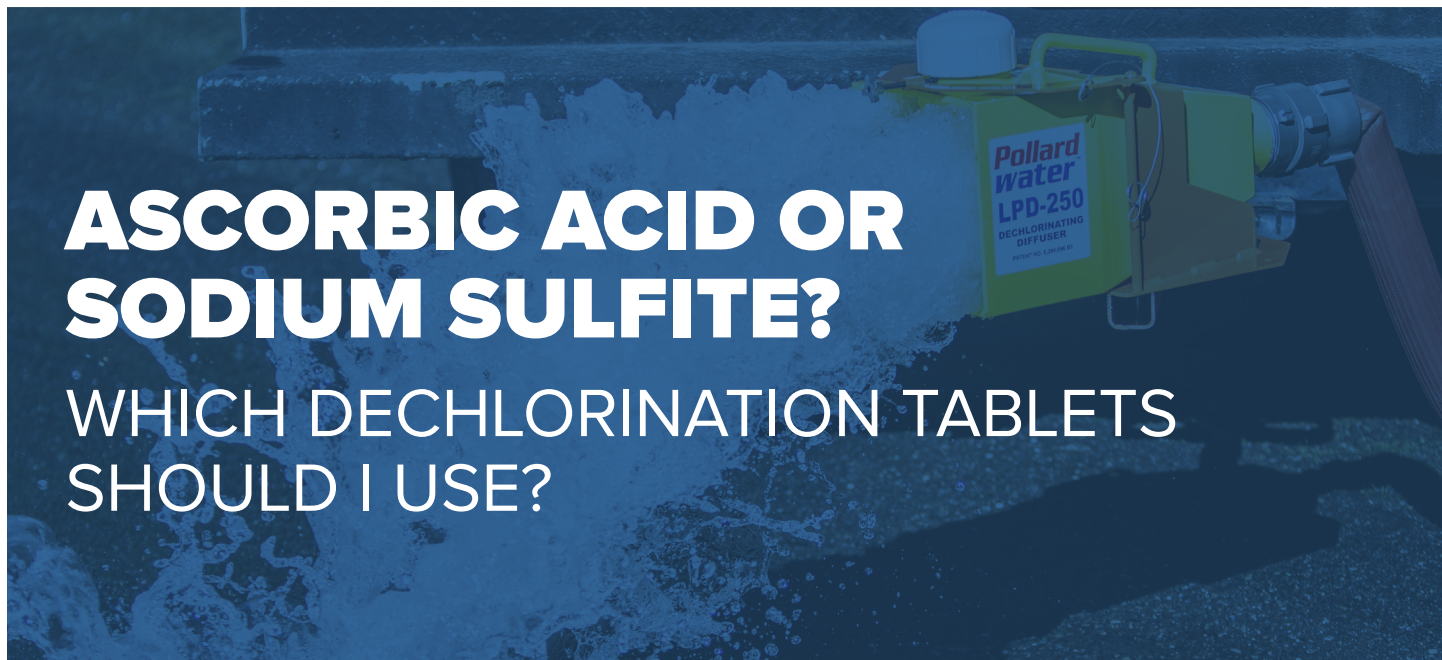


ASCORBIC ACID OR SODIUM SULFITE? WHICH DECHLORINATION TABLETS SHOULD I USE?



Today's marketplace for tablet dechlorination chemicals is vast and can be intimidating to most. Understanding the chemical options, their uses in specific equipment and the full scope of the application at hand is critical.

Tablet chemistry—when used for dechlorination in the utility industry—is typically used for potable water flushing, meaning the water being flushed is existing drinking water with low chlorine levels (0.2-2.0 ppm). Applications with higher chlorine concentrations would require alternate chemicals and delivery systems.

Sodium sulfite tablet chemistry has been in the utility industry for years. It is still in use today as an effective, safe and cost-friendly option for dechlorination. Ascorbic acid chemistry was not introduced into the industry until the early '80s. It had been used for years, however, in the medical industry to dechlorinate water as part of kidney dialysis procedures. Initially, the cost of ascorbic acid gave utility professionals pause, but the chemical's benefits far outweighed concerns over price and its demand skyrocketed.

With an established alternative already on the market, why did so many professionals turn to more expensive chemistry in ascorbic acid? **What is the big difference between the two, and why are their uses such a debated topic?**

Ascorbic acid chemistry is 100% organic-based and, on the molecular level, is not an oxygen scavenger, so it will not deplete the oxygen in receiving bodies of water. Maintaining consistent oxygen levels is vital for the survival of aquatic life. Ascorbic acid—also known as vitamin C—is an essential nutrient for aquatic life and is even part of some hatcheries' fish food supply.

Sodium sulfite chemistry is sulfur-based and is considered an oxygen scavenger. To mitigate oxygen depletion in many cases, a diffuser is used in conjunction with tablets to increase the dissolved oxygen in the receiving body of water. In these applications, the use of a diffuser would help reduce the negative effects of oxygen depletion from sulfur-based chemistry.

However, oxygen depletion can be a critical factor if sodium sulfite is used in an inline system or a device that does not aerate the water. **Most utilities will use ascorbic acid-based chemicals when flushing in environmentally sensitive areas as a best management practice.**

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Chemical demand is another important factor for consideration. Take a typical flush of 10,000 gallons of water at 1 ppm chlorine. Depending upon the diffusion equipment being used, **one would need four to five ascorbic acid tablets versus 10 sulfur-based tablets to achieve the same dechlorination goal.** However, given that the cost of ascorbic acid is a little more than double that of sulfur-based chemicals, there is no clear economic benefit to using either chemistry.

Ascorbic acid's chemical composition encourages zero waste, shifting the needle again in its favor. Sulfur-based chemicals, upon contact with water, initiate a chemical reaction that cannot be halted. Ascorbic acid-based tablets, on the other hand, interacts with water differently, allowing them to be removed, dried and stored in a sealable plastic bag for later use, thus supporting the concept of zero waste.

In light of all this, it is critical that one follows the manufacturer's recommendations for the type/brand of chemical to be used in their dechlorination equipment. They are using. This will ensure proper functioning and desired results. Some chemicals have different chemical compositions and dissolve rates which can adversely affect the outcome.

In closing, **know your application and know your flushing destination.** The days of flushing to the storm drain and a mystery outfall is over. Know the dechlorination device you are using and follow the manufacturer's recommendations. Lastly, when in doubt, know who you can call for guidance.



DREW ENDRODY
Pollardwater Product Manager

ASCORBIC ACID-BASED CHEMICALS

PROS

- Meets the dechlorination requirements of the EPA's Clean Water Act
- Dechlorinates effectively
- Environmentally safe
- Contains an essential nutrient for the healthy development of fish
- Safe to handle
- 100% organic
- Available in 2 5/8" tablets
- 50% fewer tablets needed per flush vs. sulfur-based equivalents
- Unused or partially used tablets can be reused

CONS

- More expensive than sulfur-based chemicals
- Mildly acidic (pH)

SULFUR-BASED CHEMICALS

PROS

- Meets the dechlorination requirements of the EPA's Clean Water Act
- Dechlorinates effectively
- Safe to handle
- Available in 2 5/8" tablets
- Less expensive than ascorbic acid-based chemicals

CONS

- Known toxin for fish and humans
- Removes oxygen from water
- Hazardous to people with sulfate allergies
- Mildly basic (pH)
- Tablets may include inorganic, insoluble chemicals
- Tablets cannot be reused once wet

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