

## Ozone as a Winery Disinfection Tool – How this safe, organic solution is used within today’s winery

As the wine industry continues to grow to exorbitant proportions, winery professionals know that microbiological quality control and winery disinfection methods are critical for the processing and production of wine.

While some winemakers use chemicals, steam, or hot water for disinfecting equipment, many are turning to ozone technology as an effective alternative and organic disinfectant.

Ozone is the most powerful oxidizer and disinfectant that can safely be used and is commercially available for the control of bacteria, molds, and other microbes. Ozone provides this disinfection through a lysing process, which breaks down the microbe’s membrane and cell wall, destroying it completely and very quickly. It is far more efficient in disinfection than hot water, caustic chemicals, or acids. Further, ozone is generated on-site reducing the need for handling and storage of such chemicals.

Let’s start with some facts about the ozone molecule. Ozone is Mother Nature’s perfect purifier and is formed naturally within the ozone layer. Ozone ( $O_3$ ) is generated when oxygen ( $O_2$ ) is exposed to UV light or an electrical charge (lightning). Ozone is that fresh, clean scent that can be smelled after a lightning storm. As the oxygen passes through the electrical field, the  $O_2$  molecule splits and forms two  $O_1$  atoms. Each unstable  $O_1$  atom combines with an oxygen molecule to form  $O_3$ .

FDA and USDA approved for food surface contact, ozone leaves behind no residues or aftertastes. Because ozone is created from oxygen, once this powerful molecule is consumed by the contaminant it reverts back to oxygen very quickly.



Cleaning and disinfection procedures within a winery take time, in fact, many winemakers admit that it takes far more time to clean and disinfect the winery than it does to actually make the wine. Traditional procedures start with a *pre-rinse* to knock down all of the large debris; then the *chemical cleaning* step typically using alkalis and acid based products to remove dirt, sugars and other debris; a *post rinse* to remove the cleaning chemicals; then the *disinfection rinse* to reduce and destroy microbes often times using hot water, peracetic acid, caustic soda or even hydrogen peroxide; and lastly a *final rinse* to remove the disinfectant. However, when using ozone as the disinfectant it is often the case that the *post rinse* and *final rinse* can be eliminated as there are no negative effects of the ozone mixing with the cleaning chemicals, and because ozone is safe for food contact the *ozone disinfectant rinse* can also be the final rinse.



Typical disinfection products can take 30-minutes or more to provide sufficient contact time, whereas the proper levels of ozone can take mere seconds! Further, if hot water is being used in the disinfection protocol it can now be eliminated, as the ozone rinse will use cold water only. Ozone not only saves time, but saves energy, and water.

Ozone is an excellent addition to disinfection protocol to assure microbe free surfaces within processing equipment such as hoppers, conveyors, destemmers, and crushers. In addition, it can also be used to disinfect barrels and fermentation tanks (inside and out), transfer lines, hoses, fittings, valves, and clamps.

Other places that disinfection can go forgotten in the winery are, floors, walls, and drains. Left untouched these places can attract fruit flies and other pests creating a breeding ground for microbes that can eventually become the source microbial problems throughout the winery. Ozone-containing water can be used in these places simply and effectively on a daily basis to help prevent microbial outbreaks that can taint and cause loss of product.

The use of ozone for disinfection has now spread throughout much of the wine industry today, and has become an industry standard worldwide. As the benefits and cost advantages of ozone become more widely understood, the technology's role in wineries will grow. There are many ways to make improvements to your winery, but none can help to provide a more consistent product, reduce equipment, water and energy costs, and improve wine quality the way ozone can!