

PERACETIC ACID

Peracetic acid is a mixture of acetic acid and hydrogen peroxide in an aqueous solution. It is a very strong oxidizing agent and has a stronger oxidation potential than chlorine or chlorine dioxide. It is a clear, colorless liquid with no foaming capabilities, and has a strong pungent acetic acid (vinegar) odor. Peracetic acid has been used primarily as a sanitizer and water treatment compound in food and beverage processing, as well as a successful oxidizer for removing biofilms from food contact surfaces, as an outstanding odor suppressant, and as a bleaching agent. Peracetic acid degrades in the environment very quickly, and has no potential to bioaccumulate. It has been proven that it has no carcinogenic, mutagenic, or toxicokinetic properties, and there are no known hazardous or toxic by-products associated with its use. Its ultimate fate in the environment are the basic molecules of carbon dioxide, oxygen, and water.

Although new to this country for use in municipal water treatment, peracetic acid is an outstanding disinfectant that has been used successfully for over 15 years in Europe and various other countries. Its primary use has been to replace chlorination and/or to supplement UV disinfection in secondary sewage treatment plants.

Oxidation Capacity of Various Oxidizers

Oxidizer	eV*
Ozone	2.07
Peracetic Acid	1.81
Chlorine Dioxide	1.57
Sodium Hypochlorite	1.36
** electron volts	

Peracetic acid can be manufactured in many different stabilized formulas. Primarily, the preferred formulas have a low peroxide to peracetic acid ratio to negate the theoretical COD increases in the water matrix due to the biodegradation of acetic acid. Enviro Tech's primary formula for the wastewater treatment industry has a ratio of 1.47-1 peroxide to PAA (22% active H₂O₂ vs. 15% peracetic acid). The theoretical BOD increase of a PAA-based product is the PAA % plus the acetic acid % fraction (in this case 31% total) x 0.75. The H₂O₂ fraction will contribute about 20% (vs. 31% 'demand') by weight of O₂ necessary for biodegradation. Therefore, the BOD contribution for our formula would be about 0.25% of the amount of PAA added (1 ppm BOD for each 3 ppm of PAA added). Other high level acetic acid formulas have corresponding low levels of H₂O₂, and the COD and BOD contribution becomes unacceptable for wastewater and/or stormwater application.

Since peracetic acid has a very good toxicology and environmental profile, it is very amenable for disinfection uses for short duration events such as Combined Sewer Overflows (CSO), stormwater and urban runoff disinfection. It can be used to disinfect runoff water without the need for major capital equipment investment or O & M costs for other systems, most notably Ozone. PAA can be applied using much, if not all, of the same equipment used for sodium hypochlorite applications. It has an effective storage life of 6-12 months, is easily dosed using conventional equipment, and can be dosed at flow proportional rates using simple flow sensing/proportioning equipment.

PAA formulas retain efficacy at cold or hot temperatures (35° F up to 140° F), and function equally well at pH ranges of 2.0-8.5. Another of its unique advantages is its very potent ability to oxidize sulfide molecules at all pH values associated with wastewater uses. The reaction is instantaneous and yields sulfate, which cannot combine with other compounds to form further nuisance compounds.

Although this compound is new to America, it has a proven track record in the remainder of the world, and has many unique and unusual properties that make it truly a 'Green' product for the future of stormwater and wastewater treatment. Our PAA is presently cost comparable to bleach chlorine in many applications, yet has none of the environmental liability associated with other products.

Log on to our web site at "enviro-tech.net", or simply type in 'peracetic acid' on your computer browser and you'll find us. Check us out, and give us a call. We'll send you one of our technical brochures. You may learn more than you anticipated.