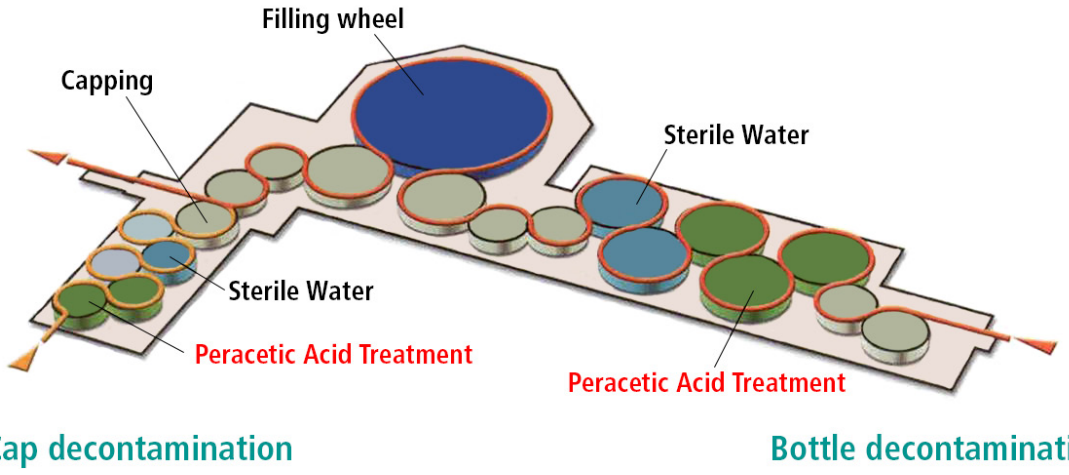
Process Application Note AN-PAN-1029

Monitoring Peracetic Acid (PAA) in a Beverage Bottling Facility

The importance of sanitary practices when it comes to processing and handling food and beverages cannot be overstated – long shelf lives and safe food depend upon completely hygienic conditions. Unsanitary conditions in a beverage bottling facility can lead to several undesirable outcomes. Contamination of a batch not only leads to loss of product, but can potentially lead to a critical public health situation if not contained and rectified quickly. The company image and sales can be damaged if the product is deemed untrustworthy or impure. There are many ways to disinfect a process line, generally using high heat, ozone (O_3), chlorinated or sulfonated compounds, but peracetic acid (PAA, PES) is valued above most other chemical sanitizers in the food and beverage industry for the sanitization of new and recycled PET bottles. PAA is found to be harmless enough by the FDA to allow direct contact with meat, vegetables, and fruits.

Peracetic acid (CH_3CO_3H) is formed by the reaction between acetic acid (CH_3COOH) and hydrogen peroxide (H_2O_2). It is very reactive and decomposes into harmless byproducts – water, oxygen, and acetic acid again. To stabilize the PAA, it is generally in a solution with an excess concentration of H_2O_2. In correct concentrations, PAA can sanitize bottles in less than 10 seconds at temperatures between 15–65 °C. The control of the disinfectant dosage is done by frequently analyzing the PAA concentration. If it is too low, there is the possibility of microbial contamination in the product, but levels which are too high can lead to higher consumption of PAA and rinse water (loss of money), and affect the taste of the final product. Lab methods (titration) are slow and labor intensive, whereas online monitoring is fast and requires no skilled lab personnel, and additionally the analyzer can be placed in clean rooms to further reduce contamination risks. Our Process Analyzers can handle peracetic acid samples with or without the presence of surfactants, and degas them before analysis to prevent bubble formation from H_2O_2 that directly interferes with the measurement.



Aseptic treatment process of PET bottles in a bottling line.

Application: A Process Analyzer configured for photometric analyses at 470 nm accurately measures the intensity of the color formed by the reaction between the reagents and PAA.

Typical Range: 0–3000 mg/L peracetic acid (PAA, PES)

Remarks: Other applications are available for the food and beverage industry such as: alkalinity, salt (NaCl), chlorine (Cl_2), hydrogen peroxide, iron, phosphate, and many more.

Keywords: Peroxyacetic acid, bottling, beverages, sanitization, CIP, stainless steel housing, 2019, 2035, 2045TI

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