



Sulfur Destruction

Application Description:

Reduced sulfur compounds are a broad class of oxy-sulfur compounds, such as sulfite (SO_3^-) and thiosulfate (S_2O_3^-), that have an oxidant demand. These compounds are found in the waste streams of the petroleum, steel, paper and most chemical industries. Their high oxidant demand can cause eutrophication of natural waters and excessive chlorine demand in waste waters treated by POTWs (Publicly Owned Treatment Works).

Chlorine dioxide effectively oxidizes these species to sulfate ions over a broad pH range (5-9). Below a pH of 4, sodium chlorite may be used without the generation of chlorine dioxide. Since these compounds are usually found in mixtures of various ratios the required chlorine dioxide dosage must be determined for each application.

Alternatives:

- Hydrogen peroxide solution is added by a chemical dosing pump.
- Chlorine gas is added by a vacuum eductor system, while sodium hypochlorite solution is added by a chemical dosing pump.

Advantages of Sodium Chlorite/Chlorine Dioxide:

- Chlorine dioxide reacts the most rapidly and does not form chlorinated organic by-products.
- While chlorine is the least expensive chemical, it can not be used when organic compounds are present due to the formation of chlorinated organic by-products.
- When chlorine can't be used, hydrogen peroxide has the lowest chemical costs.

Affected Industries:

Chemicals, Food, Iron & Steel, Mining, Oil Refining, Plastics & Rubber, Pulp & Paper, Textiles

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