Mobile Dioxide – Chlorine Dioxide for Thermal Energy Storage Systems (TES)

General

Chlorine dioxide (ClO_2) is dissolved gas in water which acts as a broad spectrum microbiocide in both the water and vapor phases. Due to the physical nature of ClO_2 (dissolved gas) the Department of Transportation does not allow its shipment on US roadways. Therefore, ClO_2 must be generated on site.

To eliminate the capital expense and subsequent maintenance associated with the purchase of ClO_2 generating equipment and to provide a lower cost option versus the use of delivered chemistry, Valent Water Technologies, developed our **MOBILE DIOXIDE** program.

MOBILE DIOXIDE allows for the on-site generation of ClO_2 directly into a TES (batch addition) or to an appropriately sized day tank which can then be pumped into the TES (continuous addition). Based on the system needs, a delivery schedule is developed to ensure the consistent availability of ClO_2.

ClO_2 Advantages in TES Systems

Advantages of ClO_2 use in a TES include but are not limited to the following:

- Efficacy over a wide pH range,
- Non-corrosive at use concentration,
- Biofilm abatement and control,
- Improved thermal transfer,
- Reduction in energy costs, and
- Dissolved iron precipitation.

Mobile Dioxide Advantages

- Turn-key solution biological control,
- Limited to no on-site equipment
- Limited to no maintenance required,
- No hazardous precursors on site
- No container management

Testing and Control

ClO_2 works on a residual basis in that, if the target residual is observed for the requisite amount of time, then the microbiological demand has been met. This target residual can be tracked using either ClO_2 test strips or a handheld spectrophotometer.

Specific concentrations of ClO_2 are used for different applications. Your Valent Water Technologies field engineer will work with you to establish these concentrations as well as test for efficacy.

ClO_2 Generation Safety

The chemical reactions take place under vacuum ensuring maximum safety and simplicity of operation. The precursor chemicals are educted into the internal reaction chamber without ambient exposure. Additionally, a trained Valent technician is present for 100% of the generation process.

ClO_2 Physical Characteristics

Compound	Free Radical
State	Dissolved Gas
Color	Yellow
Odor	Similar to chlorine
Density	8.34lbs/gal

Regulatory Considerations

There is no reportable spill quantity associated with maintaining ClO_2 at 0.3% concentration or less on site. Exposure limits are as follows:

OSHA PEL	0.1ppm-TWA
OSHA PEL	0.3ppm-STEL
ACGIH TLV	0.1ppm-TWA
ACGIH TLV	0.3ppm-STEL