



ALCO - 05

Inorganic Coagulant

Technical Information

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Inorganic Coagulation

Introduction

Effluent coagulation involves the introduction of high positive charge metal salts for charge neutralization of the stable effluent (with respect to suspended solids).

Apart from chemical Phosphorus removal, coagulation is mostly used for improvement of the physical quality of effluents by reducing turbidity, and reducing suspended solids.

In suspensions, stability of very tiny solids or particulate matter is maintained by the net negative surface charge carried by the particles. Because of this, the particles are in perpetual repulsion and will not settle out. Charge neutralization of the net surface charge allows the particles to attract each other till they are dense enough to settle out.

Parameters

Physical parameters *directly* associated with physical quality improvement by coagulation include:

- Total Suspended Solids
- Turbidity
- Color

Violation of aforementioned physical parameters- such as having the presence of high levels of suspended solids/color in effluent- is typically a guarantee for the failure of other key effluent quality parameters such as:

- Biochemical Oxygen Demand (BOD)
- Chemical Oxygen Demand (COD)

The Wastewater treatment is a highly dynamic process, which is always *not* without disturbances that cause system performance upsets. Causes of upsets in the performance which could warrant the use of a coagulant, include but not limited to the following:

- Filamentous bulking
- High sludge concentration
- Sludge age
- Influent quality disturbances
- Off *SVI* values

These are mostly process control parameters which typically take longer than a few days to ameliorate. This is accompanied by the obvious discharge of large volumes of poor-quality effluent.

Having a stock of coagulant is a chemical solution that ensures the effluent discharged meets the regulation standards with year-round production of high clarity effluent regardless of Treatment plant performance.