

# THE EFFECTS OF pH AND COAGULANT DOSAGE ON DISTRIBUTION OF PARTICLE SIZE FOR KAOLIN

Wen-liang, Lai\*, Shwu-Ling, Shu\*, Wei-Sheng, Chou\*\*, Hung-Hsiang, Wu\*\*

\* Lecture

\*\* Student

Department of Environmental Engineering and Health, Tajen Institute of Technology

## Abstract

This research was to discuss the distribution of particle size for kaolin solution coagulated by ferric salt with different pH and coagulant dosage. From the data conducted, it indicates that the particle number of kaolin was increased with the increasing pH in condition of no coagulant added. Moreover, the high turbidity had more particle numbers than that of low turbidity. Whatever the turbidity is high or low, the particle size, 3-5  $\mu\text{m}$ , was to possess about 50 percent of total particle numbers.

For 20 NTU of turbidity and 50 mg/L of ferric salts, the species of ferric salts dissolved in water, for example  $\text{FeOH}^{2+}$  and  $\text{Fe}(\text{OH})_2^+$ , could adsorb on surface of kaolin particle to form larger floc so that the particle number for different size could be uniformly removed, hence, the change of  $D_{90}$  was minor. For the constant pH=7, the  $D_{90}$  of 100 NTU of kaolin coagulated by 50 mg/L of ferric salt was the least compared to other coagulant dosages, but the  $D_{90}$  of 20 NTU kaolin coagulated by 50 mg/L ferric salt was the least. Moreover, from the data of clarified water by coagulation, the particle number seemed to have no good correlation with residual turbidity.

**Key Words:** kaolin; particle distribution, Ferric salt;  $D_{90}$