Effects of brucite on ozonation treatment of dye wastewater

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Dye wastewater, also other organic polluted water, can be treated with ozonation technics. Before the organic pollutants translate to CO_2 and H_2O during ozonatin, it undergoes a periods of stable state in low carbon acids. During this statement, the pH of the wastewater lower value, the COD (Chemical Oxygen Demand) decreased rate almost does not increase with O_3 adding. United technics of O_3/UV, O_3/H_2O_2 and O_3/catalyst are commonly used before.

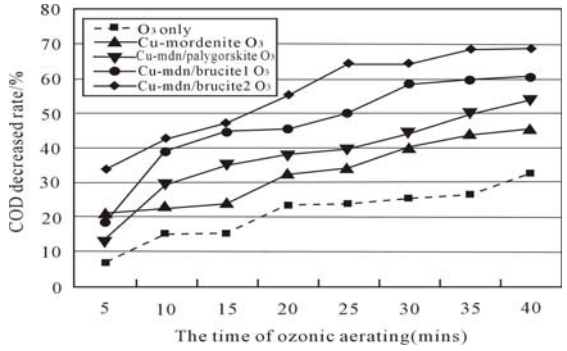

Figure 1: Correlativities of COD decreased rates with catalytic minerals added.

This study proves that zeolite and palygorskite play an efficient role when those minerals are added to the ozonic system. Furthermore, brucite increase the effects of ozonation sharply as illustrating in Figure 1. The 500mg•L^{-1} wastewater, the COD equal to 279.9 mg•L^{-1}, synthesizes by active-Brilliant Red dyes. Mixed air and 17.2mg/h O_3 in 1.1L/min flux flow through 900mm high glass aerating reactor filled in 50ml dye wastewater. COD decreased rates increase with minerals joine to the system form O_3 only to Cu modified mordenite+O_3, mordenite plus palygorskite, until brucite+O_3 get the highest value.

Brucite enhancemrnt ozonation efficiency is attributed, firstly, to the O_3 decomposition initial reaction, $O_3+OH^- \rightarrow HO_2 \bullet + O_2^-$, occurs in alkali environment. The generation and oxidation ability of hydroxyl radical are stronger in alkali condition. The dissolubility of brucite is good for a solid alkali buffer in water treatment. Secondly, reaction of Mg^{2+} dissolved from brucite with organic acid radical precipitates magnesium salts from wastewater.

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