

Activation of Bentonite to Remove the Chromium from Waste Water Produced by Panning Industry. And Studying the Chromium Recovery Efficiency¹

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Abstract

The fast development of tanning industry led to an increase in environmental problems resulting from discharging its wastes to the surrounding environment. Thus solving this problem became one of the most important aims that the researchers work on. The chromium content of the industrial water wastes of the tanning industry considered as the main pollutant for the environment. The Aleppo Bentonite is used in early research to remove the chromium from the industrial waste water.

The current research aims to find a method to activate the Aleppo Bentonite in order to increase the effective removal of chromium from the industrial waste water which is produced by tanning industry, as well as to specify the optimal conditions for chromium recovery.

This study used the Aleppo Bentonite, whose origin is Tal Ajar-Aleppo to study the activation aspects using Sulfuric Acid, Hydraulic Acid and Nitric Acid, in addition to study the recovery aspects using the same acids and hydrogen peroxide and to specify the optimal conditions for chromium recovery through applying some experiments based on three main factors: concentration, settling time and temperature.

It was observed from the applied experiments that it is possible to recover chromium from Bentonite efficiently up to (80% - 90%) by treating the Bentonite with hydrogen peroxide (33% concentration) at room temperature, or by treating it with hydrogen peroxide (8.25% concentration) at 75°C, while the settling time factor proved that full recovery of chromium is obtained during the first hour, and increasing the time factor does not affect the efficiency of chromium recovery.

Keywords: Chromium, tanning industry, bentonite, waste water treatment.

¹ For the paper in Arabic see pages (47-57).

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