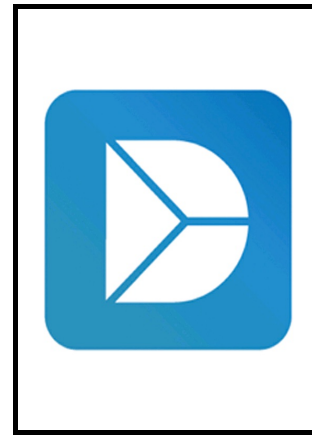


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# Adsorption of Organic Pollutants from Real Refinery Wastewater on Prepared Cross-linked Starch by Epichlorohydrin

Riyadh K. Abid<sup>1</sup>, Ammar S. Abbas<sup>2</sup>

## Abstract

The presented data shows how cornstarch can be modified to a material that can effectively remove organics pollutants from a real wastewater. A low-cost adsorbent obtained from cornstarch by the crosslinking with epichlorohydrin. The prepared crossed linked starch (CLS) adsorbent characterized by X-ray diffraction, zeta potential, Fourier-transform infrared spectroscopy, atomic force microscopy, scanning electron microscopy, and Brunauer–Emmett–Teller surface area. The effects of initial chemical oxygen demand of the real wastewater, temperature and time of the adsorption of the organics on the prepared CLS were analyzed. The removal of the highest organics concentration was 89.85%. Langmuir and Freundlich isotherm models have been applied to investigate the adsorption equilibrium. The maximum adsorption capacity of the organics pollutants on the prepared CLS was 256.41 mg/g. Thermodynamic parameters show that the adsorption process of organics on CLS is more favorable at low temperature.

**Keywords:** Adsorption, Organic pollutants, Wastewater, CLS, Epichlorohydrin.

## Specifications Table

Subject area	<i>Chemical Engineering</i>
More specific subject area	<i>Adsorbent preparation and adsorption</i>
Type of data	<i>Figure and tables</i>
How data was acquired	<i>by X-ray diffraction (XRD), zeta potential, Fourier-transform infrared spectroscopy (FTIR), atomic force microscopy (AFM), scanning electron microscopy (SEM), and Brunauer–Emmett–Teller (BET) surface area</i>
Data format	<i>Analyzed</i>
Experimental factors	<i>The prepared CLS was characterized and performed by its ability to remove organics from real untreated wastewater rejected from Dora Refinery in Baghdad (Iraq)</i>
Experimental features	<i>Preparation and characterization of CLS and its performance for the removal of organics pollutant by adsorption</i>
Data source location	<i>University of Baghdad and Petroleum Research Center</i>
Data accessibility	<i>Data are accessible with this article</i>

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