

# **Applying mass transfer models for controlling organic compounds in ozonation process.**

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摘要.

## **Abstract**

Mass transfer plays a significant role in the ozonation process. The prediction models associated with the volumetric overall mass transfer coefficient (KLa) and initial fractional ozone absorption (FOAo) during the ozonation process were developed through the use of dimensional analysis. It was found that the volumetric overall mass transfer coefficient is the function of diffusivity, agitation speed, and gas flow rate, and the parameters in the KLa equation are determined. Application of the prediction models for KLa and FOAo would yield information to choose the most practically feasible operating parameters. The removability of total organic carbon (TOC) can be estimated based on the mass balance relationship and kinetic expression of TOC oxidation, during continuous laboratory ozonation of humic acid solution. The reaction rate constant averaged 0.0291 L/mg.min. The developed model in combination with the mass transfer and reaction kinetics can be used successfully in forecasting the most efficient agitation speed to control the formation of organic compounds. Also, the critical value of ozone partial pressure to achieve the highest TOC removability can be determined through the use of the above developed model.