

# Penyisihan fenol dalam limbah cair menggunakan teknik ozonasi-adsorpsi dengan Granular Activated Carbon (GAC) dalam Reaktor Unggun Diam Berpemutar = Phenols Removal on liquid waste using ozonation-adsorption with Granular Activated Carbon (GAC) in Packed Bed Rotating Reactor

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## Abstrak

Pada penelitian ini limbah fenol didegradasi menggunakan teknik ozonasiadsorpsi dengan GAC (Granular Activated Carbon) dalam reaktor unggun diam berpemutar. Saat penelitian, dilakukan proses penyisihan menggunakan teknik ozonasi tanpa adsorpsi dan adsorpsi tanpa ozonasi sebagai pembanding. Sementara variasi dosis GAC, pH awal fenol dan kecepatan pemutar hanya dilakukan pada teknik ozonasi-adsorpsi. Hasil penelitian menunjukkan bahwa teknik ozonasi-adsorpsi terbukti lebih unggul dalam mendegradasi fenol. Pada kondisi operasi yang sama teknik ozonasi-adsorpsi mampu menyisihkan fenol sebanyak 78,62% dibandingkan ozonasi tanpa adsorpsi (53,15%) dan adsorpsi tanpa ozonasi (36,67%). Peningkatan persentase penyisihan fenol pada teknik ozonasi-adsorpsi berbanding lurus dengan penambahan dosis GAC, pH larutan, dan kecepatan pemutar.

*In this study, phenols in liquid waste is degraded using ozonationadsorption technique with GAC (Granular Activated Carbon) in a packed bed rotating reactor. During research, we also use single ozonation and single adsorption techniques for comparison. Meanwhile, variations of GAC dose, initial pH of phenols and packed bed rotator speed is only done on ozonation-adsorption technique.*

*The results showed that ozonation-adsorption technique proved more superior in degrading phenols. At the same operating conditions ozonationadsorption technique capable of removing 78.62% phenols as compared ozonation without adsorption (53.15%) and adsorption without ozonation (36.67%). The increasing percentage of degraded phenol in ozonation-adsorption technique is proportional to the addition of GAC dose, solution pH, and packed bed rotator speed.*