

Analisis produk reaksi gliserolisis urea dengan katalis ht (zn) menggunakan gliserol dari limbah biodiesel

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Abstrak

[ABSTRAK

Ketersediaan gliserol yang semakin melimpah mengakibatkan harga gliserol cenderung turun dan semakin tidak termanfaatkan. Gliserol dapat dimanfaatkan menjadi turunannya yaitu gliserol karbonat yang dapat dimanfaatkan sebagai bahan intermediate untuk menjadi produk yang memiliki daya guna dan nilai ekonomis yang lebih baik, salah satunya adalah pelumas bio. Penelitian ini bertujuan untuk mendapatkan gliserol karbonat melalui reaksi gliserolisis urea, yaitu reaksi antara gliserol dan urea dengan bantuan katalis HT(Zn) (Hydrotalcite-Zinc) dengan variasi konsentrasi gliserol dan massa katalis. Sebelum dilakukan reaksi, terlebih dahulu dilakukan karakterisasi XRD pada katalis. Produk hasil reaksi akan dikarakterisasi dengan FTIR dan GCMS untuk dianalisis. Reaksi yang menggunakan konsentrasi gliserol 96% dengan massa katalis 1 gram memberikan kualitas hasil terbaik, menghasilkan nilai konversi sebesar 57%, selektivitas 65%, dan yield 37% untuk gliserol karbonat. Sementara itu, gliserol dengan kualitas limbah biodiesel (87%) dengan jumlah katalis 0,5 gram, memiliki konversi, dan yield terbaik diantara sampel dengan konsentrasi yang sama, dengan konversi sebesar 58%, selektivitas 46%, dan yield 26% untuk gliserol karbonat.

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ABSTRACT

Increasing amount of abundant glycerol causing glycerol price to fall and become unused. Glycerol can be derivated into glycerol carbonate, which can be used as intermediate to produce higher value products, such as biolubricants. This research is conducted to produce glycerol carbonate, which is produced by urea glycerolysis reaction, a reaction between glycerol and urea with HT(Zn) (Hydrotalcite-Zinc) catalyst with glycerol concentration and catalyst loading weight as variance. Before running the reaction, the catalyst is characterized by XRD. The product will be characterized using FTIR and GC-MS that will be analyzed. The analysis results show that the highest rate of conversion and yield can be done by reacting glycerol with 96% purity and 1 gram of catalyst with conversion rate of 57%, selectivity of 65%, and yield 37% for glycidol. Meanwhile, glycerol with biodiesel purity (87%) can be converted with best performance using 0,5 gram of catalyst, with conversion rate 58%, selectivity of 46% and yield 26% for glycidol.;Increasing amount of abundant glycerol causing glycerol price to fall and become unused. Glycerol can be derivated into glycerol carbonate, which can be used as intermediate to produce higher value products, such as biolubricants. This research is conducted to produce glycerol carbonate, which is produced by urea glycerolysis reaction, a reaction between glycerol and urea with HT(Zn) (Hydrotalcite-Zinc) catalyst with glycerol concentration and catalyst loading weight as variance. Before running the reaction, the catalyst is characterized by XRD. The product will be characterized using FTIR and GC-MS that will be analyzed. The analysis results show that the highest rate of conversion and yield can be done by reacting glycerol with

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