

Catalytic Conversion 1-octadecanol to Flammable Component (1-octadecene) Using ZSiA Catalyst in Fixed Bed Reactor

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ABSTRACT

1-Octadecene can be produced from 1-octadecanol through the reduction process using ZSiA catalyst in a fixed bed reactor that was operated at 400 °C. The reduction process using hydrogen as a carrier gas. Five grams 1-octadecanol was put into evaporator and 5 g of catalyst was put into the reactor fixed bed system. Furthermore, the reactor was heated through 400 °C and the evaporator was heated through the feed (1-octadecanol) was reached the boiling point. Then the product was outflow through the cooler and was collected in the bottle. The product was analyzed using GCMS. The reduction process of 1-octadecanol was produced 1-octadecene to reach 20,21 % of 1-octadecene, 14,37 % of 5-octadecene and 10,40 % of 9-octadecene. The product had physical properties, yellow and flammable.

Keyword : 1-octadecanol, 1-octadecene, fixed bed reactor, ZSiA catalyst

Introduction

Methyl oleate conversion into gasoline fraction compound (biogasoline) can be made in stages. Phase that is the reduction reaction of methyl oleate (methyl 9-octadecenoate) into alcohol (1-octadecanol), then the reaction of 1-octadecanol to alkenes (1-octadecene) through the reduction reaction, subsequent hydrocracking alkenes into alkanes and alkenes shorter chain (<C12). Theoretically, a series of reactions are very likely to be done at the lab via catalytic hydrogenation using ZSiA catalyst and catalytic hydrocracking catalyst using Ni / ZSiA. In this study, taken part in the conversion of 1-octadecanol to 1-octadecene via catalytic hydrogenation.

Alcohol elimination reaction at a temperature of 170 °C with the help of homogeneous catalysts (H₂SO₄) will produce alkenes, such as in Figure 1.

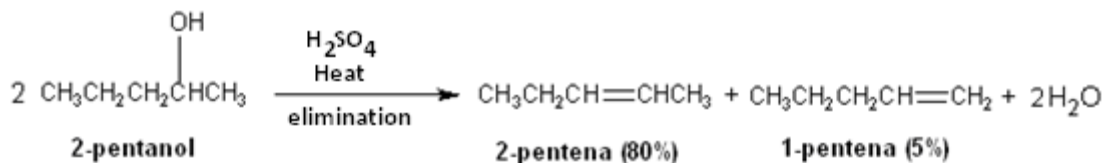


Figure 1. Alcohol elimination reaction (Fessenden dan Fessenden, 1986)