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**SYNTHESIS OF POLYOL FROM EDIBLE OIL WASTE
WITH OZONOLYSIS TECHNOLOGY**

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Abstract

Polyol is a chemical compound that contains many hydroxyl groups. Polyol can be made from petroleum, nevertheless petroleum's price is increasingly high and petroleum itself is a non-renewable resource, so it may be gone someday. Alternatively, synthesis of polyol can use other material that is renewable, in case it can use waste from edible oil.

In experiment, polyol is made from edible oil waste (used palm cooking oil) through ozonolysis reaction. Beside ozone, as reactant are also used a mixture of methanol, isopropanol and water in certain ratio and sulphuric acid as catalyst. Mechanism of reaction will start at ozone attack and break the double bonds (C=C) of unsaturated fatty acid in the waste, and then hydroxyl groups of alcohol can made contact to produce polyol.

The main purpose of experiment is to determine the optimum condition for making polyol with ozonolysis technology. The experiment will be carried out by vary temperature of ozonolysis reaction, mol ratio of oil-alcohol, reaction time and ozone concentration.

The result of experiment show that hydroxyl number values of polyol vary from 92.75 to 265.62 and viscosity values vary from 9.228 to 20.403 cp. The optimum condition determined by response optimization program, and from experiment show that converting edible oil waste to polyol will be efficient with temperature 25 °C, 3 hours reaction time, 1:7 for oil and alcohol mol ratio and ozone concentration 6.3 %.

Keywords: polyol, ozonolysis, hydroxyl number, viscosity