



BIODIESEL ELABORATION FROM MUNICIPAL FAT WASTES

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Abstract

The purposes of this study are to elaborate a diesel engine bio-fuel using animal fat wastes (WAF) as raw material, and to identify the effect of principal elements on the process design. In order to accomplish our goals, we studied the transesterification of these WAF with methanol and using sulfuric acid (H_2SO_4) as catalyst. Also the physical characteristics of produced bio-fuel were studied and compared with the European standard EN 14214. The WAF used in this study was collected from the area of Bordeaux in France by CTMA, a waste treatment station. The effects of: catalyst amount, time of reaction and alcohol to oil molar ratio on the reaction conversion have been established. The WAF have a very high acid number (60 mg KOH/g fat), which is equivalent to a content of 30% (wt.) in free fatty acids, and a cinematic viscosity of $18.75 \text{ mm}^2/\text{s}$ at 40°C . After processing, we obtained a liquid with a low acidity ($0.4 \text{ mg KOH/g fuel}$) and a viscosity of $4 \text{ mm}^2/\text{s}$ at 40°C .

Key words: acid catalyst, biofuels, transesterification, waste

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