

Fuel production from plastics and organic wastes with geologic (mineralogical) catalysts to be used for motor vehicles and heavy machinery

MEHMET CAN SARIKAP¹ AND FATMA HOŞ ÇEBİ¹

¹Karadeniz Technical University, Department of Geological Engineering, Trabzon/Turkey
mehmetcansarikap@gmail.com hos@ktu.edu.tr

A new method presented in this study can be used in energy production and removal of waste disposal and environmental pollution without the separation of plastic and organic waste. In this study, plastic and organic wastes together with clay ($\text{Al}_2\text{Si}_2\text{O}_5(\text{OH}_4)$), zeolite $[(\text{Na}_2\text{O}).70(\text{CaO}).10(\text{K}_2\text{O}).15(\text{MgO})_{0.5}\text{Al}_2\text{O}_3.(8.5-10.5)\text{SiO}_2.(6-7)\text{H}_2\text{O}]$ and MCS23-code materials (Secret material) were heated in a closed medium to a temperature range of 470-680 °C and recondensed. Diesel fuel and fuel-oil were produced from this process. Using different types and weight of plastic and organic materials, experiments were made with various amounts of catalysts in this study. 95% liquid fuel were produced in this experiment. Interpretation were made in compliance with EMRA(Energy Market Regulatory Authority) determination standards in analysing the produced fuel in ISO standards. According to the obtained products, density (@15°C) (836 kg/m³) viscosity (@40°C) (3,6 cst max.), sulfur (0 % weight max.), ash (0,001 % weight max.), flash point (41 °C max.), cetane number (51 min.), water (200 mg/kg max.), total contamination (24 mg/kg max.), cetane index (46 calculate min.) it was concluded that the proportions comply with these standards.