

Study on the effect of operating temperature on the thermal cracking of vacuum residue

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(kikim@kier.re.kr*)

Vacuum residue (VR), which is obtained from the bottom stage of vacuum distillation, has poor fuel properties due to the high boiling point (over 758K), high viscosity, and high contents of residual carbon, metal and brimstone. VR, produced from 10 to 30 weight percent of crude oil through refinery process, was thrown out or used for the raw material of construction and the pavement of a road. Many research groups have an interest in the VR chemical conversion for improving economic feasibility. Several kinds of chemical processes, such as Eureka process, delayed coking, and rapid thermal pyrolysis. In this study, the thermal cracking of VR was conducted for the production of cracked oil. The experiments with changing the operating temperature were conducted for studying the effect of operating temperature on the production yield and properties of cracked oil. The cracked oil was analyzed using liquid density meter, SIMDIS, thin layer chromatography – flame ionization detector, and XRF.