## Heating rate effect on shale oil in a fixed bed reactor

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This study investigated the effect of heating rate (measured as degree Celsius per minute) on the kerogen weight loss in oil shale samples. Crushed and sieved samples were dried at 110 ± 2$^{o}$C in oven for a period of 12 hours. In each run 500 gram were weighed and placed inside an 800-cm$^{3}$ stainless steel retort. The temperature of the fixed bed and the heater were measured and controlled through two thermocouples of type K. Circulating bath coolant to condense the generated condensable hydrocarbons using a glass condenser was employed.

Kerogen weight loss and oil yield were investigated in the 300 – 600 $^{o}$C temperature range. Low heating rates (h) $^{o}$C min-1 in the range 0.2 - 2.8 were investigated in the entire temperature range. Intermediate and high heating rates 2.2 - 5.0 and 3.0 - 13 respectively were also implemented. The evolved hydrocarbon was swept from the reaction zone by nitrogen gas flowing at the rate of 50 cm$^{3}$ per minute.

The rate of kerogen weight loss of oil shale and heating rates were measured as a function of experimental time. Higher heating rate resulted in higher total weight loss whereas oil yield decreased with increased heating rate. The rate of weight loss passed through a maximum value for different heating rates at different pyrolysis temperatures. The weight loss measured does not include the rate of gaseous production.