# Retention of Crude Oil Bases by Clay-Containing Sandstone

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**Abstract:** Retention of basic components of a crude oil by clay-containing reservoir sandstone was studied by flowing crude oil through cores and monitoring the concentration of bases in the effluent. Cores that were H-saturated, H-saturated then aged, and Na-saturated retained 0 · 82, 0 · 70, and 0 · 20 meq base/100 g, respectively. Barium exchange capacity values were 0 · 86, 0 · 7 l, and 0 · 83 meq/100 g. Subsequent floods with water, toluene, and chloroform-acetone removed oil that had increasing concentrations of base and N, indicating that the basic fraction of crude oil was the most difficult fraction to extract from clay mineral surfaces. Retained bases were nitrogenous and the most tenaciously held bases had base/N ratios approaching unity.

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