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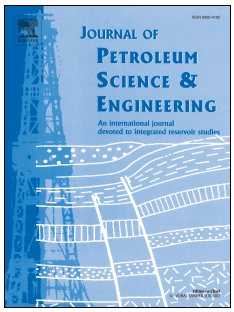

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STUDY OF EFFECTS OF BLEND OF PLANT SEED OILS ON WAX DEPOSITION TENDENCIES OF NIGERIAN WAXY CRUDE OIL

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ABSTRACT

Paraffin wax deposition has been a reoccurring problem in transportation of waxy crude oil in the oil industry. Chemical treatment had been the most convenient and economical method for tackling this problem. This paper considered the study on effects of blends of plant seed oils on wax deposition tendencies of Nigerian waxy crude oil. Three waxy crude oil samples obtained from Niger Delta region of Nigeria were characterized to determine their wax deposition tendencies, pour point, American Petroleum Institute gravity (APIg), wax content and viscosity using standard methods. The impacts of the blend of *Jatropha* seed oil (JSO) and castor seed oil (CSO) on the wax deposition tendencies of the crude oil samples were determined both in cold finger test and under a dynamic flow. The results obtained showed that blend of castor seed oil with 40% *Jatropha* seed oil reduced the wax deposition tendencies of the crude oil samples appreciably both in cold finger test and dynamic flow condition. The blend of CSO with 40% JSO gave optimum positive impacts on the pour point and wax deposition tendencies of the waxy crude oils in cold finger tests. The paraffin inhibition efficiency (PIE) attained under this condition was minimum of 79.1% for the crude oil samples at concentration of 0.1%v/v of additive with crude oil. Dynamic flow test using the optimum blend seed oil confirmed that the seed oils performed favourably as wax deposition inhibitor and flow improver at low temperatures and low concentrations of 0.10% additive to crude oil. It is recommended that blend of non-edible CSO and JSO be considered for usage as wax deposition inhibitor and flow improver in the Nigeria oil industry.

Keywords: blend of plant seed oil, wax deposition tendency, paraffin inhibition efficiency, waxy crude oil