

Comparative study on inhibitors comprising aromatic and non-aromatic solvents towards flow assurance of crude oil

ABSTRACT

The petroleum industry is facing a critical issue in transporting crude oil through the pipelines from the seashore where crude oil is being drilled off. The problem arises when crude oil exhibits higher sensitivity to the changes of temperature. This actually causes some alterations occurring in the composition, pour point of the oil and flow of the crude oil itself. Thickening of some components such as wax and asphaltenes causes the deposition to occur in the pipelines due to changes in temperature. Eventually, these depositions cause blockage of the pipelines due to reduction in the diameter of the pipelines and causing disruption in the flow of crude oil. The experiments were carried by mixing different ratio of polymer and solvent such as ethylene-vinyl acetate (EVA40) with 40% vinyl acetate, methylcyclohexane (MCH), toluene and butanol together to form an inhibitor. The response surface methodology (RSM) had been used to identify the best formulation of solvents that could act as inhibitors. The final results show that the most optimum ratio of inhibitor that gives the highest reduction in viscosity of the crude oil is 30% EVA, 30% MCH and finally 40% ratio of solvent which is either toluene or butanol.