

Formulation of polymeric inhibitor for viscosity reduction of crude oil

ABSTRACT

Generally, waxes and asphaltenes are classified as solid category which involved with deposition of high-molecular-weighted compounds along pipelines which leads to production issues. This study presents the effect of different mixture concentration consisting of copolymer and solvent on crude oil viscosity in order to find a solution for reduction of wax and asphaltene deposition along the surface of pipelines. There were two proportions used which are ethylene-vinyl acetate 25 (EVA 25), methylcyclohexane (MCH) and paraxylene as first proportion and EVA 40, MCH and paraxylene as second proportion. EVA is a polymer that comprises of linear chain of polyethylene fragment and vinyl acetate molecule which has the ability in controlling the size of formed wax crystals. Laboratory experiments were designed by response surface methodology (RSM) specifically using central composite design (CCD) to formulate ratio and analyzed optimum percentage composition of mixture to obtain a good model. The optimum parameters were 10.02% of EVA 25, 10.00% of MCH and 79.98% of paraxylene for first proportion and 10.00% of EVA 40, 45.78% of MCH and 44.22% of paraxylene for second proportion to minimize the viscosity of crude oil.