

Influence of Polymeric Additives on Crystallization of Dotriacontane in Model Oil

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Normal alkanes (n-paraffins) are predominantly responsible for pipeline wax deposition, which results in blocking of the oil flows when they are cooled. Typically, wax is composed of n-paraffin crystals with 15-50 carbon atoms in the chain and its appearance is dependent of temperature, concentration of wax, type of oil media, etc. There are several strategies to control wax crystallization such as heating, insulation, pigging of transportation lines, and wax diluents. All these methods are related to the shift of saturation line of wax crystallization by increasing temperature or decreasing the concentration of wax. However, these control methods require capital cost for heating pipelines or operation cost for huge amount of diluents. In this study, some polymeric additives, which could act as kinetic inhibitors, were used to control the crystallization of model wax (n-dotriacontane) in decane solution. Their influence on wax appearance was determined by optical microscopy, differential scanning calorimetry, and rheometer techniques.