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Assessing solvents effect for mitigation of asphaltene precipitation in South African Oilfields

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Abstract

Asphaltenes molecules is one of the heaviest components in petroleum fractions that under reservoir conditions can be found either in colloidal form or dissolved in crude oil liquid phase. However, when variation in thermodynamic parameters such as temperature, pressure and fluid composition occur can lead to asphaltene precipitation phenomenon and posterior asphaltene deposition in oil wells, pipelines and processing facilities consequently, resulting in several damages along the petroleum chain as well as economical loss for oil and gas companies. Therefore, several studies have been developed to understand this phenomenon and eventually help to monitor and prevent its occurrence.

In relation to the present work, an experimental study will be developed in the crude oil samples of one of the South African oilfields to evaluate the effectiveness of different concentrations of two solvents (Salicylic acid and *Iso*- phthalic acid) in the asphaltene precipitation onset time when variation in temperature and fluid composition occur. This procedure combined with laboratory experiments have helped to define a solvent with great inhibitor capability to prevent asphaltene precipitation in this field and also, estimate the solvent inhibitor concentration and quantity to be used.

The results obtained in this study could thus allow the building of a clear picture about probable situations and/or stages to intervene for mitigation of asphaltene precipitation in South African oilfields.