A study on the composition of heavy organic precipitates at various locations of a petroleum production line: wellhead, separator, and flowline

Godwin A. Udourioh

,

Emmanuel I. Epelle

,

Ozioma Achugasim

,

Moses M. Solomon
　　&
Peter C. Okafor

- Download citation
- https://doi.org/10.1080/10916466.2021.2003384

- CrossMark

- Full Article
- Figures & data
- References
- Citations
- Metrics
- Reprints & Permissions
- Get access

Abstract

The heavy fractions from crude oil samples from different locations of a petroleum production line was investigated by gravimetric precipitation technique through the varying of n-alkane precipitant(s) type, volume, and volume ratios. The type of heavy

organics (HOs) obtained at the different locations was studied using chromatographic fractionation into saturates, aromatics, resins and residual asphaltenes. Saturates and aromatics compositions were qualitatively and quantitatively determined by Gas Chromatographic-Flame Ionization Detection (GC-FID), while Ultraviolet-Visible spectroscopy was used for the resins. The results obtained show that the amounts of HOs precipitated changes with precipitants type, volume, and volume ratios and are in the order: wellhead (W^H) > flowline (F^L) > separator (S^R). With changes in the total volume of precipitant binary mixtures, maximum precipitation is obtained at 40 mL/g of oil. Between 70–80 mL/g of oil, the amount of precipitate produced remain constant for all samples. There is no clear-cut trend in the concentration of individual and total saturate and aromatic compositions of the heavy organics along the different locations of the production system. However, the concentration of resins increases in the order: separator > flowline > wellhead.
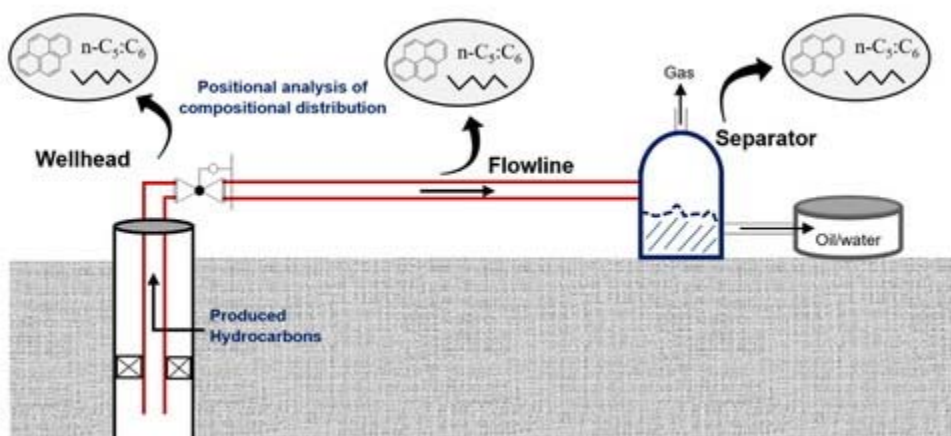
Keywords:

- asphaltenes
- heavy organics composition
- precipitation
- production line
- resins