Available online at **www.joac.info**

ISSN: 2278-1862

Journal of Applicable Chemistry

2021, 10 (2): 189-198

(International Peer Reviewed Journal)

Synthesizing Copolymer for Reducing Pour Point of Vietnamese Diamond Crude Oil

Dao V. Than[1], Thai H. Chuong[2], Dao Q. Tuy[1] and Nguyen D. Toan[3]*

1. School of Chemical Engineering, Hanoi University of Technology, **VIETNAM**
2. DMC-Drilling Fluids and Well Services, DMC Coporation, **VIETNAM**
3. Institute for Education and Human Resources Development, Ministry of Education and Training, **VIETNAM**

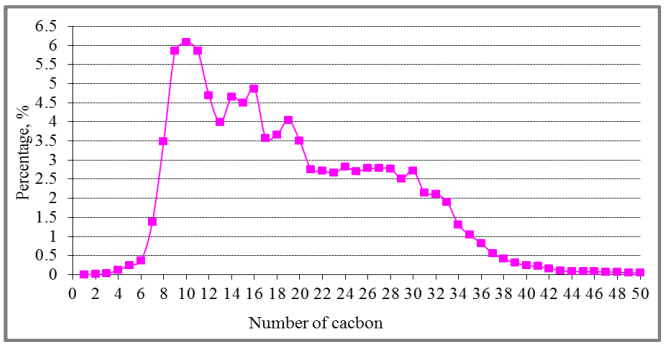
Email: dangtoanbkhn@gmail.com

Accepted on 12th February, 2021

ABSTRACT

Diamond oil field is located in Block 01 and 02 Offshore Vietnam. Crude oil is evacuated from the Diamond Well Head Platform (WHP) through the subsea flexible pipeline. The lowest seabed temperature in the field is 22℃, while the pour point temperature (PPT) of Diamond crude oil is very high (36℃) due to high paraffin content (25%). There is very necessary to discover a good Pour Point Depressant (PPD) for the crude oil. The pour point of the crude oil should be reduced from 36℃ to 21℃ with the contacting with the synthesized PPD. The aim of this research is to choose appropriate monomer for copolymerization to produce copolymer based on the crude oil components (paraffin, asphaltene and resin content and distribution of n-paraffin). The reaction involves copolymerization of Behenyl acrylate, Stearyl methacrylate and Vinyl acetate under free radical forming conditions. The properties of prepared copolymer were evaluated by using viscosity, GPC, DSC and FT-IR techniques. The efficiencies of prepared copolymers were studied for their capability as PPD and flow improver for Vietnamese Diamond crude oil to solve the problem of wax deposition during transportation. The study showed that generally the prepared copolymers were efficient in the role of both pour point depressant and flow improver for the tested crude oil. Therefore, the copolymer could be considered to be used as an effective additive in transportation of crude oil.

Graphical Abstract



Distribution of n-carbon in Vietnamese Diamond Crude Oil.

Keywords: Diamond crude oil, Copolymer, Synthesis, Wax deposition.