World Academy of Science, Engineering and Technology
International Journal of Chemical and Materials Engineering
Vol:12, No:04, 2018

Chemical Demulsification for Treating Crude Oil Emulsion

Authors : Miran Sabah Ibrahim, Nahit Aktas

Abstract : The utilization of emulsifiers is highly important in the process of breaking emulsions. This examination employed five commercial demulsifiers in various temperatures for evaluating the separation efficiency. Furthermore, two different crude oils (Khurmala and Demir Dagh crude oil) were utilized for preparing emulsion. The outcomes revealed that the application commercial demulsifiers for Khurmala crude oil at 55°C and 100 ppm (KD-3100, KD-3200, FD-6144, FD-6210 and RI35Q) the separation efficiency were (78, 80.6, 78, 86 and 90 %) respectively. However, at 65 °C and 100 ppm (KD-3100, KD-3200, FD-6144, FD-6210 and RI35Q) separation efficiency were (87, 85, 91.3, 94 and 97 %) respectively. Nonetheless, utilizing Demir Dagh crude oil at 55 °C and 100 ppm (KD-3100, KD-3200, FD-6144, FD-6210 and RI35Q) resulted in the separation efficiency of (63.3, 66.6, 65, 73 and 76.6 %) respectively, and at 65 °C and 100 ppm (KD-3100, KD-3200, FD-6144, FD-6210 and RI35Q) were (77, 76.6, 80, 82 and 85 %) respectively. The combinations of FD-6144 and RI35Q at 55°C and ratio of (1:1) and (1:3) for Khurmala crude oil led to (96 and 90.6 %) efficiency respectively. However, the efficiency decreased to (98.6 and 93.3 %) respectively at 65 °C. The same combinations applied on Demir Dagh Crude oil and the results were (78 and 63.3 %) at 55 °C and (86.6 and 71 %) at 65 °C. Three different brine concentrations (NaCl) (0.5, 2 and 3.5 %) were prepared and utilized. It was found that the optimum NaCl concentration was at 3.5 % NaCl concentration for both khurmala and Demir dagh crude oil at 55 °C and 65 °C.

Keywords : demulsifier, emulsion, breaking emulsion, emulsifying agent (surfactant)
Conference Title : ICOGPE 2018 : International Conference on Oil, Gas and Petrochemical Engineering
Conference Location : New York, United States
Conference Dates : April 19-20, 2018