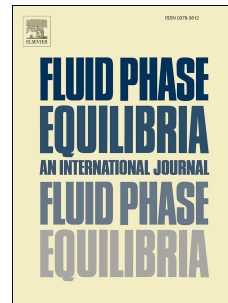


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Effects of ethanol on the performance of kinetic hydrate inhibitors

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EFFECTS OF ETHANOL ON THE PERFORMANCE OF KINETIC HYDRATE INHIBITORS

Abstract

The main types of hydrate inhibitors are thermodynamic (THI), kinetics (KHI) and anti-agglomerants (AA) inhibitors. Kinetic inhibitors are used in low dosages but do not have satisfactory efficiency in large subcoolings. On the other hand, thermodynamic inhibitors are widely used in the industry and require high dosages. In order to study a combined inhibition, the behavior of three different commercial kinetic inhibitors combined with ethanol (THI) was tested under subcooling conditions in cases which unique kinetic inhibition did not yield satisfactory results. With 3% concentrations of kinetic inhibitors and a 10% by mass ratio of ethanol, it was possible to identify a significant increase in induction time for two of the inhibitors tested. Once the growth of the hydrate crystals began to appear, the presence of inhibitors did not result in significant gain in delaying the crystallization process. Some physical characteristics of the formed hydrates were altered in the presence of kinetic inhibitors and ethanol, evidencing a lower capacity of the crystals to adhere. With the same concentration of kinetic inhibitor and a 30% by mass ratio of ethanol the KHI presented low effectiveness.

Keywords: Gas Hydrates; Kinetic hydrate inhibitors; Ethanol; Cristal growth inhibition.

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