

## Evaluation of New Chemicals as Tetrahydrofuran Hydrate Crystal Growth Inhibitors

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It is now well known that the most efficient chemicals to act as kinetic hydrate inhibitors are water soluble polymers, which hinder hydrate formation during enough time in order to keep adequate flow in oil and gas production activities, particularly in offshore facilities. The open literature reports good properties as low dose kinetic hydrate inhibitors for poly(N-vinylactams), poly(N-N-(di)alkyl(meth)acrylamide)s, polyvinylloxazolines, polymaleimides, polymaleamides, poly(N-vinylalkanamide)s, acrylamidopropylsulfonic acid polymers, and polyallylamides. In the present work experimental tests were performed to establish the ability of newly synthesized chemicals for perturbing and inhibiting the growth of structure II tetrahydrofuran (THF) hydrates, under atmospheric pressure and 272.65 K (-0.5 °C), with the presence of 36,000 ppm of sodium chloride to obtain an adequate subcooling temperature. The experimental method has been reported in the literature. The quantity that is used to evaluate the THF hydrate growth inhibition properties of the new chemicals, as well as that for a reference commercial chemical, is the average rate of crystal growth (g/hr) of 5 experiments for each chemical. Following the mentioned tendency three water soluble copolymers of caprolactam and alkylimidazolium were synthesized and evaluated in the concentration range (0.05 to 1.0) mass %. The experimental average rates of crystal growth show that one of those chemicals presents similar performance as the commercially available Inhibex™ 101; the latter being poly(N-vinylcaprolactam) in 2-butoxyethanol as solvent.