CLAIMS

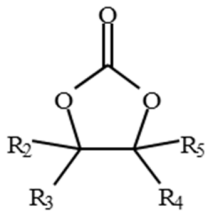
What is claimed is:

1. A composition comprising water, a crude hydrocarbon stream and a gas hydrate inhibitor composition comprising a hydroxyalkylurethane.

2. The composition of claim 1, wherein the hydroxyalkylurethane is obtained by the reaction of an amine and an alkylene carbonate.

3. The composition of claim 2, wherein the amine is a compound having the formula R_0-$(NH_2)_n$ where R_0 is a linear or branched C_2-C_{20} alkyl group or a polyoxyalkylene chain derived from ethylene oxide, propylene oxide, butylene oxide or a mixture thereof, and n is an integer from 1 to 3.

4. The composition of claim 2, wherein the alkylene carbonate is a compound having a formula (9) or (10):



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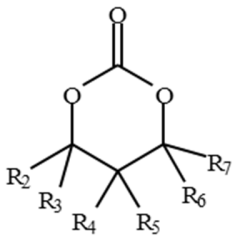
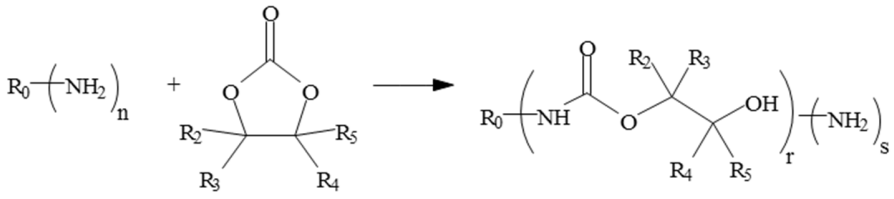


(10)

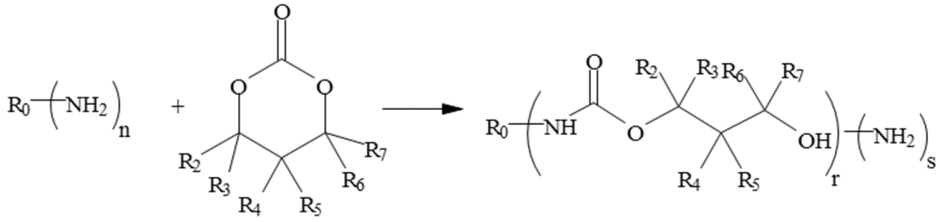
where R_2, R_3, R_4, R_5, R_6 and R_7 are the same or different and are selected from hydrogen, a C_1-C_6 alkyl and a C_1-C_6 hydroxyalkyl.

5. The composition of claim 1, wherein the hydroxyalkylurethane is obtained by the reaction of



(i)

or



(ii)

where R_0 is a linear or branched C_2-C_{20} alkyl group or a polyoxyalkylene chain derived from ethylene oxide, propylene oxide, butylene oxide or a mixture thereof,

R_2, R_3, R_4, R_5, R_6, R_7 are the same or different and are selected from hydrogen, a C_1-C_6 alkyl and a C_1-C_6 hydroxyalkyl,

n is an integer from 1 to 3 and

r and s are intergers from 1 to 3 with the proviso that r + s = n.

6. The composition of claim 1, wherein the crude hydrocarbon stream is a crude natural gas stream.

7. The composition of claim 1, wherein the crude hydrocarbon stream is a crude petroleum stream.

8. The composition of claim 1, wherein the gas hydrate inhibitor composition further comprises a second hydrate inhibitor or a solvent or an additive included for purposes other than gas hydrate inhibition.

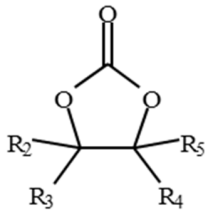
9. The composition of claim 1, wherein the hydroxyalkylurethane is present in an amount of from 0.005% by weight to 8% by weight, based on the total weight of water in the composition.

10. A method for inhibiting formation of gas hydrates comprising contacting a crude hydrocarbon stream comprising water and one or more lower hydrocarbons or other hydrate forming compound with a gas hydrate inhibitor composition comprising a hydroxyalkylurethane.

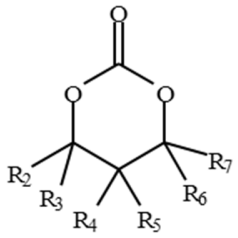
11. The method of claim 10, wherein the hydroxyalkylurethane is obtained by the reaction of an amine and an alkylene carbonate.

12. The method of claim 11, wherein the amine is a compound having the formula R_0-$(NH_2)_n$ where R_0 is a linear or branched C_2-C_{20} alkyl group or a polyoxyalkylene chain derived from ethylene oxide, propylene oxide, butylene oxide or a mixture thereof, and n is an integer from 1 to 3.

13. The method of claim 12, wherein the alkylene carbonate is a compound having a formula (9) or (10):



(9)



(10)

where R_2, R_3, R_4, R_5, R_6 and R_7 are the same or different and are selected from hydrogen, a C_1-C_6 alkyl and a C_1-C_6 hydroxyalkyl.

14. The method of claim 10, wherein the contacting occurs by injection or mixing with a static mixer.

15. The method of claim 10, wherein the crude hydrocarbon stream and gas hydrate inhibitor composition are contacted at a pressure at or greater than atmospheric pressure.

16. The method of claim 15, wherein the crude hydrocarbon stream and gas hydrate inhibitor composition are contacted at a temperature at or lower than ambient temperature.

17. A gas hydrate inhibitor composition comprising a kinetic hydrate inhibitor wherein the kinetic hydrate inhibitor is a hydroxyalkylurethane, and further comprising a second hydrate inhibitor or a solvent or an additive included for purposes other than gas hydrate inhibition.

18. The gas hydrate inhibitor composition of claim 17, wherein the second hydrate inhibitor is selected from the group consisting of: a thermodynamic inhibitor, a kinetic hydrate inhibitor, an agglomeration inhibitor and a mixture thereof.