

The cloud point of aqueous solutions of ethoxylated monoalkylphenols in the individual state and in the presence of electrolytes

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Abstract

© 2017 Taylor & Francis The cloud points t_{cp} of aqueous solutions of ethoxylated monoalkylphenols, AF9-n ($n = 8,9,10,12$), were measured in the concentration (C) range of 0.25-40 wt.%. t_{cp} increased as C decreased at $C < 1$ wt.%. At $1 < C < 10$ wt.%, t_{cp} changed insignificantly; $\Delta t_{cp} / t_{cp}$ did not exceed 5%. Solutions transformed into the gel state at $C > 10-20$ wt.% and t_{cp} sharply increased. The dependence of t_{cp} on the length of the oxyethylene chains of ethoxylated nonylphenols at $C = 1$ wt.% can be described by the equation $t_{cp} = b \cdot \ln(n - n_0)$, where $n_0 = 6$. The cloud points of aqueous solutions ($C = 1$ wt.%) of the ethoxylated nonylphenols were measured at different concentrations of NaI, NaCl, NaF, Na_2CO_3 , and Na_2SO_4 salts. For all of these solutions, t_{cp} decreased in the presence of NaCl, NaF, Na_2CO_3 , Na_2SO_4 and increased in the presence of NaI. To describe the dependence of t_{cp} on the salt concentration, the equation (Formula presented.) was suggested, where (Formula presented.) and t_{cp} are the cloud points of a neat aqueous solution of ethoxylated nonylphenols and of the solution in the presence of electrolytes, respectively.

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Keywords

Cloud point, electrolytes, ethoxylated isononylphenols