Liquid-liquid equilibria for the ternary systems of ethanol + n-hexadecane + nitrogen compounds at 298.15 K

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The tie-line end compositions of six ternary systems of ethanol + n-hexadecane + nitrogen compounds were experimentally determined at 298.15 K. This work was carried out to find solvent extraction possibility of nitrogen compound from the middle distillates. The nitrogen compounds act as an inhibitor in the ultra-low sulfur diesel manufacturing process in the oil industry. In this study, tie-line end compositions for six different nitrogen compounds containing ternary systems were experimentally determined at 298.15 K by using a static apparatus. These heterocylic nitrogen compounds are quinoline, pyridine, pyrrole, indole, acridine and aniline. Measured tie lines have been correlated using the NRTL and UNIQUAC equations, and showed good agreement. Besides, the extracting capabilities of methanol to nitrogen compounds were investigated with respect to distribution coefficients and selectivities.