

Synthesis and thermophysical investigation of jatropha biodiesel + (C4-C5) alkan-1-ol binary mixtures at 288.15-308.15K and atmospheric pressure

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Densities and Speed of sound for binary mixtures of jatropha curcas biodiesel+ butan-1-ol or pentan-1-ol have been measured as a function of composition at different temperatures (288.15, 293.15, 298.15, 303.15, and 308.15) K and atmospheric pressure, over the entire composition range, using an Anton Paar digital vibrating glass tube densimeter (model DSA 5000). The excess molar volume, V^E , isentropic compressibility and deviation in isentropic compressibility of the binary mixtures were calculated from the density and speed of sound data.

These data have been correlated using the Redlich-Kister type function. The excess volumes as well as deviation in isentropic compressibilities are negative for these mixtures. Further, the results have been analyzed in terms of molecular interactions between biodiesel and alcohol molecules.