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Thermodynamic properties of pure furfural and furfuryl alcohol and binary mixture at different pressures and temperatures

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Abstract

Due to the global trend of decreasing fossil energy sources consumption, there is a tendency, among other things, to explore possibilities of using biomass to obtain biofuels and value-added chemicals. In order to design processes as optimally as possible, it is necessary to know the thermodynamic properties of biomass components. One of the components that have been gaining in importance lately are furfural and furfuryl alcohol. The thermodynamic and transport properties such as density, speed of sound, refractive index and viscosity, of the binary system furfural + furfuryl alcohol were studied at various temperatures and pressures. Density of pure components was obtained in the temperature range (293.15–413.15) K for furfural and (293.15–373.15) K for furfuryl alcohol at pressure up to 60.0 MPa. The

obtained density values were correlated using the modified Tammann–Tait equation. The thermodynamic properties of these components are of great importance in their further potential application.

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