

Isobaric vapor-liquid equilibria, density and viscosity for the binary mixture of exo- and endo-tetrahydrodicyclopentadiene

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The exo isomer of tetrahydrodicyclopentadiene (exo-THDCPD) is the major component of the high-energy-density rocket fuel referred to as JP-10. The endo isomer (endo-THDCPD), which is the precursor of the exo isomer, is also present in JP-10 as a minor component. Despite of their importance, very little thermochemical information on the pure tricyclic isomers and their mixture is available in the literature.

In this work, isobaric vapor-liquid equilibrium data for the binary mixture of exo-THDCPD(1)+ endo-THDCPD(2) were measured by using recirculating still at 10, 30, 50, 70, 90 and 101.3kPa. The measured VLE data were correlated with common gE model equations. Additionally density and viscosity were also measured for the same binary mixture at 298.15 K with the help of digital vibrating tube densimeter and precision viscometer.