

## Densities and refractive index for the binary and ternary systems of tert-amyl methyl ether (TAME) + ethanol + 2,2,4-trimethylpentane at 298.15 K

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Fuel oxygenates are generally added to gasoline to increase combustion efficiency and to reduce air pollution. Commonly used oxygenates in recently developed non-leaded gasoline include aliphatic alcohols and methyl ethers. The significant impact of the automobile sector on the environment is forcing the refining industry to reassess the process of production and formulation of gasoline, with the aim of providing a more competitive and less polluting product. Di-isopropyl ether (DIPE) is one of the additives permitted under US Federal reformulated gasoline regulations and the proposed Euro-3 and Euro-4 rules. In this work, densities and refractive index at 298.15 K are reported for the binary systems of methyl tert-amyl ether (TAME) + ethanol, ethanol + 2,2,4-trimethylpentan and TAME + 2,2,4-trimethylpentan, and also for the ternary system TAME + ethanol + 2,2,4-trimethylpentan. The excess molar volumes and changes of refractive index of the binary and ternary systems were derived and correlated with the Redlich-Kister and Cibulka equation.