

Comments

Comment on “Phase Equilibria of CFC Alternative Refrigerant Mixtures: Binary Systems of Isobutane + 1,1,1,2-Tetrafluoroethane, + 1,1-Difluoroethane, and + Difluoromethane” (Lim, J. S.; Park, J.-Y.; Lee, B.-G.; Lee, Y.-W.; Kim, J.-D. *J. Chem. Eng. Data* 1999, 44, 1226–1230)

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1. Values of pressure at $T = 313.2$ K for the system HFC-152a + isobutane (Table 3) are clearly incorrect. Reasonable looking values can be obtained by multiplying reported data by the factor 0.1.

2. In Table 2 authors report at $T = 323.2$ K vapor pressures for HFC134a $P = 1.284$ MPa and for isobutane $P = 0.665$ MPa, respectively. The respective values from a recommended source¹ are 1.320 and 0.6852 MPa. Differences of 36 and 30 kPa are too big in comparison with the declared accuracy of the experiment. The authors ought to discuss the differences. In addition, the authors twice measured the vapor pressure of isobutane at $T = 323.3$ K (Table 2 system with HFC134a and Table 3 system with HFC152a). The values reported are 0.665 and 0.687 MPa. Again, differences are too big to omit any comments.

3. Neither the accuracy nor the precision of composition measurements is declared in the paper. The only proofs of accuracy of the correlation of the composition of coexisting phases are x, y, P diagrams (Figures 1–3). The numerical values of average deviations (AADs) are reported only for pressure. The analogous values for vapor composition (y) appear only in the title of Table 6. The inspection of

diagrams leads to big deviations in vapor composition for the systems HFC134a + isobutane at 323.2 and HFC152a + isobutane at 323.2 and 333.2 K. The representation of the vapor-phase composition is usually used as the thermodynamic consistency test for the high-pressure VLE.² These deviations are much above the reproducibility of the composition measurements declared by the authors.

4. The authors neglected results already published. For example, for the FC134a + isobutane system an isotherm at almost identical temperature is available³ and should be used for comparison.

Literature Cited

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- (3) Bobbo, S.; Stryjek, R.; Elvassore, N.; Bertucco, A. A Recirculation Apparatus for Vapor-Liquid Equilibrium Measurements of Refrigerants. Binary Mixtures of R600a, R134a and 236fa. *Fluid Phase Equilib.* **1998**, *150–151*, 343–352.

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