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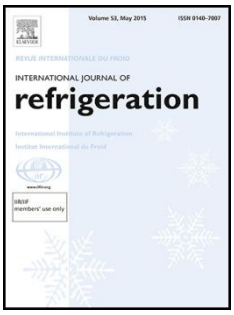

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The measurements of vapor liquid phase equilibrium for R717 + R152a system at temperatures ranging from 253.150 K to 293.150 K

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Highlights

- The vapor liquid equilibrium for ammonia + 1, 1-difluoroethane system were studied.
- Measurements were based on vapor phase single recirculation method.
- A positive azeotropic behavior was exhibited at the experimental temperature range.

Abstract

In contrast to pure ammonia, some additives into it may provide better solubility of the mineral oils, higher refrigeration capacity and lower discharge temperature of the compressor. In this paper, the vapor liquid phase equilibrium for the ammonia + 1,1-difluoroethane system at temperatures ranging from 253.150 K to 293.150 K were studied. The Peng–Robinson equation of state with the Huron–Vidal mixing rule involving the non-random two-liquid activity coefficient model was employed to describe the VLE behaviour of the system concerned. The maximum average absolute relative deviation of pressure and average absolute deviation of vapor phase are 0.31% and 0.009, respectively. A positive azeotropic behavior was exhibited at the experimental temperature range.

Keywords

Refrigerants; Ammonia (R717); 1, 1-Difluoroethane (R152a); Vapor liquid equilibrium (VLE); Azeotropy

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