## Takahasi Nearest-Neighbour Gas Revisited; Stockmayer Gases with a Hard Core

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Some thermodynamic quantities for the Stockmayer potential (12, 6, 3) with a hard core are analytically evaluated at an isobaric process. The parameters of polar gases for 16 substances are obtained. Also some thermodynamic quantities for H<sub>2</sub>O are calculated numerically and drawn graphically. The inflexion point of the length *L* corresponds physically to a boiling point. *L* indicates the liquid phase from lower temperature to the inflexion point and the gaseous phase from the inflexion point to higher temperature. The boiling temperatures indicate reasonable values compared with experimental data. The behaviour of *L* suggests the chance of a first-order phase transition in one-dimension.

*Key words:* Takahasi Nearest-Neighbour Gas; Stockmayer Potential; Boiling Temperature; Equation of State; Enthalpy; First-Order Phase Transition.