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# Thermophysical properties of pure polar and nonpolar compounds with a modified VdW-711 equation of state

I. P. **Androulakis**, N. S. Kalospiros and D. P. Tassios

National Technical University, 42 Patission St., Athens 10682, Greece

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## Abstract

A modification of the VdW-711 Equation of State (EoS), applicable to nonpolar and polar compounds is presented that provides: (i) excellent description of vapor pressures from the triple point to the critical; (ii) very good prediction of saturated liquid and vapor volumes in the same range; (iii) extrapolation of high  $P'$  values to lower ones with declining, however, accuracy as the triple point is approached; (iv) reasonably accurate values of vapor volumes in the superheated subcritical region and at high  $T_r$  values with - the typical for cubic EoS - poor results at  $T_r$  equal to or just over one; and (v) good predictions of enthalpy and entropy departures and excellent ones of enthalpies of vaporization. Values for the necessary parameters for a large number of compounds are also presented.

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