

CHAPTER OVERVIEW

7: Pure Substances in Single Phases

This chapter applies concepts introduced in earlier chapters to the simplest kind of system, one consisting of a pure substance or a single component in a single phase. The system has three independent variables if it is open, and two if it is closed. Relations among various properties of a single phase are derived, including temperature, pressure, and volume. The important concepts of standard states and chemical potential are introduced.

[7.1: Volume Properties](#)

[7.2: Internal Pressure](#)

[7.3: Thermal Properties](#)

[7.4: Heating at Constant Volume or Pressure](#)

[7.5: Partial Derivatives with Respect to \$\(T\)\$, \$\(p\)\$, and \$\(V\)\$](#)

[7.6: Isothermal Pressure Changes](#)

[7.7: Standard States of Pure Substances](#)

[7.8: Chemical Potential and Fugacity](#)

[7.9: Standard Molar Quantities of a Gas](#)

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