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Material Properties on a Phase Boundary of a Multiphase Equation of State CHRISTOPHER ROBINSON, AWE plc — Multiphase equations of state (EoS) may be constructed by determining a separate EoS for each individual solid (or liquid) phase. At a phase transition the two phases generally have a different specific volume, energy and entropy. For specific volumes and energies between the two phases the EoS may be determined by assuming the material consists of a mixture of the two individual phases. This paper determines the material properties (bulk sound speed, specific heat etc.) in the mixed two-phase region along the phase boundary assuming the material consists of a mixture of the two single phases at the same pressure and temperature and in thermodynamic equilibrium. Some general relationships between the thermodynamic properties of the mixed two-phase region compared to the single-phase regions are then determined. The effect of a phase boundary on isentropic compression or release is considered.

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