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**Equation of State Models for Low-Z Materials at High Energy Densities** KONSTANTIN V. KHISHCHENKO, JIHT RAS, Moscow, Russia — Models of thermodynamic properties of materials over a wide range of parameters are necessary for numerical simulations of processes at high energy densities including mixing in fusion plasmas. Accuracy of calculation results is determined mainly by adequacy of equation of state (EOS) of a medium. In the present work, different wide-range EOS models for low-Z elements and compounds are considered, such as Thomas–Fermi or Hartree–Fock–Slater plasma models. A semiempirical model of thermodynamic potential free energy with taking into account polymorphic phase transformations, melting, evaporation and ionization is presented. EOS calculations are carried out for hydrogen, deuterium, lithium, beryllium, carbon and hydrocarbon compounds in a broad region of the phase diagram. Obtained results are compared with available data of experiments at high pressures and temperatures in shock and release waves.

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