

Abstract Submitted
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Equation of state formulation for unreacted solid high explosives, PETN and HMX KUNIHITO NAGAYAMA¹, Retired — Equation of state (EOS) for unreacted explosives has been formulated thermodynamically aiming at using with numerical code of SDT processes. A generalized form of EOS is given in terms of p-v-E from the available static isothermal compression curve with non-constant specific heat, and arbitrary Grüneisen volume function. In this paper, a procedure of providing p-v-E EOS is developed based on the specific heat at constant volume as a function of entropy, Grüneisen volume function, together with Birch-Murnagan form of the isotherm. Material function of EOS and shock Hugoniot for PETN and HMX has been calculated, which is compared with the experimental data of shock-particle velocity Hugoniot. Dependence of shock pressure and temperature on the Grüneisen volume function is discussed. Insensitivity of the shock-particle velocity relationship to functional form of Grüneisen volume function is also shown.

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