

Abstract Submitted
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Variation of Thermal Pressure along the Solid Hugoniot¹ HUI YU², ZIZHENG GONG³, XIUFANG CHEN, XUDONG ZHANG⁴, Institute of Physics, Southwest Jiaotong University, Chengdu 610031, P.R. China, FUQIAN JING, Laboratory for Shock Wave and Detonation Physics Research, Institute of Fluid Physics, P.O.Box 919, Mianyang, Sichuan 621900, China — The behavior of thermal pressure P_{TH} for all kinds of solid materials were investigated by using lattice dynamics theory and shock wave theory along the Hugoniot up to 500GPa. The results showed that for metals, ionic crystal and minerals, etc., the ratio of the thermal pressure to the total pressure (P_{TH} / P_{Total}) is approximately keeping in constant in a large pressure range not only for non-porous materials but also for porous materials at certain porosity. This confirms theoretically the existence of material constant parameter β along solid Hugoniot (Gong *et al.*, Shock Compression of Condensed Matter-2003, edited by M. D. Furnish, Y. m. Gupta, and J. W. Forfes, pp.61-64.). Moreover, the volume dependence of the thermal pressure for all kinds of materials was addressed in our paper.

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