

Abstract Submitted
for the SHOCK05 Meeting of
The American Physical Society

PBX-9502 Shock Sensitivity Correlation with Specific Heat and Reactive Temperature Magnitudes JAMES BILLINGSLEY, U.S. Army RDECOM, AMSRD-AMR-SS-EG, Redstone Arsenal, AL. 35898 — This work is a supplementary follow-on to papers [1 and 2], presented in two previous SCCM conferences, that related plane impact shock sensitivity of CHNO energetic materials to specific heat (C_p per average atom) magnitude and reactive temperature (T_R) conditions. More specifically, plane impact shock energy input that is equal to the thermal vibratory energy increment (the area under the C_p versus temperature data curve between an experimental temperature, T_{EXP} , and a reactive temperature) is sufficient to cause shock induced reactions, up to and including detonation, in CHNO energetic materials. This statement is demonstratively verified at four different test temperatures for PBX-9502 in this proposed paper.

1. Billingsley, J. P., paper in Shock Compression of Condensed Matter – 1995, AIP Conference Proceedings 370, Part I, pages 429 – 432.
2. Billingsley, J. P., paper in Shock Compression of Condensed Matter – 1999, AIP Conference Proceedings, 505, Part II, pages 899 – 902.

James Billingsley
U.S. Army RDECOM, AMSRD-AMR-SS-EG, Redstone Arsenal, AL. 35898

Date submitted: 06 May 2005

Electronic form version 1.4