

Abstract Submitted
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Shock Initiation Thresholds for Insensitive High Explosives HUGH

JAMES, AWE — Work with conventional high explosives shows that the initiation thresholds for a variety of projectile types can be mapped onto a single curve in a space defined by the pressure or particle velocity of the initial shock, and the time of the maximum non-divergent shock volume generated in the explosive by the initial impact. This curve is distinct from, although parallel to, the Pop Plot curve, where the time is defined as the time to detonation. In contrast for an insensitive high explosive, the location of the initiation thresholds in the above space appear divided between those forming a distinct threshold curve and those which appear to be a continuation of the Pop Plot. Projectile diameters larger than the failure diameter still form a distinct threshold, but smaller projectile diameters lie on the Pop Plot curve. An examination of the data indicates that impacts lying on the threshold curve produce non-divergent detonations. These detonations appear likely to remain non-divergent or even fade. The initial conditions need to be enhanced so that the impact lies on, or just above, the Pop Plot before divergence takes place. Those initial conditions that lie on the Pop Plot only need sufficient run distance in the explosive before a diverging detonation is achieved.

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