

Abstract Submitted  
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**The Effect of Surface Area and Density on the Volumetric Shock Initiation of PETN** ROSEMARY BURRITT, MICAEL BOWDEN, Los Alamos National Laboratory — A volumetric shock initiation criterion, based on the concept of a critical shock volume as a function of shock pressure, has been shown to describe the initiation of PETN and HNS by curved, thin flyers. Historic criteria based upon a shock duration cannot describe this process as completely. Data is often only available, for a given material, for a single density and surface area. Therefore, the effect of density and surface area on the pressure/volume relationship is not well known, though may be hypothesized. PETN of two different surfaces, at two different densities, was initiated with electrically-driven plastic flyer plates of a range of thicknesses and diameters, and the pressure required for initiation determined. This data, along with comparison to published data, allows for the effect of density and surface to be quantified. Increasing the surface area, and decreasing the density, was found to increase the shock sensitivity. These effects were found to be more pronounced for small volume shocks, such as those generated by LEEFIs. For larger flyers, the effect was less pronounced.

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