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Particle size and surface area effects on the thin-pulse shock initiation of Diaminoazoxyfurazan (DAAF). ROSEMARY BURRITT, ELIZABETH FRANCOIS, GARY WINDLER, DAVID CHAVEZ, Los Alamos National Laboratory — Diaminoazoxyfurazan (DAAF) has many of the safety characteristics of an insensitive high explosive (IHE): it is extremely insensitive to impact and friction and is comparable to triaminotrinitrobezene (TATB) in this way. Conversely, it demonstrates many performance characteristics of a Conventional High Explosive (CHE). DAAF has a small failure diameter of about 1.25 mm and can be sensitive to shock under the right conditions. Large particle sized DAAF will not initiate in a typical exploding foil initiator (EFI) configuration but smaller particle sizes will. Large particle sized DAAF, of 40 μm, was crash precipitated and ball milled into six distinct samples and pressed into pellets with a density of 1.60 g/cc (91% TMD). To investigate the effect of particle size and surface area on the direct initiation on DAAF multiple threshold tests were preformed on each sample of DAAF in different EFI configurations, which varied in flyer thickness and/or bridge size. Comparative tests were performed examining threshold voltage and correlated to Photon Doppler Velocimetry (PDV) results. The samples with larger particle sizes and surface area required more energy to initiate while the smaller particle sizes required less energy and could be initiated with smaller diameter flyers.

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