

Abstract Submitted
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Shock Reactivity Study on Standard and Reduced Sensitivity RDX of Different Particle Size Distributions NICHOLAS MCGREGOR, Naval Surface Warfare Center, Indian Head Division, ALLEN LINDFORS, Naval Air Weapons Station, China Lake — Embedded gauge experiments have been performed using a three inch high velocity powder gun to assess the effects of RDX particle size and crystal quality on shock induced reactivity in support of the Combat Safe Insensitive Munitions (CSIM) program. Four monomodal experimental compositions containing 73% solids loading by weight and 27% HTPB binder were tested. The compositions were made using either standard or reduced sensitivity grades of RDX in Class 5 or Class 1 150-300 micron sieve cut particle size classes. Results have shown marked changes in the mode of reaction between the two particle size classes. Both RDX grades at the Class 1 sieve cut particle size distribution showed significant reaction at the shock front as well as behind the front. The Class 5 RDX compositions however showed little reaction at the shock front with rapid growth behind the front. Similar input pressures resulted in a full detonation in a similar distance for like RDX grades. Reaction modes were similar but occurring at greater input pressures for the reduced sensitivity grade of RDX compared to the corresponding particle size distribution standard grade RDX counterpart.

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