

THE INFLUENCE OF DELAYED ENERGY RELEASE IN ALUMINIZED EXPLOSIVES

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This paper presents the interim results of an analysis of combined theoretical, calculational, and experimental data assembled on Tritonal over the past two years. It has been noticed that Tritonal behaves very differently when detonated as a free air charge, a lightly cased charge, or a heavily cased charge. The differences have been attributed to a variety of deficiencies ranging from separation of the aluminum during charge pouring, to air pockets in the charge, to poor detonation characteristics or duds.

Data on the explosive behavior of Tritonal has been collected on a variety of experiments over a range of charge sizes and casing heights. Usually the data needed for this analysis has been collected as secondary information on experiments conducted for other purposes. This data has been supplemented by the results of large hydrodynamic calculations, again, mostly completed in support of experiments only peripherally related to this work. Several calculations have been made in direct support of our understanding of the behavior of Tritonal and aluminized explosives in general.

This paper also presents the results of the data analysis completed at this time and suggests models of the time dependent detonation parameters for calculating Tritonal bum. This work suggests an explanation of the wide variability observed between cased and uncased charges and a discussion of further experiments needed before further improvements can be made and validated.