

UPDATE ON THE STATUS OF NUMERICAL MODELING OF NON-IDEAL EXPLOSIVES

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This paper summarizes a number of numerical modeling approaches that have been and are being used to provide environments resulting from the detonation of non-ideal explosives. These explosives may be mixtures of combinations of explosive, binder, oxidizer and/or added fuel. The mixtures may be uniform or intentionally segregated. Charges may be bare, lightly cased or heavily cased. A review of important modeling treatments is included with a view to the value of carefully controlled experiments in understanding the behavior of these complex explosives.

As a result of these modeling efforts, a number of parameters have been determined to have significant influence on the performance of such explosive mixtures. Some of the most influential parameters are:

1. The components of the mixture
2. The charge size
3. The presence or absence of a case and its properties
4. The degree of confinement
5. Mixing of detonation products with air
6. Ignition temperature of the metal content

Some examples of the importance of these and other parameters will be presented. Indications of the gaps and weaknesses of the current models will also be mentioned with suggestions for the direction of future work.