

BLAST EFFICIENCY OF ALUMINIZED HIGH EXPLOSIVES

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ABSTRACT

The aim of this paper is to address by experiments the identification and the validation of similarity laws for an aluminized high explosive with a low aluminum content. The experimental blast parameters are then compared to numerical simulations.

We present blast experiments with hemispherical charges detonated on the ground. The experimental set-up allows simultaneously the measurement of side-on and reflected pressures. A TNT reference is preliminary tested and compared to reference data. The side-on and reflected blast parameters versus scaled distance are also measured for different charge weights of a aluminized high explosive with a low aluminum content. The identification and validation of a similarity law is obtained.

Numerical simulations are performed with the new Speedy software. It is a chain of thermochemical codes (Cheetah 2.0 and Quercy) and one-dimensional hydrocodes based on an arbitrary Lagrangian/Eulerian (ALE) solver, working fast on a PC and dedicated to the underwater and air blast effects calculated from the detonation of a HE charge, taking into account only the HE composition. In this paper, Speedy is evaluated for an aluminized high explosive with a low aluminum content.