

34-57 NUMERICAL SIMULATION ON MACH DETONATION FORMED BY HIGH EXPLOSIVES

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The detonations of explosives are classified into C-J (Chapman Jouguet) detonation and Over driven detonation (O.D.D.). Under the C-J detonation, the explosives detonate with the stable detonation pressure and detonation velocity. Though explosives can generate great energy and pressure, they are often insufficient to apply for mechanical and material processes.

On the other hand, O.D.D. can be expected to generate the higher detonation pressure and detonation velocity than those in C-J detonation. Mach Detonation is a kind of O.D.D.; the irregular reflection of detonation wave exhibits much resemblance in reflecting configuration with the Mach reflection of weak shock in gaseous media. We investigate the occurrence of Mach Detonation generated by a combination of high explosives. This paper presents that the Mach Detonation is produced from three high explosives that have different performances, and that the progress of Mach detonation is investigated by the numerical simulation. The calculated results demonstrate that the higher detonation pressure and velocity occur in Mach detonation compared with C-J detonation.

(Impact Engineering and Application, Proceedings of the 4th International Symposium on Impact Engineering, Jul 16-18, 2001, Kumamoto, Japan)