

# REFLECTED HETEROGENEOUS BLAST

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## ABSTRACT

Reflection of a spherical blast wave from a wall results in a complex fluid flow and shock structure, including a reflected spherical wave and a radially expanding Mach stem. For a metalized explosive, the pressure and impulse distributions along the wall may be modified by the afterburning of particles both before and after they impact the wall and interact with the reflected waves. Experiments have been carried out to determine the pressure history on a wall during blast reflection from spherical heterogeneous charges consisting of a mixture of nitromethane and various reactive metal particles in comparison with those for homogeneous (C4) charges. In all cases, the reflected pressure and impulse, normalized with the incident values, increases on the wall near the transition to Mach reflection. For charges containing light metal particles such as aluminum, the normalized pressure and impulse were not enhanced by the particle/wall interactions compared to the homogeneous HE. In contrast, the impact and fragmentation of higher density reactive particles that remain partially solid significantly augmented the impulse applied to the structure.