

DECELERATION OF EXPLOSIVE PRODUCTS OF HMX-BASED HE IN COOPER AND ALUMINUM BARRIERS

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The paper presents the experiments aimed to obtain a deceleration curve of explosive products of HMX-based high-explosive (HE). The tested HE was initiated using the plane-wave loading device with aluminum impactor plate driven at the velocity of ~4 km/s. Normal detonation mode was reached in the HMX-based HE sample using this loading device with the initial pressure of ~37 GPa being close to the Chapman-Jouguet pressure.

Double-layer copper and aluminum samples with different shock-wave impedances were used as barriers. Wave velocity and free surface velocity at the entrance and exit out of the second barrier layer were recorded using PDV technique. The first layer of the barrier was used to dampen chemical peak. Pressures and particle velocities for each barrier were obtained using the particle velocity doubling relation ($W = 2u$) and conservation laws, and they adequately fall along the two-fold compression adiabat.
