

The Characteristics of the Fragments from Cylindrical Casing with One of End Caps Fully Constrained

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Abstract : In order to study the process and characteristic of the fragments in the warhead with one end cap under full constraint condition, we established a cylindrical casing with two end caps which one of which was fully constrained using the simulation analysis. The result showed that the fragmentation of cylindrical casing with one end full constrained has its own characteristic. The Mach stem was generated when the detonation wave propagated to the fully constrained end cap under the condition of one end detonation, working on unreactive explosives and causing the nearby fragment subjected to nearly 2.5 times the normal pressure to obtain a higher speed. The cylindrical casing first ruptured at the contact surface with the fully constrained end, and then at the end cover of the initiating end, and then the rupture extends to the whole cylindrical casing. The detonation products started to leak out from the rupture. Driving fragments to fly and forming two dense flying areas. The analysis of this paper can provide a reference for the optimal design of this kind of warhead.

Keywords : fragment, cylindrical casing, detonation waves, numerical simulation

Conference Title : ICDV 2021 : International Conference on Dynamics and Vibration

Conference Location : Istanbul, Türkiye

Conference Dates : April 26-27, 2021