

Numerical Modeling on lethality of a Faceted Prismatic Warhead

LI Yuan¹, ZHAO Qian¹, XIONG Shi-hui², WEN Yu-quan²

(1. State Key Laboratory of Automotive Safety and Energy, Tsinghua University, Beijing 100084, China; 2. State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, Beijing 100081, China)

Abstract: To enhance the damage probability of munitions at various encounter distances, a faceted prismatic warhead composed of flat faces and convex faces is numerically studied in this work, and the dispersion patterns and lethality parameters of fragment beams from different faces are analyzed. The results reveal that this warhead structure could produce two types of fragment beams. One is the fragment beam with high speed and small scattering angle, and the other shows low speed and wide coverage. These fragment beams are suitable for attacking targets at different missing distances. The asymmetrical initiations could enhance the fragment velocity of flat face by 21.68%, reduce the dispersion angle of 3.38° and improve the lethality of fragment opposite to detonating point without changing the property of producing two kinds of fragment beams. The lateral two line initiations could change the fragment dispersion angle of the flat face of 4.94° without reducing the velocity of the fragment, which is higher than other initiations. Under large warhead-target missing distance, this change could alter the aiming direction and improve the damage probability.

Key words: aimable warhead; multi-point initiation; fragment dispersion; multi-effect warhead

CLC number: TJ410.33

Document code: A

DOI: 10.11943/CJEM2018143



《含能材料》“含能共晶”征稿

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