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NUMERICAL STUDY ON DEBRIS CLOUD BEHIND AL/MG WAVE IMPEDANCE-GRADE  
BUMPER**Abstract**

Debris clouds produced behind Al/Mg wave impedance-grade bumper and Aluminum alloy were studied by using numerical simulation at velocity range 4.0-7.0 km/s. The number of ejecta particles before Al/Mg bumper was half of that before aluminum alloy bumper. Projectile debris behind Al/Mg bumper spread in a larger expansion angle, while bumper debris expanded in a smaller angle, compared with those behind aluminum alloy bumper. Less large fragments with smaller mass were observed in debris cloud behind Al/Mg bumper. These characteristics of debris cloud indicated that Al/Mg bumper could break an incidence projectile into more fragments moving at smaller velocities than monolithic aluminum alloy bumper could.

Key words: debris cloud; wave impedance-grade material; protection shield; hypervelocity impact; numerical simulation