
Features of high-speed face blow of flat blade projectiles

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The article presents experimental results and numerical simulations of flat blade projectiles high-speed interaction with massive semi-infinite duraluminium targets. We studied interaction velocity in the range of 800...1500 mps and two values of projectile thickness $h = 1.5$ and 3 mm. Width and length of the projectiles were 7.7h and 14h for the 3mm-thick blades, and 15.5h and 28h for 1.5mm-thick blades. Influence of impact velocity on depth, volume and shape of the cavern formed in the target was investigated. Influence of the sabot on the results of the interaction was also studied. It was shown that transverse dimensions of the cavern are equal to 5...9h, while the longitudinal dimensions can be equal to 1.35...2.0 of the plate width. A comparison of the investigation results of blade projectile and axisymmetric projectile interaction with target showed that planar projectiles had advantages in depth of penetration and in width of the formed crater over cylindrical ones.

Keywords: blade projectiles, sabot, high-speed interaction, target, duraluminium, cavern.

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