MODELING OF FRAGMENTATION OF RAPIDLY EXPANDING CYLINDERS

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The paper considers fragmentation process of high-explosive projectile casings, i.e. rapidly expanding cylinders loaded by extreme internal pressures generated by detonation of explosives. The classical Mott's model as well as the alternative approaches to the problem are examined. The distribution laws of fragment size and mass are analyzed and the average fragment size (mass) is related to the characteristics of expansion and the casing material properties. The theoretical distributions are compared with experimental data and good correspondence is obtained. Finally, the possibilities for improvement of characteristics of projectile fragmentation are investigated.

Keywords: fragmentation, high-explosive projectile, Mott's fragmentation model, fragment distribution law.