Comparative analysis of the shaped-charge jet formation from conical and hemispherical liners

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The article describes numerical simulation of the metal shaped-charge jet formation during compression of conical and hemispherical liners carried out within the framework of the two-dimensional axisymmetric problem of continuum mechanics. Copper was considered as a material for liners. It is found that the transition from a constant thickness of hemispherical shaped liners to a degressive one (decreasing from the top to the bottom) makes it possible increasing the velocity of the head part of the formed shaped-charge jets to a level of 10 km / s provided by shaped charges with conical lining. It can be made by creating conditions for the realization of the implosion principle (spherically symmetrical thinning-down of the liner material to the center). The analysis of mass-velocity distributions for shaped-charge jets, formed from different liners, has been performed. Findings of the research show that using liners of a degressive thickness in the form of a half-ellipsoid or a truncated sphere is possible as an additional means of controlling the mass-velocity characteristics of the shaped-charge jets.

Keywords: *shaped charge, shaped-charge jet, conical liner, hemispherical liner, mass-velocity distribution, numerical simulation*

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