Braking of explosion products of plasticized octogen on lithium fluoride

Stanovov A A[@], Bogdanov E N, Burenin V I, Kanunova L I, Yagovkin A O, Antonyuk L K, Govorunova T A and Safronov A E

Federal State Unitary Enterprise "Russian Federal Nuclear Center—All-Russian Research Institute of Experimental Physics", Mira Avenue 37, Sarov, Nizhniy Novgorod Region 607188, Russia

[@] postmaster@ifv.vniief.ru

To test the equations of state of the explosion products, a wide range of different experimental data is used, in particular, the results of experiments on the deceleration of explosion products into optically transparent barriers with registration of the mass velocity profile by methods of highly sensitive laser interferometry (VISAR, PDV). The profile of the Taylor expansion wave, in which the explosion products expand from the Chapman–Jouguet state to relatively low pressures, contains important information in the experiments. Since the Taylor wave is a non-stationary zone of the detonation wave, with an increase in the length of the charge, the rate of pressure drop in it decreases, which makes it possible to realize different ranges of pressure changes in the explosion products.
In the experiments carried out, states in the explosion products from ≈ 40 to 10 GPa were realized. The experimental results obtained were used to test the equation of state of the explosion products of the investigated explosive in the Jones–Wilkins–Lee (JWL) form. The results of the computational modeling in two-dimensional geometry are in satisfactory agreement with the experimental results.