
Assessment of high-density explosives performance using the JWL equation of state

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In the article we have refined estimations of the explosive materials performances considered as the ability of their decomposition products to produce work while isoentropically expanding from the initial state of the instantaneous explosion products; the effect of the 'cold' components of pressure and internal energy of the actuating medium producing the work was taken into account. Results of the calculations using the Jones–Wilkins–Lee (JWL) equation of state for low-density and high-density PETN charges are provided for several ways of delivering extra energy into explosion products, excessive as compared to the heat generation at the detonation front characterized by the Chapman–Jouget parameters.

Keywords: explosive material, heat of explosive reaction, performance, efficiency coefficient, instantaneous explosion

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