simulation of explosive welding with ANFO Mixtures

The work described here arose from a study into explosive welding. As part of that study the impact velocity of stainless steel and titanium plates to grazing detonation of ANFO/perlite, the velocity of detonation were measured. Computer simulation required a new model which copes with an equation of state of low explosives. The Williamsburg equation of state WBG EoS has several advantages over traditional equations of state such as the jones wilkins lee JWL when modelling low explosives such as ANFO. The use of the WBG EoS to model ammonium nitrate -fuel oil ANFO explosives with an inert perlite admixture is described. The WBG EoS was codified into the commercial finite difference package AUTODYN2D and used to model the acceleration of thin plates under grazing detonation as seen in explosive welding. The predictions were verified by comparison with experimentss.

Explosives welding: ANFO; Williamsburg equation of state: modelling

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