

Abstract Submitted
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New Mix Explosives for Explosive Welding LEONID ANDREEVSKIKH — Suggested and tested were some mix explosives—powder mixtures of a brisant high explosive (HE = RDX, PETN) and an inert diluent (baking soda)—for use in explosive welding. RDX and PETN were selected in view of their high throwing ability and low critical diameter. Since the decomposition of baking soda yields a huge amount of gaseous products, its presence ensures (even at a low HE percentage) a throwing speed that is sufficient for realization of explosive welding, at a reduced brisant action of charge. Mix chargers containing 30–70 wt % HE (the rest baking soda) have been tested experimentally and optimized. For study of possibility to reduce critical diameter of HE mixture, the mixture was prepared where HE crystal sizes did not exceed $10\ \mu\text{m}$. The tests, which were performed with this HE, revealed that the mixture detonated stably with the velocity $D \approx 2\ \text{km/s}$, if the layer thickness was $d = 2\ \text{mm}$. The above explosives afford to markedly diminish deformations within the oblique impact zone and thus to carry out explosive welding of hollow items and thin metallic foils.

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