

# INFLUENCE OF ALUMINUM PARTICLE SIZE ON THE HEAT OF EXPLOSION OF ALUMINIZED EXPLOSIVE COMPOSITIONS

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**Abstract:** The investigation results confirm the possibility of the heat of explosion (HoE) to be considerably enhanced by the addition of dispersed aluminum (Al) to a high explosive (HE). It follows from the data obtained that in the case of the formulations prepared by mechanical mixing, the compositions with nanoaluminum (nAl) have no advantages in HoE over the mechanical mixtures, containing Al with the particle size of the order of several micron. The exception is provided by the formulations based on HE with a highly negative oxygen balance (OB). In the latter case, the mixtures with nAl can outperform their counterparts with micronsized Al for HoE. The nanocomposite representing the system with uniform distribution of nAl particles in HE matrix can be superior to the mechanical mixture in HoE when the Al concentration is high and basic HE has negative OB.

**Keywords:** high explosive; acceleration ability; heat of explosion, aluminum; nanocomposite

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