

INFLUENCE OF THE THICKNESS OF FLAT CRYSTALS ON THE CRITICAL TEMPERATURE OF THERMAL EXPLOSION OF LEAD AZIDE

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Reaction of thermal decomposition of lead azide is heterogeneous [P.G. Fox, R.W. Hutchinson // *Energetical Materials*, V. 1. – New York: Plenum Press, 1976; P. G. Fox // *J. Solid State Chem.* – 1970. – Vol. 2. – No. 4. – P. 491–502; M.M. Chaudhri, J.E. Field // *J. Solid State Chem.* – 1975. – Vol. 12. – No.1-2. – P. 72–79; A.V. Khaneft // *Russian Journal of Physical Chemistry.* – 2001. – Vol. 75. – No. 1. – P. 14–17]. Thermal explosion of lead azide occurs after an acceleration period, caused by a topochemical autocatalysis. When the lead nuclei are overlapped, the kinetics of the decomposition of lead azide is described by the equation of the shrinking volume. Thermal decomposition parameters of lead azide from [A.V. Khaneft // *Russian Journal of Physical Chemistry.* – 2001. – Vol. 75. – No. 1. – P. 14–17] were used for the calculation of the critical temperature of a thermal explosion of lead azide. On the bases of the Semenov ignition criteria, a system of equations for the calculation of the critical ignition temperature is derived. The results of the calculations are consistent with experiments [M.M. Chaudhri, J.E. Field // *J. Solid State Chem.* – 1975. – Vol. 12. – No.1-2. – P. 72–79].

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