CALCULATION OF THE STANDARD ENTHALPY OF FORMATION AND HEAT OF COMPLETE COMBUSTION OF TRIETHYLALUMINUM IN WATER VAPOR AND IN AIR

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Abstract: Based on the available reference data on the binding energy of an aluminum atom to a carbon atom in the AlC radical, an approximate estimate of the total breaking energy of three Al–C_2H_5 bonds in the $Al(C_2H_5)_3$ triethyl aluminum molecule is obtained and the heat of reaction of a stoichiometric gas-phase mixture of $Al(C_2H_5)_3$ with saturated steam with the formation of ethane and solid Al_2O_3 is calculated. The obtained data on the heat of reaction were used to calculate the standard enthalpy of formation of $Al(C_2H_5)_3$ and the heat of complete combustion of triethyl aluminum in air.

Keywords: aluminum; triethyl aluminum; binding energy; standard enthalpy of formation; heat of reaction

DOI: 10.30826/CE19120202

Acknowledgments

This work was supported by the subsidy given to the N. N. Semenov Federal Research Center of Chemical Physics of the Russian Academy of Sciences to implement the state assignment on the topic No. 0082-2016-0011 "Fundamental studies of conversion processes of energetic materials and development of scientific grounds of controlling these processes"(Registration No. AAAA-A17-117040610346-5) and to the Scientific Research Institute for System Analysis to implement the state assignment on the topic No. 0065-2019-0005 "Mathematical modeling of dynamic processes in deformed and reactive media using multiprocessor computational systems" (Registration No. AAAA-A19- 119011590092-6), and partly by the Russian Foundation for Basic Research (project 16-29-01065ofi-m).

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Received December 25, 2018

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