*Reference Object Identifier* – ROI: jbc-01/18-53-2-53
*The Digital Object Identifier* – DOI: 10.37952/ROI-jbc-01/18-53-2-53
Submitted on January 09, 2018.

# Ignition characteristics of the composite fuel droplets containing municipal solid waste

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***Keywords:*** municipal solid waste, utilization, composite liquid fuel, ignition and combustion, energy production.

## Abstract

Article contains results of experimental studies of ignition and combustion of composite liquid fuels droplets with the addition of typical municipal solid waste as a combustible component: wood, rubber, plastic, cardboard. A small concentration (about 10% by weight) of these components in the fuel composition intensifies the ignition process, all other things being equal. Experimental studies were performed using a bench that allows studying the heating conditions of stationary fuel drops about 1 mm in a muffle furnace with a temperature variation in the range of 400-1000 $^{o}$C. As a result of the studies, the minimum temperatures necessary to realize the steady ignition of composite liquid fuel drops with the addition of typical municipal solid waste, as well as the dependence of the ignition delay on temperature, are established. It was also found that fuels with the addition of municipal solid waste have lower concentrations of nitrogen and sulfur oxides in gaseous combustion products compared to fuel without adding waste. The maximum difference between the concentrations of $NO_x$ and $SO_x$ for such fuels is 70% and 45% (in absolute units of 125 ppm and 50 ppm).

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