

## Dynamic viscosity dependence on temperature for fuels used for diesel engine

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**Abstract.** Viscosity is an important property of fuels used for diesel engine affecting engine's efficiency and harmful gases emission. Viscosity of liquid fuels depends especially on fuels composition and temperature. The dynamic viscosity of diesel fuel, biodiesel and blends of diesel with biodiesel, *i*-propanol and *n*-butanol was measured for temperature ranging from 293.15 K to 323.15 K and atmospheric pressure. It has been verified that well-known Arrhenius derived equations can be used to estimate with good accuracy, viscosity at different temperatures for diesel, biodiesel, diesel+biodiesel blends, but also for diesel blends with propanol and butanol. Values of activation parameters: activation energy, activation enthalpy and activation entropy for the viscous flow were derived based on linearized Eyring's type equation. The values of the activation energy for viscous flow of fuels and fuels blends calculated based on measured values of dynamic viscosity in the temperature range of 273.15 K and 323.15 K were similar to those presented in the literature for some hydrocarbons, esters, and alcohols, respectively.

**Keywords:** dynamic viscosity; diesel, biodiesel; activation energy; viscous flow.

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