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## **BIODIESEL AND DIESEL ENGINE: CORRELATION BETWEEN BIODIESEL SPECIFIC MASS AND THE ENGINE CONSUMPTION AND THE POLLUTANTS EMISSION**

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The fuel used in diesel cycle engines is diesel oil, a mixture of mineral hydrocarbons. Biodiesel is a compound of fatty acids obtained from vegetable oils and animal fat in the transesterification process. In Brazil, the National Petroleum Agency (ANP) regulates the characteristics of these fuels. The characteristics of both diesel oil and biodiesel depend on the composition of them. This work presents the composition of biodiesel from two oil seeds and the average composition of diesel oil, highlights the influence of the composition of these oils on the specific mass and viscosity and presents the consumption

and emission of a diesel engine, constituting a motor group and electricity generator, fed with these fuels. Soybean biodiesel had a specific mass of 3.6% higher when compared to diesel oil, and biodiesel of castor bean 6.77%. The consumption of the engine with zero load and mixed feed containing 35% was higher 5.39% with soybean biodiesel and 9.97% with castor biodiesel. With these percentages of biodiesel in the fuel, there was an increase in CO, NO<sub>x</sub>, unburned hydrocarbons and soot emissions. There were no significant variations in CO<sub>2</sub> emissions.

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