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Fleet Test Evaluation of B5 Blends (5% Biodiesel) in Pickups

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ABSTRACT

The Brazilian B5 (5% by volume of biodiesel in mineral diesel) mandatory legal marketing established for 2013 led to the evaluation of the effects of this fuel in vehicle fleets. This work presents the results of a research project that was aimed to assess the effects of the use of B5 blend of biodiesel made from castor oil and soy in a dedicated pickup fleet of 6 units. The vehicles selected were powered by 3.0-liter engines, equipped with a common rail injection system that meets the Euro Stage III emissions level.

Two vehicles ran with soy-made B5, two ran with B5 from castor oil, and two ran with pure mineral diesel as reference. Each pickup traveled 100.000 km over a year in different regions of altitude and temperature. Engine oil and oil filters, fuel filters and fuel samples were collected and analyzed periodically. The engines were evaluated in dynamometers, and their components inspected in detail before and after the test. Torque and power curves, fuel consumption and vehicle performance in addition to the regulated tailpipe emissions were recorded and evaluated.

Results of engine oil analysis, fuel filters and lubricant filters analysis collected during the test showed acceptable characteristics to the analyzed parameters. Also, the fuel consumption was satisfactory, showing regularity with minor variations.