

THE EFFECT OF 95% ETHANOL USE ON AFR AND EMISSIONS IN MOTOR VEHICLES WITH A CARBURETOR COMBUSTION SYSTEM

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ABSTRACT

This study aims to determine the effect of 95% ethanol use on the value of Air Fuel Ratio (AFR) and exhaust gas emissions in carburetor system motor vehicles. The research was conducted using a Yamaha Byson 2013 motorcycle with experimental methods and quantitative approaches. The test was carried out at idle conditions of 1500 rpm using 95% ethanol fuel and pertalite as a comparison. The parameters tested included AFR, lambda (λ), as well as CO, HC, CO₂, and O₂ exhaust emissions using a gas analyzer and wideband O₂ sensor.

The results showed that 95% ethanol produced an AFR of 10.28 : 1 with a lambda value of 1.142, while pertalite was 27.81 : 1 with a lambda of 1.892. CO emissions in ethanol of 3.58% by volume are lower than pertalite of 4.26% by volume. However, ethanol HC emissions reached 10000 ppm, much higher than pertalite of 494.67 ppm. The CO₂ content of ethanol of 2.40% volume was lower than that of pertalite of 2.87% by volume, while the content of O₂ ethanol of 14.67% volume was higher than that of pertalite of 12.83% volume. The results showed that the use of 95% ethanol had an effect on the characteristics of AFR and exhaust gas emissions in motor vehicles with a carburetor system.

Keywords: *Ethanol 95%, AFR, carburetor, lambda.*