ANALYSIS OF THE EFFECT OF MIXING POLYPROPYLENE PLASTIC FUEL WITH PETROL CLEANER ON OCTANE NUMBER AND RECOMMENDATIONS FOR MOTOR VEHICLE ENGINE SPECIFICATIONS

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ABSTRACT

The depletion of fossil fuel oil reserves in nature, including non-renewable fuel sources, has led to the exploration of alternative solutions. Polypropylene (PP) plastic waste is one such alternative fuel source often touted as a solution to the energy crisis through pyrolysis processes. The fuel produced from pyrolysis is then mixed with an additive substance such as petrol cleaner or carbon cleaner, with variations in addition ranging from 1ml, 1.5ml, to 3ml. Subsequently, octane number testing is conducted on the polypropylene pyrolysis fuel blend with the additive using an octane number apparatus. The octane number significantly impacts engine performance, as a higher octane number necessitates a higher compression ratio to prevent detonation. This study resulted in the highest octane number for the polypropylene fuel blend with carbon cleaner at a volume mixture of 100ml + 1.5ml additive, yielding an octane number of >115.4 RON. This octane number exceeds that of Pertamax Turbo by Pertamina, which has an octane number of 98 RON.

Keywords: Octane number, plastic (PP), Pyrolysis, Incinerator, Additive substance, Carbon cleaner.