**Blending Study of Palm Oil Methyl Esters with Rubber Seed Oil Methyl Esters to Improve Biodiesel Properties**

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**Abstract**

Palm oil methyl esters (POME’s) significantly contributed towards biodiesel production commercially. Rubber seed oil methyl esters (RSOME’s) with non-edible properties and significant amount of unsaturated fatty acid content contributed to enhancement of low temperature properties along with remedy on food scarcity dilemma. Post blending of POME’s and RSOME’s at different volumetric ratios improved the low temperature properties of fuel. POME’s resulted in excellent oxidation stability with induction period (IP) of 25.52h as compared to RSOME’s which only exhibited IP of 3h. Contrarily, RSOME’s showed positive behaviour towards low temperature properties. GC analysis determined the momentous improvement in low temperature properties as the saturated methyl esters compostion reduced in post blended mixture. The optimized blend value where both low temperature properties and oxidation stability were determined at acceptable limits was found at blend ratio of POME’s to RSOME’s at 20:80. All the blends satisfied the international biodiesel criteria of EN and ASTM. Kinetics of POME and RSOME were investigated and followed a pseudo-first order kinetics. Activation energy for POME was found to be 33.2 KJ/mole and for RSOME was found to be 43.4 KJ/mole. Frequency factor for POME and RSOME was found to be 2.4 x 103 min-1 and 1.3 x 103 min-1 respectively.

***Key words****: low temperature properties, oxidation stability, biodiesel, non-edible, blend ratio, kinetics*