

Development of an Optimal Additive Package for Re-refined Lubricating Oils.

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Abstract:

The re-refining of used SAE 20W- 50 lubricating oils from automotive (car) gasoline engines and the development of an additive package for the re-refined oil has been investigated. Vacuum distillation preceded by caustic treatment of the used oil produced about 65% (w/w) of SAE 30 grade base tube stock.

Response Surface Methodology (RSM) was successfully utilized in the optimization of an additive package consisting of an oxidation/corrosion inhibitor, detergent and dispersant additives as independent variables. Neutralization number, corrosion and sludge deposition were the responses measured.

An optimal additive package of 0.988% (v/v) oxidation/ corrosion inhibitor 1.325% (v/v) detergent additive and 3.0% (v/v) dispersant additive was found for the SAE 40 grade lubricating oil obtained from a blend of the re-refined oil and bright stock in the ratio 3:1.

Keywords: Re-refined lubricating oil/ Response Surface Methodology (RSM)

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