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Phosphorus Reduction in Plain and Fully Formulated Oils Using Fluorinated Additives

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Abstract : The reduction of phosphorus and sulfur in engine oil are the main topics of this paper. Very reproducible boundary lubrication tests were conducted as part of Design of Experiment software (DOE) to study the behavior of fluorinated catalyst iron fluoride (FeF3), and polutetrafluoroethylene or Teflon (PTFE) in developing environmentally friendly (reduced P and S) anti-wear additives for future engine oil formulations. Multi-component Chevron fully formulated oil (GF3) and Chevron plain oil were used with the addition of PTFE and catalyst to characterize and analyze their performance. Lower phosphorus blends were the goal of the model solution. Experiments indicated that new sub-micron FeF3 catalyst played an important role in preventing breakdown of the tribofilm.

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