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(54) Title: LUBRICATING OIL COMPOSITIONS CONTAINING ENCAPSULATED MICROSCALE PARTICLES

Fig. 1

Benchmark Formulation	Average Film (%)	Average Friction	Wear Scar Depth (μm)
PAO 4	4	0.351	-9.63, -10.91
Partial Formulation	3	0.166	-2.77, -2.84
Full Formulation	31	0.104	-1.05, -1.21

(57) Abstract: A method for improving wear control in an engine or other mechanical component lubricated with a lubricating oil by using as the lubricating oil a formulated oil. The formulated oil has a composition comprising a lubricating oil base stock as a major component, and encapsulated microscale particles, as a minor component. The minor component contains no sulfur or phosphorus. The encapsulated microscale particles include an encapsulating material and a core material encapsulated by the encapsulating material. The core material includes at least one metal salt selected from a metal oxide, metal hydroxide, metal carbonate, or mixtures thereof. The encapsulating material is derived from a carboxylic acid selected from an aliphatic carboxylic acid, a cycloaliphatic carboxylic acid, an aromatic carboxylic acid, and mixtures thereof. The lubricating oils are useful in internal combustion engines.



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