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

Fig. 1

<u>Ligands (%)</u>	<u>Stability in PAO</u>
Stearic Acid (100)	White precipitate
Palmitic Acid (100)	Cloudy suspension
Palmitic (67) and Stearic (33) Acids	Slightly clear suspension
Palmitic (33) and Stearic (67) Acids	White precipitate
Oleic Acid (100)	Clear solution, no precipitate
Palmitic (67) and Oleic (33) Acids	Slightly cloudy suspension
Palmitic (33) and Oleic (67) Acids	Clear solution, very little precipitate
Naphthenic Acid (100)	Clear solution, no precipitate
Naphthenic (67) and Stearic (33) Acids	Clear solution, very little precipitate
Naphthenic (33) and Stearic (67) Acids	Clear solution, very little precipitate

(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 including a lubricating oil base stock as a major component, and encapsulated boron-containing microscale particles, as a minor component. The minor component preferably contains no metal or sulfur, and preferably no phosphorus. The encapsulated boron-containing microscale particles include an encapsulating material and a boron-containing compound encapsulated by the encapsulating material. The boron-containing compound is derived from a boron powder, a boron alkoxide, a boron oxide, a boric acid, a borane, 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.

