ABSTRACT

BORATED DETERGENTS AND THEIR LUBRICATING APPLICATIONS

Disclosed herein is an overbased alkaline earth metal hydrocarbyl-substituted salicylate detergent comprising both carbonate and borate moieties and exhibiting the following characteristics: a basicity index of at least 3.8; a ratio of soap content to mass% boron is greater than 55 mmol/kg; a soap content of at least 330 mmol/kg; a TBN, measured according to ASTM D2896, of at least 220 mg KOH/g; and a mass ratio of borate to carbonate from 0.75 to 6.0, wherein the alkaline earth metal comprises calcium and/or magnesium, and the hydrocarbyl substitution comprises 9 to 30 carbon atoms. Methods of making the boron-containing salicylate detergent, specifically to be package-stable, are also disclosed, as well as package-stable lubricant additive package concentrates and lubricating oil compositions containing same.

No Figure