## SUMMARY OF THE ~~INVENTION~~DISCLOSURE

In one embodiment, the present ~~invention~~disclosure is directed to a carboxylate detergent prepared by the process comprising

(a) alkylating a hydroxyaromatic compound with at least one alpha olefin oligomer, derived from $C_8$ to $C_{20}$ alpha olefins, to thereby produce an alkylhydroxyaromatic compound, and wherein at least 90 % of the molecules in the alkylhydroxyaromatic compound have the alkyl group attached at the 4-position or higher from the terminus of the longest chain of the alkyl group, and further wherein the alkyl group comprises at least one hydrocarbon tail of at least 7 carbons ;

(b) neutralizing the resulting alkylated hydroxyaromatic compound with an alkali metal base to provide an alkali metal salt of the alkylated hydroxyaromatic compound;

(c) carbonating the alkali metal salt from step (b) with carbon dioxide thereby producing an alkylated hydroxyaromatic carboxylic acid alkali metal salt;

(d) acidifying the salt produced in step (c) with acid to produce the alkylated hydroxyaromatic carboxylic acid; and

(e) overbasing the alkylated hydroxyaromatic carboxylic acid with lime in the presence of carbon dioxide thereby producing an overbased alkylated hydroxyaromatic carboxylate detergent.

In one aspect, there is provided a carboxylate detergent prepared by a process comprising

(a) alkylating a hydroxyaromatic compound with at least one substantially straight chain alpha olefin oligomer, derived from oligomerizing of $C_8$ to $C_{20}$ alpha olefins, to thereby produce an alkylhydroxyaromatic compound, and wherein at least 90 % of the molecules in the alkylhydroxyaromatic compound have the alkyl group attached at the 4-position or higher from the terminus of the longest chain of the alkyl group, and further wherein the alkyl group comprises at least one hydrocarbon tail of at least 7 carbons;

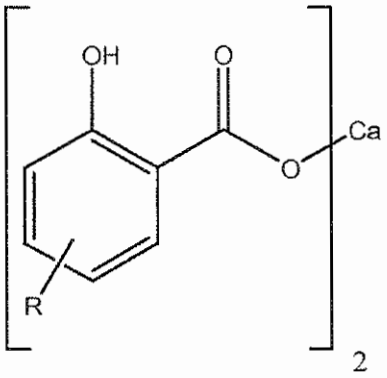
(b) neutralizing the resulting alkylated hydroxyaromatic compound with an alkali metal base to provide an alkali metal salt of the alkylated hydroxyaromatic compound;

(c) carbonating the alkali metal salt from step (b) with carbon dioxide thereby producing an alkylated hydroxyaromatic carboxylic acid alkali metal salt;

(d) acidifying the salt produced in step (c) with acid to produce the alkylated hydroxyaromatic carboxylic acid; and

(e) overbasing the alkylated hydroxyaromatic carboxylic acid with lime in the presence of carbon dioxide thereby producing an overbased alkylated hydroxyaromatic carboxylate detergent.

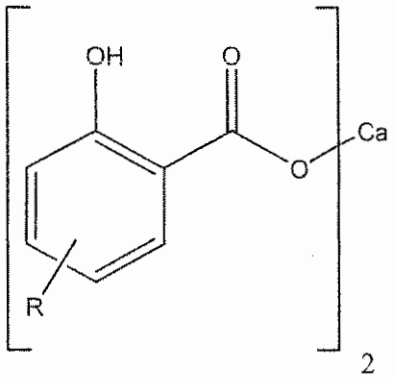
In another embodiment, the present ~~invention~~disclosure it directed to a carboxylate detergent having the following structure:




$(CaCO_3)_y(Ca(OH)_2)_z$

wherein R is a substantially straight-chain alkyl group of from about 16 to 40 carbon atoms, wherein the alkyl group is derived from substantially straight chain oligomers of $C_8$ to $C_{20}$ alpha olefins, and wherein at least 90 % of the substantially straight-chain alkyl group has the alkyl group attached at the 4-position or higher from the terminus of the longest chain of the alkyl group, and further wherein the alkyl group comprises at least one hydrocarbon tail of at least 7 carbons and wherein y and z are independently whole or partial integers.

In another aspect, there is provided a carboxylate detergent having the following structure:




$(CaCO_3)_y(Ca(OH)_2)_z$

wherein R is a substantially straight-chain alkyl group of from about 16 to 40 carbon atoms, wherein the alkyl group is derived from oligomerizing $C_8$ to $C_{20}$ alpha olefins, and wherein at least 90 % of the substantially straight-chain alkyl group has the alkyl group attached at the 4-position or higher from the terminus of the longest chain of the alkyl group, and further wherein the alkyl group comprises at least one hydrocarbon tail of at least 7 carbons and wherein y and z are independently whole or partial integers.

## DETAILED DESCRIPTION OF THE INVENTION

While the invention is susceptible to various modifications and alternative forms, specific embodiments thereof are herein described in detail. It should be understood, however, that the description herein of specific embodiments is not intended to limit the invention to the particular forms disclosed, but on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended claims.