TABLE 2

Extraction Temp. (°C)	Number of Extractions	Extraction Solvent(s)	Wt. Ratio of Composition and Extraction Solvent (%)	Total TPP (wt. %)
RT	1x12h	Acetone	23:77	1.2593
RT	1x12h	EtOH	15:85	4.42.61
RT	1x12h	Methyl Ethyl ketone	17:83	6.83%
RT	3 x 0.25h	EtOH, Acetic acid (2.8 wt.%)	3:97	4.3%
60°C	2x1h	EtOH, Acetic acid (2.8 wt.%)	29:61	0.04%
60°C	2x 40min	EtOH, Acetic acid (2.8 wt.%)	10:90	0.43%
60°C	3	MeOH, Acetic acid (2.8 wt.%)	10:90	0.17%

[00113] It will be understood that various modifications may be made to the embodiments disclosed herein. Therefore the above description should not be construed as limiting, but merely as exemplifications of preferred embodiments. For example, the functions described above and implemented as the best mode for operating the present invention are for illustration purposes only. Other arrangements and methods may be implemented by those skilled in the art without departing from the scope and spirit of this invention. Moreover, those skilled in the art will envision other modifications within the scope and spirit of the claims appended hereto.

WHAT IS CLAIMED IS:

1. A process for preparing a salt of a sulfurized alkyl-substituted hydroxyaromatic composition having a reduced content of unsulfurized alkyl-substituted hydroxyaromatic compound and its unsulfurized metal salt, the process comprising the steps of:

(a) providing a composition comprising (i) a salt of a sulfurized alkyl-substituted hydroxyaromatic compound; (ii) an unsulfurized alkyl-substituted hydroxyaromatic compound and (iii) an unsulfurized metal salt of the alkyl-substituted hydroxyaromatic compound; wherein the alkyl-substituted hydroxyaromatic compound is derived from alkylation of a hydroxyaromatic compound with one or more olefins comprising C_9 to C_{18} oligomers of monomers selected from propylene, butylene or mixtures thereof; and

(b) extracting the unsulfurized alkyl-substituted hydroxyaromatic compound and its unsulfurized metal salt from the composition of step (a) with one or more solvents capable of solubilizing the unsulfurized alkyl-substituted hydroxyaromatic compound and its unsulfurized metal salt and under extraction conditions sufficient to provide a salt of a sulfurized alkyl-substituted hydroxyaromatic composition having a reduced content of unsulfurized alkyl-substituted hydroxyaromatic compound and its unsulfurized metal salt.

2. The process according to Claim 1, wherein the unsulfurized alkyl-substituted hydroxyaromatic compound is a tetrapropenyl phenol.

3. The process according to Claims 1 or 2, wherein the one or more solvents capable of solubilizing the unsulfurized alkyl-substituted hydroxyaromatic compound and its unsulfurized metal salt is selected from the group consisting of a low molecular weight C_1 to C_3 alcohol, a carbonyl-containing compound and mixtures thereof.

4. The process according to Claim 3, wherein the low molecular weight alcohol is selected from the group consisting of methanol, ethanol, propanol, isopropanol, and mixtures thereof.

5. The process according to Claim 3, wherein the carbonyl-containing compound is selected from the group consisting of an aldehyde, ketone, and mixtures thereof.

6. The process according to Claim 5, wherein the aldehyde is selected from the group consisting of a C_1 to C_{12} aliphatic aldehyde, C_4 to C_{12} cycloaliphatic aldehyde, C_8 to C_{12} aromatic aldehyde and mixtures thereof.

7. The process according to Claim 5, wherein the ketone is selected from the group consisting of a C_3 to C_{12} aliphatic ketone, C_3 to C_{12} cycloaliphatic ketone, C_8 to C_{12} aromatic ketone and mixtures thereof.

8. The process according to Claims 1-7, further comprising the adding one or more co-solvents prior to or with the addition of the one or more solvents capable of solubilizing the unsulfurized alkyl-substituted hydroxyaromatic compound and its unsulfurized metal salt.

9. The process according to Claim 8, wherein the one or more co-solvents is selected from the group consisting of water, acidic co-solvent and mixtures thereof.

10. The process according to Claim 9, wherein the one or more acidic co-solvents is selected from the group consisting of a carboxylic acid, a polyalkenyl succinic acid or anhydride thereof, an organic sulfonic acid, an amine or ammonium salt, a peroxide and mixtures thereof.

11. The process according to Claims 1-10, wherein the extraction conditions include room temperature or at a temperature ranging from 30°C to ~~about~~ 200°C.

12. The process according to Claims 1-11, wherein the prior to extraction step (b) one or more non-polar solvents is added to the composition provided in step (a) to dissolve or dilute the composition.

13. The process according to Claim 12, wherein the one or more non-polar solvents is selected from the group consisting of an alkane solvent aromatic solvent and mixtures thereof.

14. The process according to Claims 1-13, wherein the resulting extracted salt of a sulfurized alkyl-substituted hydroxyaromatic composition contains from ~~about~~ 0.1 wt. % to

~~about~~ 1.5 wt. % of the unsulfurized alkyl-substituted hydroxyaromatic compound and its unsulfurized metal salt.

15. The process according to Claims 1-14, wherein the resulting extracted salt of a sulfurized alkyl-substituted hydroxyaromatic composition contains less than ~~about~~ 0.3 wt. % of the unsulfurized alkyl-substituted hydroxyaromatic compound and its unsulfurized metal salt.