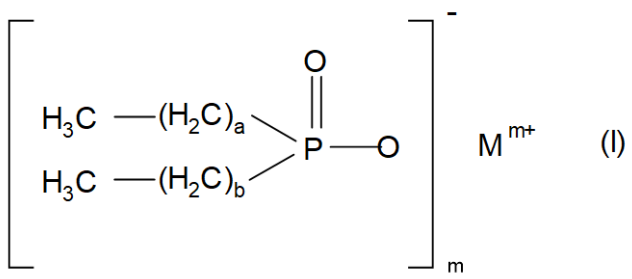
Patent claims

1. Process for producing dialkylphosphinic salts of the formula (I),



(I)

in which

a and b are the same or different and are each independently 1 to 9, and

M is Mg, Ca, Al, Sb, Sn, Ge, Ti, Fe, Zr, Zn, Ce, Bi, Sr, Mn, Li, Na, K and/or a protonated nitrogen base and

m is 1 to 4,

characterized in that the process comprises:

feeding a substream of renewable raw materials and/or recycled raw materials into a main stream of conventional raw materials originated from petroleum;

converting said renewable raw material and/or recycled raw materials to ethylene together with said conventional raw materials;

reacting the resultant ethylene stream with derivatives of hypophosphorous acid to give a derivative of the dialkylphosphinic acid; and

reacting said derivative of the dialkylphosphinic acid with a metal salt to give dialkylphosphinic salts of the formula (I),

wherein the renewable raw materials are tall oil, tung oil, wood tar, creosote, or vegetable oils such as palm oil, soya oil, rapeseed oil, sunflower oil, palm kernel oil, cottonseed oil, peanut oil, maize kernel oil, coconut oil, olive oil, sesame oil, linseed oil and/or safflower oil,

wherein said recycled raw materials are selected from food wastes, residues or wastes from food production, papermaking or pulp processing, and plastics from recycled process ,

and the ratio of said mainstream of conventional raw material to said

substream of renewable raw materials and/or recycled raw materials is 10^9:1 to 1:10^6.

2. Process according to Claim 1, characterized in that the ratio of said mainstream of conventional raw material to said substream of renewable raw materials and/or recycled raw materials is 10^9:1 to 1:10^4.

3. Process according to Claim 1 or 2, characterized in that the ratio of said mainstream of conventional raw material to said substream of renewable raw materials and/or recycled raw materials is 10^9:1 to 1:10^3.

4. Process according to at least one of Claims 1 to 3, characterized in that a and b may be the same or different and are each independently 1 to 5, and where the carbon chains may be linear, branched or cyclic and M is Al, Fe, TiO_q with q = 0 to 1.9 or Zn.

5. Process according to at least one of Claims 1 to 4, characterized in that a and b are each 1 and M is Al.

6. Process according to at least one of Claims 1 to 5, characterized in that the renewable raw materials are tall oil.

7. Process according to at least one of Claims 1 to 5, wherein said recycled raw materials is pyrolysis oil from plastic wastes, for example from used tyres.

8. Process according to at least one of Claims 1 to 7, characterized in that the substream is made of renewable raw materials, said metal salt is an aluminium salt, and said dialkylphosphinic salt of the formula (I) is aluminium dialkylphosphinate.

9. Process according to Claim 8, characterized in that the derivatives of hypophosphorous acid have been produced in a substream process from recycled raw materials and conventional raw materials originated from petroleum.

10. Process according to Claim 8, characterized in that the aluminium salt has been produced in a substream process from recycled raw materials and conventional raw materials originated from petroleum.

11. Process according to at least one of Claims 8 to 10, characterized in that the aluminium salt is aluminium sulfate.