Claims

1. An alkylaromatic composition comprising:

   an aromatic moiety other than unsubstituted naphthalene; and
   an alkyl moiety having a carbon atom number in the range between 16 to 40, wherein said alkyl moiety is attached to said aromatic moiety such that at least 25 mol% of the benzylic carbons are quaternary.

2. The alkylaromatic composition of claim 1, wherein at least 35 mol%, preferably at least 70 mol %, of the benzylic carbons are quaternary.

3. The alkylaromatic composition of claim 1, wherein said aromatic moiety is toluene and optionally said composition has an oxidative stability, as measured by ASTM D2272, of greater than 30 minutes.

4. The alkylaromatic composition of claim 1, wherein said aromatic moiety is benzene and optionally said composition has an oxidative stability, as measure by ASTM D2272, of greater than 20 minutes.

5. The alkylaromatic composition of claim 1, wherein said composition has a pour point of less than or equal to -35°C, preferably less than or equal to -50°C.

6. A process for the preparation of an alkylaromatic compound comprising: contacting at least one aromatic moiety and a mono-olefin having a carbon atom number in the range between 16 to 40 in the presence of an acidic alkylation catalyst under alkylation conditions, wherein at least 50 mol% of the mono-olefin comprises a vinylidenyl structure, and thereby producing said alkylaromatic compound having at least 25 mol% of benzylic carbons that are quaternary.

7. The process according to claim 6, further comprising: separating and recovering said alkylaromatic compound.

8. The process according to claim 6, wherein said alkylaromatic compound has at least 65 mol% of benzylic carbons that are quaternary.

9. The process according to claim 6, wherein said acidic alkylation catalyst is chosen from zeolite catalysts, MCM-22, MCM-57, MCM-36, MCM-49, MCM-56, ITQ-1, and ITQ-3, or is a Friedel Craft catalyst chosen from BF_3, promoted BF_3, $AlCl_3$, $SnCl_4$, $FeCl_3$, and $ZnCl_2$.

10. The alkylaromatic composition of claim 1 wherein said aromatic moiety is chosen from benzene, toluene, xylenes, ethylbenzene, diphenyl sulfide, diphenyl oxide, and mixtures thereof.

11. The alkylaromatic composition of claim 1 wherein said aromatic moiety is chosen from substituted or unsubstituted benzene, substituted naphthalene, substituted or unsubstituted furan, substituted or unsubstituted thiophene, substituted or unsubstituted anthracene, substituted or unsubstituted phenanthrene, substituted or unsubstituted pyrole, substituted or unsubstituted indole, substituted or unsubstituted benzothiophene, substituted or unsubstituted dibenzothiophene, substituted or unsubstituted benzofuran, substituted or unsubstituted dibenzofuran, substituted or unsubstituted phenoxanthiin, substituted or unsubstituted thianthrene, substituted or unsubstituted biphenyl, substituted or unsubstituted pyrene, bisphenol A, bisphenol sulfide, anisole, thioanisole, diphenyl oxide, diphenyl sulfide, diphenylmethane, and mixtures thereof.

12. The alkylaromatic composition of claim 1, wherein said aromatic moiety is chosen from toluene, o-, m- or p-xylene, hydroxybenzene, methoxy or ethoxybenzene, thioanisole, diphenylether, diphenylmethane, diphenyl sulfide, methylnaphthalene, methoxynaphthalene, ethoxynaphthalene, methylnaphthyl sulfide, ethyl naphthylsulfide, bisphenol-A, bisphenol sulfide and mixtures thereof.

13. The alkylaromatic composition of claim 1 or the process according to claim 6, wherein said mono-olefin has a carbon atom number in the range between 16 to 24.

14. The process according to claim 6, wherein said mono-olefin is derived from alkyl aluminum catalysts.

15. The process according to claim 14, wherein said alkyl aluminum catalyst is triisobutyl aluminum.

16. The process according to of claim 6, wherein said mono-olefin is derived from a metallocene-catalyzed alpha-olefin polymerization process.

17. The process according to claim 6, wherein said mono-olefin is derived from a vinylidene with a carbon atom number less than 40.

18. The process according to claim 17, wherein said vinylidene is chosen from 2-hexyl-1-decene, 2-octyl-1-dodecene, or 2-decyl-1-tetradecene, and mixtures thereof.

19. The process according to claim 6, wherein at least 65 mol% of the mono-olefin comprises a vinylidenyl structure.

20. The process according to claim 6, wherein said aromatic moiety is chosen from benzene, toluene, xylenes, ethylbenzene, naphthalene, diphenyl sulfide, diphenyl oxide, and mixtures thereof.

21. The process according to claim 6, wherein said aromatic moiety is chosen from substituted or unsubstituted benzene, substituted or unsubstituted naphthalene, substituted or unsubstituted furan, substituted or unsubstituted thiophene, substituted or unsubstituted anthracene, substituted or unsubstituted phenanthrene, substituted or unsubstituted pyrole, substituted or unsubstituted indole, substituted or unsubstituted benzothiophene, substituted or unsubstituted dibenzothiophene, substituted or unsubstituted benzofuran, substituted or unsubstituted dibenzofuran, substituted or unsubstituted phenoxanthiin, substituted or unsubstituted thianthrene, substituted or unsubstituted biphenyl, substituted or unsubstituted pyrene, bisphenol A, bisphenol sulfide, anisole, thioanisole, diphenyl oxide, diphenyl sulfide, diphenylmethane, and mixtures thereof.

22. The process according to claim 6, wherein said aromatic moiety is chosen from toluene, o-, m- or p-xylene, hydroxybenzene, methoxy or ethoxybenzene, thioanisole, diphenylether, diphenylmethane, diphenyl sulfide, naphthalene, methylnaphthalene, methoxynaphthalene, ethoxynaphthalene, methylnapthyl sulfide, ethyl naphthylsulfide, bisphenol-A, bisphenol sulfide and mixtures thereof.