CLAIMS

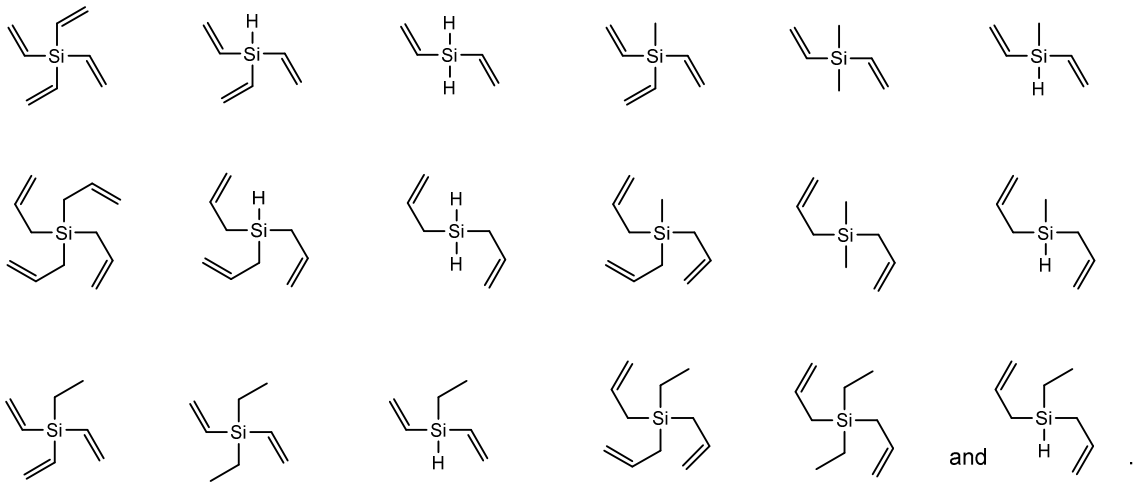
1. A method for producing an alkenyl or alkynyl-containing organosilicon precursor composition, the method comprising the steps of:

distilling at least once a composition comprising at least one alkenyl or alkynyl-containing organosilicon compound having a formula $R_nSiR^1_{4-n}$ wherein R is selected from the group consisting of a linear or branched C_2 to C_6 alkenyl group, and a linear or branched C_2 to C_6 alkynyl group; R^1 is selected from the group consisting of hydrogen, a linear or branched C_1 to C_{10} alkyl group, and a C_3 to C_{10} aryl group; and n is 1 to 4, wherein a distilled alkenyl or alkynyl-containing organosilicon precursor composition is produced after distilling; and

packaging the distilled alkenyl or alkynyl-containing organosilicon precursor composition in a container, wherein the container permits transmission into the container of no more than 10% of ultraviolet and visible light having a wavelength of between 290 nm to 450 nm, wherein the distilled alkenyl or alkynyl-containing organosilicon precursor composition includes no more than 100 ppm (0.01 wt. %) of >1000 amu impurities as determined by Gel Permeation Chromatography (GPC).

2. The method of claim 1 wherein the at least one alkenyl or alkynyl-containing organosilicon compound is one or more selected from the group consisting of

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3. The method of claim 2 wherein the at least one alkenyl or alkynyl-containing organosilicon compound comprises tetravinylsilane.

4. The method of claim 1 further comprising adding a stabilizer compound to the distilled alkenyl or alkynyl-containing organosilicon precursor composition prior to said packing step.

5. The method of claim 4 wherein the stabilizer compound is selected from the group consisting of 2,6-di-tert-butyl-4-methyl phenol , 2,2,6,6-tetramethyl-1-piperidinyloxy (TEMPO), 2- tert-butyl-4-hydroxyanisole, 3-tert-butyl-4-hydroxyanisole, propyl ester 3,4,5-trihydroxy-benzoic acid, 2-(1,1-dimethylethyl)-1,4-benzenediol, diphenylpicrylhydrazyl, 4-tert-butylcatechol, N-methylaniline, p- methoxydiphenylamine, diphenylamine, N,N'-diphenyl-p-phenylenediamine, p- hydroxydiphenylamine, phenol, octadecyl-3-(3,5-di-tert-butyl-4-hydroxyphenyl) propionate, tetrakis (methylene (3,5-di-tert-butyl)-4- hydroxy-hydrocinnamate) methane, phenothiazines, alkylamidonoisoureas, thiodiethylene bis (3,5,-di-tert-butyl-4-hydroxy-hydrocinnamate, 1,2,-bis (3,5-di-tert-butyl-4-hydroxyhydrocinnamoyl) hydrazine, tris (2-methyl-4- hydroxy-5-tert-butylphenyl) butane, cyclic neopentanetetrayl bis (octadecyl phosphite), 4,4'-thiobis (6-tert-butyl-m-cresol), 2,2'- methylenebis (6-tert-butyl-p-

cresol), oxalyl bis (benzylidenehydrazide), raw seed oils, wheat germ oil, tocopherols and gums.

6. The method of claim 1 wherein the container permits transmission into the container of no more than 7% of ultraviolet and visible light having a wavelength of between 290 nm to 450 nm.

7. The method of claim 6 wherein the container permits transmission into the container of no more than 1% of ultraviolet and visible light having a wavelength of between 290 nm to 450 nm.

8. The method of claim 7 wherein the container permits 0% transmission into the container of ultraviolet and visible light having a wavelength of between 290 nm to 450 nm.

9. The method of claim 1, wherein the distilled alkenyl or alkynyl-containing organosilicon precursor composition includes less than 50 ppm water impurity.

10. The method of claim 1, wherein the distilled alkenyl or alkynyl-containing organosilicon precursor composition includes less than 10 ppm halide impurity.

11. A system for storing an alkenyl or alkynyl-containing organosilicon compound, the system comprising:

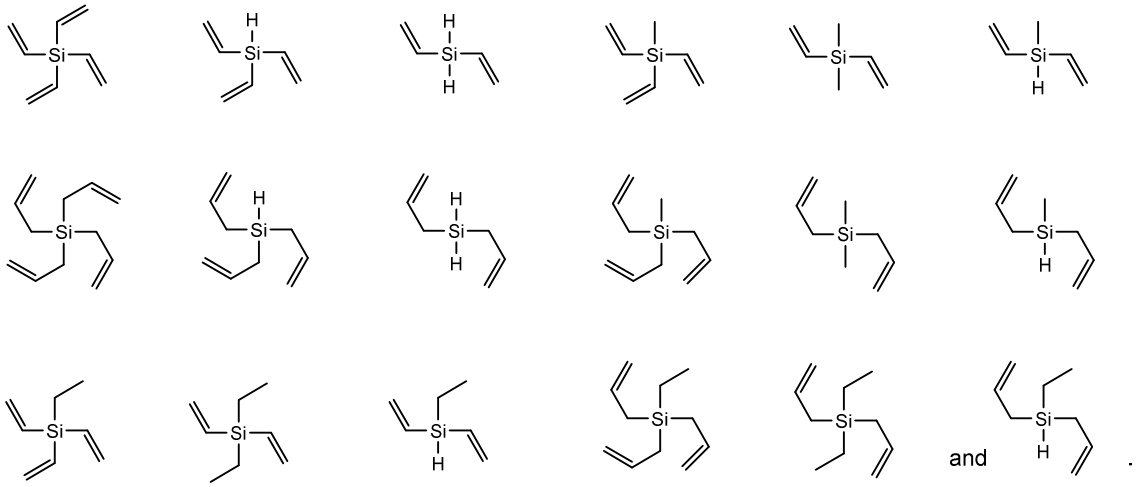
a container, wherein the container permits transmission into the container of no more than 10% of ultraviolet and visible light having a wavelength of between 290 nm to 450 nm; and

contained within the container, at least one distilled alkenyl or alkynyl-containing organosilicon compound having a formula $R_nSiR^1_{4-n}$ wherein R is selected from the group

consisting of a linear or branched C_2 to C_6 alkenyl group, and a linear or branched C_2 to C_6 alkynyl group; R^1 is selected from the group consisting of hydrogen, a linear or branched C_1 to C_{10} alkyl group, a C_3 to C_{10} cyclic alkyl group, and a C_3 to C_{10} aryl group; and n is 1 to 4,

wherein the distilled alkenyl or alkynyl-containing organosilicon precursor composition includes no more than 100 ppm (0.01 wt. %) of >1000 amu impurities as determined by Gel Permeation Chromatography (GPC).

12. The system of claim 11 wherein the at least one distilled alkenyl or alkynyl-containing organosilicon compound is selected from the group consisting of



13. The system of claim 12 wherein the at least one distilled alkenyl or alkynyl-containing organosilicon compound comprises tetravinylsilane.

14. The system of claim 11 wherein a stabilizer compound is further contained within the container.

15. The system of claim 15 wherein the stabilizer compound is selected from the group consisting of 2,6-di-tert-butyl-4-methyl phenol (BHT), 2,2,6,6-tetramethyl-1-piperidinyloxy (TEMPO), 2- tert-butyl-4-hydroxyanisole, 3-tert-butyl-4-hydroxyanisole, propyl

ester 3,4,5-trihydroxy-benzoic acid, 2-(1,1-dimethylethyl)-1,4-benzenediol, diphenylpicrylhydrazyl, 4-tert-butylcatechol, N-methylaniline, p-methoxydiphenylamine, diphenylamine, N,N'-diphenyl-p-phenylenediamine, p- hydroxydiphenylamine, phenol, octadecyl-3-(3,5-di-tert-butyl-4- hydroxyphenyl) propionate, tetrakis (methylene (3,5-di-tert-butyl)-4- hydroxy-hydrocinnamate) methane, phenothiazines, alkylamidonoisoureas, thiodiethylene bis (3,5,-di-tert-butyl-4-hydroxy-hydrocinnamate, 1,2,-bis (3,5-di-tert-butyl-4-hydroxyhydrocinnamoyl) hydrazine, tris (2-methyl-4- hydroxy-5-tert-butylphenyl) butane, cyclic neopentanetetrayl bis (octadecyl phosphite), 4,4'-thiobis (6-tert-butyl-m-cresol), 2,2'-methylenebis (6-tert-butyl-p-cresol), oxalyl bis (benzylidenehydrazide), raw seed oils, wheat germ oil, tocopherols and gums.

16. The system of claim 11 wherein the at least one distilled alkenyl or alkynyl-containing organosilicon compound has than 100 ppm (0.01 wt. %) of >1000 amu impurities as determined by Gel Permeation Chromatography (GPC).

17. The system of claim 11 wherein the container permits transmission into the container of no more than 7% of ultraviolet and visible light having a wavelength of between 290 nm to 450 nm.

18. The system of claim 17 wherein the container permits transmission into the container of no more than 5% of ultraviolet and visible light having a wavelength of between 290 nm to 450 nm.

19. The system of claim 18 wherein the container permits transmission into the container of no more than 2% of ultraviolet and visible light having a wavelength of between 290 nm to 450 nm.

20. The system of claim 19 wherein the container permits transmission into the container of no more than 1% of ultraviolet and visible light having a wavelength of between 290 nm to 450 nm.

21. The system of claim 20 wherein the container permits 0% transmission into the container of ultraviolet and visible light having a wavelength of between 290 nm to 450 nm.

22. The system of claim 11, wherein less than 50 ppm water impurity is contained within the container.

23. The system of claim 11, wherein less than 10 ppm halide impurity is contained within the container.