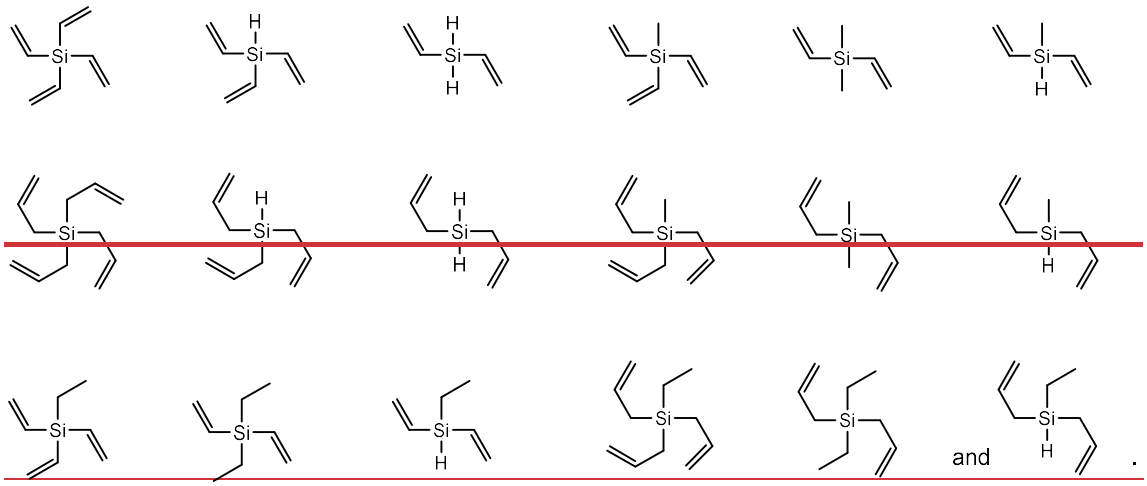
CLAIMS

1. A method for producing ~~an alkenyl or alkynyl~~a tetravinylsilane-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~~tetravinylsilane, wherein a distilled tetravinylsilane~~alkenyl or alkynyl-containing organosilicon precursor~~ composition is produced after distilling, wherein the distilled tetravinylsilane composition includes no more than 100 ppm (0.01 wt. %) of >1000 amu impurities as determined by Gel Permeation Chromatography (GPC) and wherein the distilled tetravinylsilane composition includes less than 50 ppm water impurity and less than 10 ppm halide impurity; and

packaging the distilled ~~alkenyl or alkynyl-containing organosilicon precursor~~tetravinylsilane composition in a container, wherein the container is made of stainless steel, and 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~~



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

~~4.~~2. The method of claim 1 further comprising adding a stabilizer compound to the distilled ~~alkenyl or alkynyl-containing organosilicon precursor~~tetravinylsilane composition prior to said packing step.

~~5.~~3. The method of claim ~~4~~ 2 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.~~4. 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.~~5. The method of claim ~~6~~ 4 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.~~6. The method of claim ~~7~~ 5 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.~~7. A system for storing ~~an alkenyl or alkynyl-containing organosilicon compound~~tetravinylsilane, the system comprising:

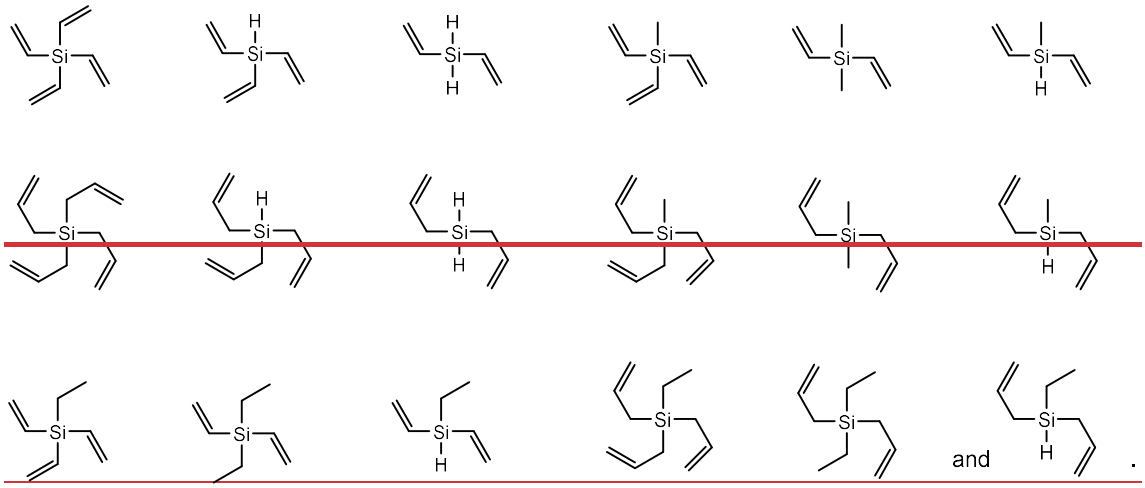
a container, wherein the container is made of stainless steel, and wherein the container permits transmission into the container of no more than 10% of ultraviolet and visible light having a wavelength of between 290 nm to 450 nm; and

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~~tetravinylsilane,

wherein the distilled ~~alkenyl or alkynyl-containing organosilicon precursor~~tetravinylsilane composition includes no more than 100 ppm (0.01 wt. %) of >1000 amu impurities as determined by Gel Permeation Chromatography (GPC) and wherein the distilled tetravinylsilane composition includes less than 50 ppm water impurity and less than 10 ppm halide impurity.

~~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.~~8. The system of claim ~~11~~ 7 wherein a stabilizer compound is further contained within the container.

~~15.~~9. The system of claim ~~15~~ 8 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.~~10. The system of claim ~~11~~ 7 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.~~11. The system of claim ~~17~~ 10 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.~~12. The system of claim ~~18~~ 11 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.~~13. The system of claim ~~19~~ 12 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.~~14. The system of claim ~~20~~ 13 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.~~