What is claimed is:

1. A silicone hydrogel formed from a reaction mixture comprising about 30 to about 75 wt% of a mixture of slow-reacting hydrophilic monomers, each having a slow-reacting hydrophilic monomer kinetic half life; said mixture of slow reacting hydrophilic monomers comprising at least one slow-reacting ionic monomer;

at least one silicone-containing component having a silicone-containing component kinetic half life, which may be optionally substituted with at least one hydroxyl containing group; and

at least one hydroxyl-containing component selected from said silicone-containing component substituted with at least one hydroxyl containing group, at least one hydroxyalkyl monomer, and mixtures thereof,

wherein ratio of each of said slow-reacting hydrophilic component half lives to said silicone-containing component half life is at least 2.

2. The silicone hydrogel of claim 1 formed from a reaction mixture comprising about 37 to about 75 wt% of the at least one slow-reacting hydrophilic monomer having a slow-reacting hydrophilic monomer kinetic half life.

3. The silicone hydrogel of claim 1 formed from a reaction mixture comprising about 37 to about 70 wt% of the at least one slow-reacting hydrophilic monomer having a slow-reacting hydrophilic monomer kinetic half life.

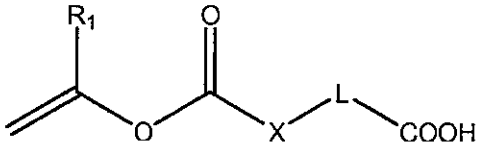
4. The silicone hydrogel of claim 1 formed from a reaction mixture comprising about 39 to about 60 wt% of the at least one slow-reacting hydrophilic monomer having a slow-reacting hydrophilic monomer kinetic half life.

5. The silicone hydrogel of any preceding claim wherein said slow-reacting ionic component is selected from the group consisting of anionic components, cationic components, zwitterionic components and mixtures thereof.

6. The silicone hydrogel of any preceding claim wherein said slow-reacting ionic component comprise at least one anionic component selected from the group consisting of carboxylic acids, sulfonic acids, boronic acids, phosphonic acids and their salts and mixtures thereof.

7. The silicone hydrogel of any preceding claim wherein said slow-reacting ionic component comprises reactive functionality selected from the group consisting of methacrylamide reactive groups, N-vinyl amides, O-vinyl carbamates, O-vinyl carbonates, N-vinyl carbamates, O-vinyl ethers, O-2-propenyl, wherein the vinyl or allyl groups may be further substituted with a methyl group.

8. The silicone hydrogel of any preceding claim wherein said slow-reacting ionic component is selected from the group consisting of 4-acrylamidobutanoic acid (ACAII), (3-acrylamidophenyl)boronic acid (APBA), 3-acrylamidopropionic acid, 5-acrylamidopentanoic acid, 3-acrylamido-3-methylbutanoic acid (AMBA), N-vinyloxycarbonyl-α-alanine, N-vinyloxycarbonyl-β-alanine (VINAL), 2-vinyl-4,4-dimethyl-2-oxazolin-5-one (VDMO), vinyl sulphonate salt, 3-((3-acrylamidopropyl)dimethylammonio)propane-1-sulfonate (AMPDAPS), 3-((3-methacrylamidopropyl)dimethylammonio)propane-1-sulfonate (MAMPDAPS); acetic acid, 2-carboxymethoxy)-,1-ethenylester, of Formula




Formula Q

Where $R_1$ is H or methyl, X is O or $NR_{16}$, $R_{16}$ is H or C1-3 alkyl), and L is divalent $C_{1-4}$ alkyl group; and mixtures thereof.

9. The silicone hydrogel of claim 8 wherein said slow-reacting ionic component is selected from the group consisting of N-vinyloxycarbonyl-α-alanine; N-vinyloxycarbonyl-β-alanine (VINAL); 2-vinyl-4,4-dimethyl-2-oxazolin-5-one (VDMO); vinyl sulphonate sodium salt; acetic acid, 2-carboxymethoxy)-,1-ethenylesters of Formula Q, mixtures thereof and the like.

10. The silicone hydrogel of claim 1 – 7 wherein said slow-reacting ionic component is present in the reactive mixture in an amount below about 20 mole%.

11. The silicone hydrogel of claim 1 – 7 wherein said slow-reacting ionic component is present in the reactive mixture in an amount between about 0.5 and about 15 mole %, based upon all components in the reaction mixture.

12. The silicone hydrogel of claim 1 – 7 wherein said slow-reacting ionic component is present in the reactive mixture in an amount between about 0.5 and about 5 mole %, based upon all components in the reaction mixture.

13. The silicone hydrogel of claim 1 – 7 wherein said slow-reacting ionic component is present in the reactive mixture in an amount between about 0.5 and about 10 mole %, based upon all components in the reaction mixture.

14. The silicone hydrogel of claim any preceding claim wherein all of said slow-reacting components have the same reactive functionality.

15. The silicone hydrogel of any preceding claim wherein all of said slow-reacting components have vinyl functionality.

16. The silicone hydrogel of claim any preceding claim wherein said reaction mixture further comprises at least one slow reacting crosslinker and at least one fast reacting crosslinker.

17. The silicone hydrogel of claim 14 wherein said slow reacting crosslinkers have only vinyl reactive functionality and said fast reacting crosslinkers have (meth)acrylate reactive functionality only.

18. The silicone hydrogel of claim 17 wherein said slow reacting crosslinker comprises TAC and said fast reacting crosslinker is selected from the group consisting of EDGMA, TEGDMA and mixtures thereof.

19. The silicone hydrogel of claim any of claims 14 to 16 wherein said at least one slow reacting crosslinker and at least one fast reacting crosslinker are each present in said reaction mixture in amounts between about 0.4 to about 2.0 mmoles per 100 g of reactive components.

20. The silicone hydrogel of claim any of claims 14 to 16 wherein said at least one slow reacting crosslinker and at least one fast reacting crosslinker are each present in said reaction mixture in amounts between about 0.3 to about 2.0 mmol/100 g of polymerizable components

21. The silicone hydrogel of any preceding claim wherein said reactive mixture further comprises at least one reactive cationic component.

22. The silicone hydrogel of claim 21 wherein said cationic component or hydrogen bonding component is present in an amount sufficient to improve surface resilience of said hydrogel.

23. The silicone hydrogel of claim 19 or 20 wherein said at least one reactive cationic component has the same reactive functionality as at least one of said silicone containing components.

24. The silicone hydrogel of any preceding claim wherein said kinetic half life ratio is at least about 3.

25. The silicone hydrogel of any preceding claim further comprising a Dk of at least about 80.

26. The silicone hydrogel of any preceding claim further comprising a Dk of at least about 85.

27. The silicone hydrogel of any preceding claim further comprising a %haze of less than about 70%.

28. The silicone hydrogel of any preceding claim further comprising a %haze of less than about 50%.

29. The silicone hydrogel of any preceding claim further comprising a water content of at least about 55%.

30. The silicone hydrogel of any preceding claim further comprising a water content of at least about 60%.

31. The silicone hydrogel of any preceding claim further comprising a modulus of less than about 150 psi.

32. The silicone hydrogel of any preceding claim further comprising a modulus of about 100 psi or less.

32. The silicone hydrogel of any preceding claim wherein said reaction mixture further comprises at least one UV absorbing compound.

34. The silicone hydrogel of claim 32 wherein said at least one UV absorbing compound is reactive.

35. The silicone hydrogel of claim 34 wherein said at least one UV absorbing compound is selected from benzotriazoles.

36. The silicone hydrogel of claim 34 wherein said at least one UV absorbing compound is selected from the group consisting of reactive 2-(2`-hydroxyphenyl)benzotriazoles, 2-hydroxybenzophenones, 2-hydroxyphenyltriazines, oxanilides, cyanoacrylates, salicylates and 4-hydroxybenzoates.

37. The silicone hydrogel of claim 34 wherein said at least one UV absorbing compound is selected from the group consisting of 2-(2'-hydroxy-5-methacrylyloxyethylphenyl)-2H-benzotriazole, 5-vinyl and 5-isopropenyl derivatives of 2-(2,4-dihydroxyphenyl)-2H-benzotriazole and 4-acrylates or 4-methacrylates of 2-(2,4-dihydroxyphenyl)-2H-benzotriazole or 2-(2,4-dihydroxyphenyl)-1,3-2H-dibenzotriazole, and mixtures thereof.

38. The silicone hydrogel of claim 34 comprising between about 0.5 and about 4 wt.%, of at least one UV absorber.

39. The silicone hydrogel of claim 34 comprising between about 1 wt% and about 2 wt% UV absorber.

40. The silicone hydrogel of any preceding claim wherein said reaction mixture is substantially free of diluent.

41. The silicone hydrogel of any preceding claim wherein said reaction mixture is substantially free of TRIS.

42. The silicone hydrogel of any preceding claim wherein said slow-reacting hydrophilic monomer comprises a reactive group selected from the group consisting of (meth)acrylamides, vinyls, allyls and combinations thereof and said silicone-containing component comprises a reactive group selected from the group consisting of (meth)acrylates, styryls, amides and mixtures thereof.

43. The silicone hydrogel of any preceding claim wherein said slow-reacting hydrophilic monomer comprises a reactive group selected from the group consisting of vinyls, allyls and combinations thereof and said silicone-containing component comprises a reactive group selected from the group consisting of (meth)acrylates, styryls, amides and mixtures thereof.

44. The silicone hydrogel of any preceding claim wherein said slow-reacting hydrophilic monomer is present in an amount between about 39 and about 70wt%.

45. The silicone hydrogel of any preceding claim wherein said slow-reacting hydrophilic monomer is present in an amount between about 39 and about 60 wt%.

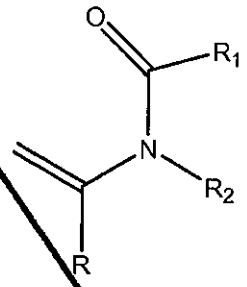
46. The silicone hydrogel of any preceding claim wherein said slow-reacting hydrophilic monomer comprises a reactive group selected from the group consisting of N-vinyl amides, O-vinyl carbamates, O-vinyl carbonates, N-vinyl carbamates, O-vinyl ethers, O-2-propenyl, wherein the vinyl or allyl groups may be further substituted with a methyl group.

47. The silicone hydrogel of any preceding claim wherein said slow reacting hydrophilic monomer comprises at least one hydrophilic group selected from the

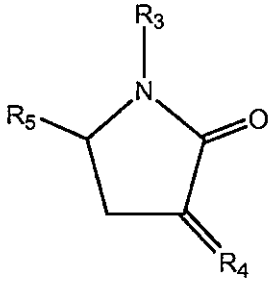
group consisting of hydroxyls, amines, ethers, amides, ammonium groups, carboxylic acid, carbamates and combinations thereof.

48. The silicone hydrogel of any preceding claim wherein said slow reacting hydrophilic monomer comprises at least one hydrophilic group selected from the group consisting of hydroxyls, ethers, amides, carboxylic acid combinations thereof.

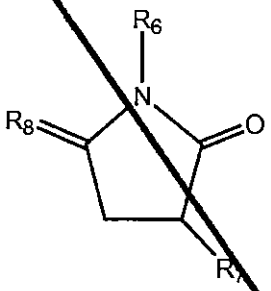
49. The silicone hydrogel of claim 1 wherein said slow reacting hydrophilic monomer is selected from N-vinylamide monomer of Formula I, a vinyl pyrrolidone of Formula II-IV, n-vinyl piperidone of Formula V :



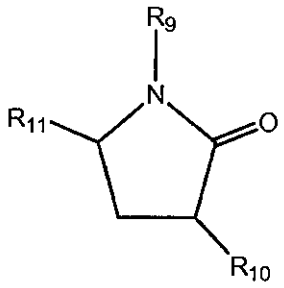

Formula I



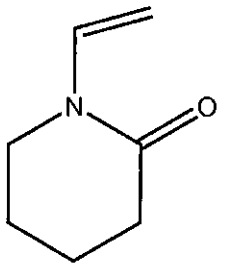

Formula II




Formula III




Formula IV




Formula V

wherein R is H or methyl;

$R_1$, $R_2$, $R_3$, $R_6$, $R_7$, $R_{10}$, and $R_{11}$ are independently selected from H, $CH_3$, $CH_2CH_3$ , $CH_2CH_2CH_3$, $C(CH_3)_2$;

$R_4$ and $R_8$ are independently selected from $CH_2$, $CHCH_3$ and $C(CH_3)$;

$R_5$ is selected from H, methyl, ethyl; and

$R_9$ is selected from $CH=CH_2$, $CCH_3=CH_2$, and $CH=CHCH_3$.

50. The silicone hydrogel of claim 49 wherein the slow-reacting hydrophilic monomer is selected from the vinyl pyrrolidone of Formula II or IV or the N-vinyl amide monomer of Formula I, and the total number of carbon atoms in $R_1$ and $R_2$ is 4 or less.

51. The silicone hydrogel of claim 49wherein the slow-reacting hydrophilic monomer is selected from a vinyl pyrrolidone of Formula III or IV and $R_6$ is methyl, $R_7$ is hydrogen, $R_9$ is $CH=CH_2$, $R_{10}$ and $R_{11}$ are H.

52. The silicone hydrogel of claim 49 wherein the slow-reacting hydrophilic monomer is selected from the slow-reacting hydrophilic monomer is selected from ethylene glycol vinyl ether (EGVE), di(ethylene glycol) vinyl ether (DEGVE), N-vinyl pyrrolidone (NVP), 1-methyl-3-methylene-2-pyrrolidone, 1-methyl-5-methylene-2-pyrrolidone, 5-methyl-3-methylene-2-pyrrolidone; 1-ethyl-5-methylene-2-pyrrolidone, N-methyl-3-methylene-2-pyrrolidone, 5-ethyl-3-methylene-2-pyrrolidone, 1-n-propyl-3-methylene-2-pyrrolidone, 1-n-propyl-5-

methylene-2-pyrrolidone, 1-isopropyl-3-methylene-2-pyrrolidone, 1-isopropyl-5-methylene-2-pyrrolidone, N-vinyl-N-methyl acetamide (VMA), N-vinyl-N-ethyl acetamide, N-vinyl-N-ethyl formamide, N-vinyl formamide, N-vinyl acetamide, N-vinyl isopropylamide, allyl alcohol, N-vinyl caprolactam, N-2-hydroxyethyl vinyl carbamate, N-carboxy-ß-alanine N-vinyl ester; N-carboxyvinyl-β-alanine (VINAL), N-carboxyvinyl-α-alanine and mixtures thereof.

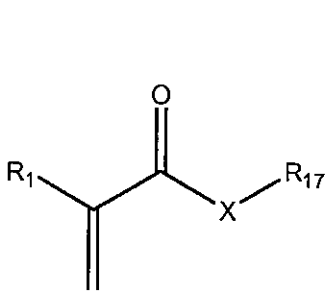
53. The silicone hydrogel of claim 49 wherein the slow-reacting hydrophilic monomer is selected from NVP, VMA and 1-methyl-5-methylene-2-pyrrolidone.

54. The silicone hydrogel of claim 1 wherein the slow-reacting hydrophilic monomer comprises NVP.

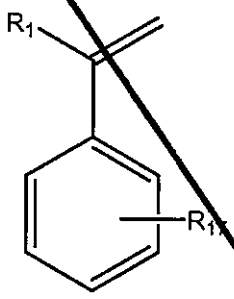
55. The silicone hydrogel of claim 49 wherein said silicone-containing component comprises at least one hydroxyl group.

56. The silicone hydrogel of claim 49 further comprising at least one hydroxyalkyl monomer.

57. The silicone hydrogel of claim 56 wherein said hydroxyalkyl monomer is selected from hydroxyalkyl (meth)acrylate or (meth)acrylamide monomer of Formula VII or a styryl compound of Formula VIII




FORMULA VII




FORMULA VIII

wherein $R_1$ is H or methyl,

X is O or $NR_{16}$, $R_{16}$ is a H, $C_1$ to $C_4$ alkyl, which may be further substituted with at least one OH, and

$R_{17}$ is selected from $C_2$-$C_4$ mono or dihydroxy substituted alkyl, and poly(ethylene glycol) having 1-10 repeating units.

58. The silicone hydrogel of claim 57 wherein $R_1$ is H or methyl, X is oxygen and R is selected from $C_2$-$C_4$ mono or dihydroxy substituted alkyl, and poly(ethylene glycol) having 1-10 repeating units.

59. The silicone hydrogel of claim 57 wherein $R_1$ methyl, X is oxygen and $R_{17}$ is selected from $C_2$-$C_4$ mono or dihydroxy substituted alkyl, and poly(ethylene glycol) having 2-20 repeating units.

60. The silicone hydrogel of claim 56 wherein said hydroxyalkyl monomer is selected from 2-hydroxyethyl methacrylate, 2-hydroxyethyl acrylate, 3-hydroxypropyl (meth)acrylate, 2-hydroxypropyl (meth)acrylate, 1-hydroxypropyl-2-(meth)acrylate, 2-hydroxy-2-methyl-propyl (meth)acrylate, 3-hydroxy-2,2-dimethyl-propyl (meth)acrylate, 4-hydroxybutyl (meth)acrylate, glycerol (meth)acrylate, 2-hydroxyethyl (meth)acrylamide, polyethyleneglycol monomethacrylate, bis-(2-hydroxyethyl) (meth)acrylamide, 2,3-dihydroxypropyl (meth)acrylamide, and mixtures thereof.

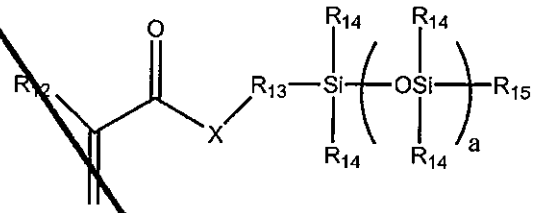
61. The silicone hydrogel of claim 56 wherein said hydroxyalkyl monomer is selected from the group consisting of 2-hydroxyethyl methacrylate, glycerol methacrylate, 2-hydroxypropyl methacrylate, hydroxybutyl methacrylate, 3-hydroxy-2,2-dimethyl-propyl methacrylate, and mixtures thereof.

62. The silicone hydrogel of claim 56 wherein said hydroxyalkyl monomer comprises 2-hydroxyethyl methacrylate, 3-hydroxy-2,2-dimethyl-propyl methacrylate, glycerol methacrylate and mixtures comprising them.

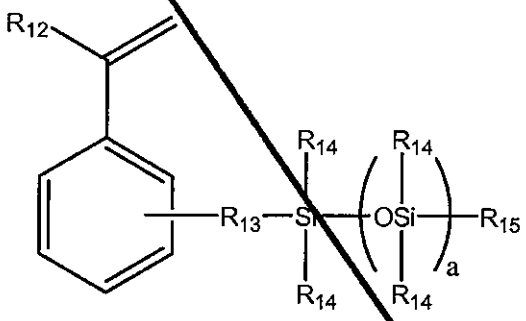
63. The silicone hydrogel of claim 1 wherein the at least one silicone-containing monomer is monofunctional and comprises (a) a reactive group selected from

(meth)acrylates, styryls, amides and mixtures thereof and (b) a polydialkyl siloxane chain and may optionally contain fluorine.

64. The silicone hydrogel of claim 1 wherein said silicone-containing component is selected from mono (meth)acryloxyalkyl polydialkylsiloxane monomer of Formula IX or the styryl polydialkylsiloxane monomer of Formula X:



Formula IX



Formula X

wherein $R_{12}$ is H or methyl;

X is O or $NR_{16}$;

each $R_{14}$ is independently a $C_1$ to $C_4$ alkyl which may be fluorine substituted, or phenyl;

$R_{15}$ is a $C_1$ to $C_4$ alkyl;

$R_{13}$ is a divalent alkyl group, which may further be functionalized with a group selected from the group consisting of ether groups, hydroxyl groups, carbamate groups and combinations thereof;

a is 3 to 50;

$R_{16}$ is selected from H, C1-4, which may be further substituted with one or more hydroxyl groups.

65. The silicone hydrogel of claim 64 wherein each $R_{14}$ is independently selected from ethyl and methyl groups.

66. The silicone hydrogel of claim 64 wherein all $R_{14}$ are methyl.

67. The silicone hydrogel of claim 64 wherein $R_{12}$ and each $R_{14}$ are methyl.

68. The silicone hydrogel of claim 64 wherein at least one $R_{14}$ is 3,3,3-trifluoropropyl.

69. The silicone hydrogel of claim 64 wherein $R_{13}$ is selected from C1-C6 alkylene groups which may be substituted with ether, hydroxyl and combinations thereof.

70. The silicone hydrogel of claim 64 wherein $R_{13}$ is selected from C1 or C3-C6 alkylene groups which may be substituted with ether, hydroxyl and combinations thereof.

71. The silicone hydrogel of claim 64 wherein a is 5 to 15

72. The silicone hydrogel of claim 64 wherein$R_{16}$ is H or methyl.

73. The silicone hydrogel of claim 64 wherein said monomethacryloxyalkylpolydimethylsiloxane methacrylate is selected from the group consisting of monomethacryloxypropyl terminated mono-n-butyl terminated polydimethylsiloxane, monomethacryloxypropyl terminated mono-n-methyl terminated polydimethylsiloxane, monomethacryloxypropyl terminated mono-n-butyl terminated polydiethylsiloxane, monomethacryloxypropyl terminated mono-n-methyl terminated polydiethylsiloxane, N-(2,3-dihydroxypropane)-N'-(propyl tetra(dimethylsiloxy) dimethylbutylsilane)acrylamide, α-(2-hydroxy-1-

methacryloxypropyloxypropyl)-ω-butyl-octamethylpentasiloxane, and mixtures thereof.

74. The silicone hydrogel of claim 64 wherein said monomethacryloxyalkylpolydimethylsiloxane methacrylate is selected from the group consisting of monomethacryloxypropyl terminated mono-n-butyl terminated polydimethylsiloxane, monomethacryloxypropyl terminated mono-n-methyl terminated polydimethylsiloxane, N-(2,3-dihydroxypropane)-N'-(propyl tetra(dimethylsiloxy) dimethylbutylsilane)acrylamide, and mixtures thereof.

75. The silicone hydrogel of any preceding claim further comprising at least one crosslinking monomer.

76. The silicone hydrogel of any preceding claim wherein further comprising at least one photoinitiator.

77. The silicone hydrogel of any preceding claim further comprising an advancing contact angle of less than about 80°.

78. The silicone hydrogel of any preceding claim further comprising an advancing contact angle of less than about 70°.

79. The silicone hydrogel of any preceding claim further comprising from about 5 to about 20 wt% of at least one polar diluent, based upon all components in the reaction mixture.

80. The silicone hydrogel of claim any preceding claim wherein said reaction mixture further comprises at least one slow reacting crosslinker and at least one fast reacting crosslinker.

81. The silicone hydrogel of claim 80 wherein said slow reacting crosslinkers have only vinyl reactive functionality and said fast reacting crosslinkers have (meth)acrylate reactive functionality only.

82. The silicone hydrogel of claim 80 wherein said slow reacting crosslinker comprises TAC and said fast reacting crosslinker is selected from the group consisting of EDGMA, TEGDMA and mixtures thereof.

83. The silicone hydrogel of any preceding claim wherein said reaction mixture comprises less than about 5% of intermediate reacting hydrophilic components.

84. The silicone hydrogel of claim 80 wherein said at least one slow reacting crosslinker and at least one fast reacting crosslinker are each present in said reaction mixture in amounts between about 0.05 to about 0.3 wt%.

85. The silicone hydrogel of claim 80 wherein said at least one slow reacting crosslinker and at least one fast reacting crosslinker are each present in said reaction mixture in amounts between about 0.1 to about 0.2 wt%.

86. The silicone hydrogel of claim 80 wherein all crosslinkers are present in an amount between about 0.5 wt% and about 2 wt%.

**Claims**

1. A silicone hydrogel formed from a reaction mixture comprising about 37 to about 75 wt% of a mixture of slow-reacting hydrophilic monomers, each having a slow-reacting hydrophilic monomer kinetic half life; said mixture of slow reacting hydrophilic monomers comprising at least one slow-reacting ionic monomer;

at least one silicone-containing component having a silicone-containing component kinetic half life, which may be optionally substituted with at least one hydroxyl containing group; and

at least one hydroxyl-containing component selected from said silicone-containing components substituted with at least one hydroxyl containing group, at least one hydroxyalkyl monomer, and mixtures thereof,

wherein ratio of each of said slow-reacting hydrophilic component half lives to said silicone-containing component half life is at least 2.

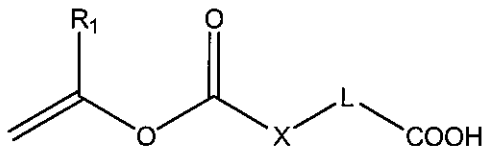
2. The silicone hydrogel of claim 1 wherein said slow-reacting ionic component is selected from the group consisting of anionic components, cationic components, zwitterionic components and mixtures thereof.

3. The silicone hydrogel of claim 1 wherein said slow-reacting ionic component comprise at least one anionic component selected from the group consisting of carboxylic acids, sulfonic acids, boronic acids, phosphonic acids and their salts and mixtures thereof.

4. The silicone hydrogel of claim 1 wherein said slow-reacting ionic component comprises reactive functionality selected from the group consisting of ionic vinyl ethers, ionic vinyl amines and ionic vinyl enamines.

5. The silicone hydrogel of claim 1 wherein said slow-reacting ionic component is selected from the group consisting of 4-acrylamidobutanoic acid (ACAII), (3-acrylamidophenyl)boronic acid (APBA), 3-acrylamidopropionic acid, 5-acrylamidopentanoic acid, 3-acrylamido-3-methylbutanoic acid (AMBA), N-vinyloxycarbonyl-$\alpha$-alanine, N-vinyloxycarbonyl-$\beta$-alanine (VINAL), 2-vinyl-4,4-dimethyl-2-oxazolin-5-one (VDMO), vinyl sulphonate salt, 3-((3-acrylamidopropyl)dimethylammonio)propane-1-sulfonate (AMPDAPS), 3-((3-

methacrylamidopropyl)dimethylammonio)propane-1-sulfonate (MAMPDAPS); acetic acid, 2-carboxymethoxy)-,1-ethenylester, of Formula




Formula Q

Where $R_1$ is H or methyl, X is O or $NR_2$, $R_2$ is H or $C_1$-$C_3$ alkyl), and L is divalent $C_{1-4}$ alkyl group; and mixtures thereof.

6. The silicone hydrogel of claim 1 wherein said slow-reacting ionic component is selected from the group consisting of N-vinyloxycarbonyl-$\alpha$-alanine; N-vinyloxycarbonyl-$\beta$-alanine (VINAL); 2-vinyl-4,4-dimethyl-2-oxazolin-5-one (VDMO); vinyl sulphonate sodium salt; acetic acid, 2-carboxymethoxy)-,1-ethenylesters of Formula Q, mixtures thereof and the like.

7. The silicone hydrogel of any of claims 1 – 4 wherein said slow-reacting ionic component is present in the reactive mixture in an amount below about 20 mole%.

8. The silicone hydrogel of any of claims 1 – 4 wherein said slow-reacting ionic component is present in the reactive mixture in an amount between about 0.5 and about 15 mole %, based upon all components in the reaction mixture.

9. The silicone hydrogel of any of claims 1 – 4 wherein said slow-reacting ionic component is present in the reactive mixture in an amount between about 0.5 and about 5 mole %, based upon all components in the reaction mixture.

10. The silicone hydrogel of any of claims 1 – 4 wherein said slow-reacting ionic component is present in the reactive mixture in an amount between about 0.5 and about 10 mole %, based upon all components in the reaction mixture.

11. The silicone hydrogel of claim 1wherein all of said slow-reacting components have the same reactive functionality.

12. The silicone hydrogel of claim 1wherein all of said slow-reacting components have vinyl functionality.

13. The silicone hydrogel of claim 1 wherein said reaction mixture further comprises at least one slow reacting crosslinker and at least one fast reacting crosslinker.

14. The silicone hydrogel of claim 13 wherein said slow reacting crosslinkers have only vinyl reactive functionality and said fast reacting crosslinkers have (meth)acrylate reactive functionality only.

15. The silicone hydrogel of claim 13 wherein said slow reacting crosslinker comprises triallylcyanurate and said fast reacting crosslinker is selected from the group consisting of of ethylene glycol dimethacrylate, tetraethyleneglycol dimethacrylate and mixtures thereof.

16. The silicone hydrogel of claim 13 wherein said at least one slow reacting crosslinker and at least one fast reacting crosslinker are each present in said reaction mixture in amounts between about 0.4 to about 2.0 mmoles per 100 g of reactive components.

17. The silicone hydrogel of claim 13 wherein said at least one slow reacting crosslinker and at least one fast reacting crosslinker are each present in said reaction mixture in amounts between about 0.3 to about 2.0 mmol/100 g of polymerizable components

18. The silicone hydrogel of claim 1 wherein said reactive mixture further comprises at least one reactive cationic component.

19. The silicone hydrogel of claim 18 wherein said cationic component or hydrogen bonding component is present in an amount sufficient to improve surface resilience of said hydrogel.

20. The silicone hydrogel of claim 18 wherein said at least one reactive cationic component has the same reactive functionality as at least one of said silicone containing components.

21. The silicone hydrogel of claim 1 wherein said kinetic half life ratio is at least about 3.

22. The silicone hydrogel of claim 1 further comprising a Dk of at least about 80 barrers.

23. The silicone hydrogel of claim 1 further comprising a Dk of at least about 85 barrers.

24. The silicone hydrogel of claim 1 further comprising a %haze of less than about 70%.

25. The silicone hydrogel of claim 1 further comprising a %haze of less than about 50%.

26. The silicone hydrogel of claim 1 further comprising a water content of at least about 55%.

27. The silicone hydrogel of claim 1 further comprising a water content of at least about 60%.

28. The silicone hydrogel of claim 1 further comprising a modulus of less than about 150 psi.

29. The silicone hydrogel of claim 1 further comprising a modulus of about 100 psi or less.

30. The silicone hydrogel of claim 1 wherein said reaction mixture further comprises at least one UV absorbing compound.

31. The silicone hydrogel of claim 30 wherein said at least one UV absorbing compound is reactive.

32. The silicone hydrogel of claim 30 wherein said at least one UV absorbing compound is selected from benzotriazoles.

33. The silicone hydrogel of claim 30 wherein said at least one UV absorbing compound is selected from the group consisting of reactive 2-(2`-hydroxyphenyl)benzotriazoles, 2-hydroxybenzophenones, 2-hydroxyphenyltriazines, oxanilides, cyanoacrylates, salicylates and 4-hydroxybenzoates.

34. The silicone hydrogel of claim 30 wherein said at least one UV absorbing compound is selected from the group consisting of 2-(2'-hydroxy-5-methacrylyloxyethylphenyl)-2H-benzotriazole, 5-vinyl and 5-isopropenyl derivatives of 2-(2,4-dihydroxyphenyl)-2H-benzotriazole and 4-acrylates or 4-methacrylates of 2-(2,4-dihydroxyphenyl)-2H-benzotriazole or 2-(2,4-dihydroxyphenyl)-1,3-2H-dibenzotriazole, and mixtures thereof.

35. The silicone hydrogel of claim 30 comprising between about 0.5 and about 4 wt.%, of at least one UV absorber.

36. The silicone hydrogel of claim 30 comprising between about 1 wt% and about 2 wt% UV absorber.

37. The silicone hydrogel of claim 1 wherein said reaction mixture is substantially free of diluent.

38. The silicone hydrogel of claim 1 wherein said reaction mixture is substantially free of 3-methacryloxypropyltris(trimethylsiloxy)silane.

39. The silicone hydrogel of claim 1 wherein said slow-reacting hydrophilic monomer comprises a reactive group selected from the group consisting of (meth)acrylamides, vinyls, allyls and combinations thereof and said silicone-containing component comprises a reactive group selected from the group consisting of (meth)acrylates, styryls, amides and mixtures thereof.

40. The silicone hydrogel of claim 1 wherein said slow-reacting hydrophilic monomer comprises a reactive group selected from the group consisting of vinyls, allyls and combinations thereof and said silicone-containing component comprises a reactive group selected from the group consisting of (meth)acrylates, styryls, amides and mixtures thereof.

41. The silicone hydrogel of claim 1 wherein said slow-reacting hydrophilic monomer is present in an amount between about 39 and about 70wt%.

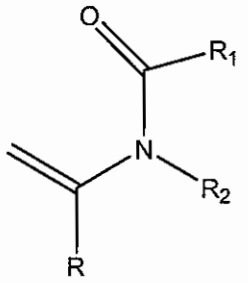
42. The silicone hydrogel of claim 1 wherein said slow-reacting hydrophilic monomer is present in an amount between about 39 and about 60 wt%.

43. The silicone hydrogel of claim 1 wherein said slow-reacting hydrophilic monomer comprises a reactive group selected from the group consisting of N-vinyl amides, O-vinyl carbamates, O-vinyl carbonates, N-vinyl carbamates, O-vinyl ethers, O-2-propenyl, wherein the vinyl or allyl groups may be further substituted with a methyl group.

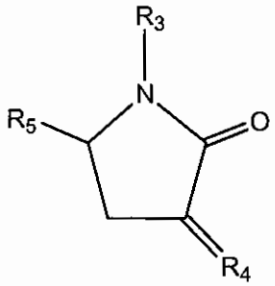
44. The silicone hydrogel of claim 1 wherein said slow reacting hydrophilic monomer comprises at least one hydrophilic group selected from the group consisting of hydroxyls, amines, ethers, amides, ammonium groups, carboxylic acid, carbamates and combinations thereof.

45. The silicone hydrogel of claim 1 wherein said slow reacting hydrophilic monomer comprises at least one hydrophilic group selected from the group consisting of hydroxyls, ethers, amides, carboxylic acid combinations thereof.

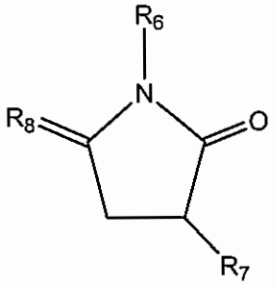
46. The silicone hydrogel of claim 1 wherein said slow reacting hydrophilic monomer is selected from N-vinylamide monomer of Formula I, a vinyl pyrrolidone of Formula II-IV, n-vinyl piperidone of Formula V :



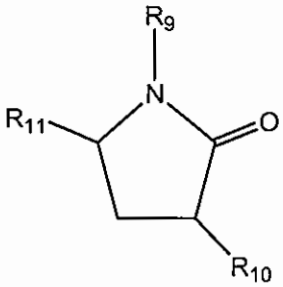

Formula I



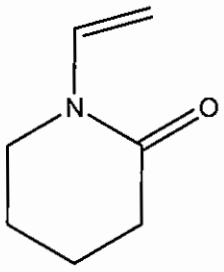

Formula II




Formula III




Formula IV




Formula V

wherein R is H or methyl;

$R_1$, $R_2$, $R_3$, $R_6$, $R_7$, $R_{10}$, and $R_{11}$ are independently selected from H, $CH_3$, $CH_2CH_3$, $CH_2CH_2CH_3$, $C(CH_3)_2$;

$R_4$ and $R_8$ are independently selected from $CH_2$, $CHCH_3$ and $C(CH_3)$;

$R_5$ is selected from H, methyl, ethyl; and

$R_9$ is selected from $CH=CH_2$, $CCH_3=CH_2$, and $CH=CHCH_3$.

47. The silicone hydrogel of claim 46 wherein the slow-reacting hydrophilic monomer is selected from the vinyl pyrrolidone of Formula II or IV or the N-vinyl amide monomer of Formula I, and the total number of carbon atoms in $R_1$ and $R_2$ is 4 or less.

48. The silicone hydrogel of claim 46wherein the slow-reacting hydrophilic monomer is selected from a vinyl pyrrolidone of Formula III or IV and $R_6$ is methyl, $R_7$ is hydrogen, $R_9$ is $CH=CH_2$, $R_{10}$ and $R_{11}$ are H.

49. The silicone hydrogel of claim 1 wherein the slow-reacting hydrophilic monomer is selected from the slow-reacting hydrophilic monomer is selected from ethylene glycol vinyl ether (EGVE), di(ethylene glycol) vinyl ether (DEGVE), N-vinyl pyrrolidone (NVP), 1-methyl-3-methylene-2-pyrrolidone, 1-methyl-5-methylene-2-pyrrolidone, 5-methyl-3-methylene-2-pyrrolidone; 1-ethyl-5-methylene-2-pyrrolidone, N-methyl-3-methylene-2-pyrrolidone, 5-ethyl-3-methylene-2-pyrrolidone, 1-n-propyl-3-methylene-2-pyrrolidone, 1-n-propyl-5-methylene-2-pyrrolidone, 1-isopropyl-3-methylene-2-pyrrolidone, 1-isopropyl-5-methylene-2-pyrrolidone, N-vinyl-N-methyl acetamide (VMA), N-vinyl-N-ethyl acetamide, N-vinyl-N-ethyl formamide, N-vinyl formamide, N-vinyl acetamide, N-vinyl isopropylamide, allyl alcohol, N-vinyl caprolactam, N-2-hydroxyethyl vinyl carbamate, N-carboxy-ß-alanine N-vinyl ester; N-carboxyvinyl-$\beta$-alanine (VINAL), N-carboxyvinyl-$\alpha$-alanine and mixtures thereof.

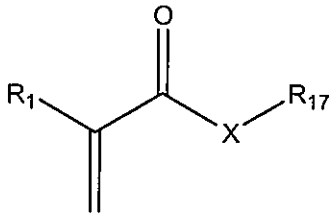
50. The silicone hydrogel of claim 1 wherein the slow-reacting hydrophilic monomer is selected from NVP, VMA and 1-methyl-5-methylene-2-pyrrolidone.

51. The silicone hydrogel of claim 1 wherein the slow-reacting hydrophilic monomer comprises NVP.

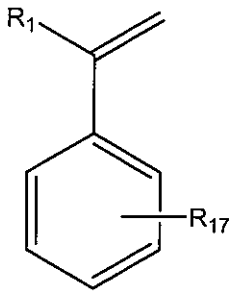
52. The silicone hydrogel of claim 1 wherein said silicone-containing component comprises at least one hydroxyl group.

53. The silicone hydrogel of claim 1 further comprising at least one hydroxyalkyl monomer.

54. The silicone hydrogel of claim 53 wherein said hydroxyalkyl monomer is selected from hydroxyalkyl (meth)acrylate or (meth)acrylamide monomer of Formula VII or a styryl compound of Formula VIII




FORMULA VII




FORMULA VIII

wherein $R_1$ is H or methyl,

X is O or $NR_{16}$, $R_{16}$ is a H, $C_1$ to $C_4$ alkyl, which may be further substituted with at least one OH, and

$R_{17}$ is selected from $C_2$-$C_4$ mono or dihydroxy substituted alkyl, and poly(ethylene glycol) having 1-10 repeating units.

55. The silicone hydrogel of claim 53 wherein $R_1$ is H or methyl, X is oxygen and R is selected from $C_2$-$C_4$ mono or dihydroxy substituted alkyl, and poly(ethylene glycol) having 1-10 repeating units.

56. The silicone hydrogel of claim 53 wherein $R_1$ methyl, X is oxygen and R is selected from $C_2$-$C_4$ mono or dihydroxy substituted alkyl, and poly(ethylene glycol) having 2-20 repeating units.

57. The silicone hydrogel of claim 53 wherein said hydroxyalkyl monomer is selected from 2-hydroxyethyl methacrylate, 2-hydroxyethyl acrylate, 3-hydroxypropyl (meth)acrylate, 2-hydroxypropyl (meth)acrylate, 1-hydroxypropyl-2-(meth)acrylate, 2-hydroxy-2-methyl-propyl (meth)acrylate, 3-hydroxy-2,2-dimethyl-propyl (meth)acrylate, 4-hydroxybutyl (meth)acrylate, glycerol (meth)acrylate, 2-hydroxyethyl (meth)acrylamide, polyethyleneglycol monomethacrylate, bis-(2-hydroxyethyl) (meth)acrylamide, 2,3-dihydroxypropyl (meth)acrylamide, and mixtures thereof.

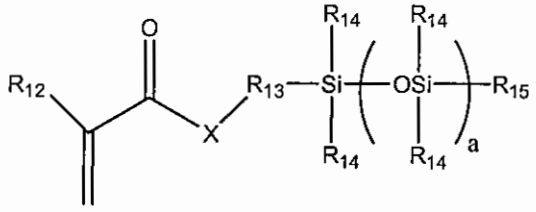
58. The silicone hydrogel of claim 53 wherein said hydroxyalkyl monomer is selected from the group consisting of 2-hydroxyethyl methacrylate, glycerol methacrylate, 2-

hydroxypropyl methacrylate, hydroxybutyl methacrylate, 3-hydroxy-2,2-dimethyl-propyl methacrylate, and mixtures thereof.

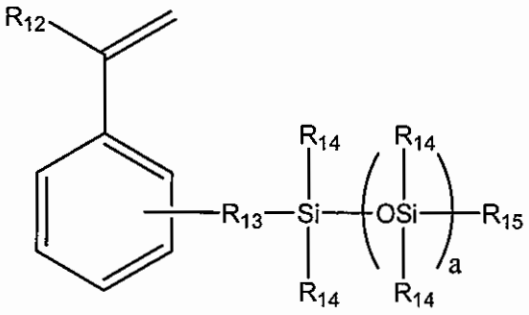
59. The silicone hydrogel of claim 53 wherein said hydroxyalkyl monomer comprises 2-hydroxyethyl methacrylate, 3-hydroxy-2,2-dimethyl-propyl methacrylate, glycerol methacrylate and mixtures comprising them.

60. The silicone hydrogel of claim 1 wherein the at least one silicone-containing monomer is monofunctional and comprises (a) a reactive group selected from (meth)acrylates, styryls, amides and mixtures thereof and (b) a polydialkyl siloxane chain and may optionally contain fluorine.

61. The silicone hydrogel of claim 1 wherein said silicone-containing component is selected from mono (meth)acryloxyalkyl polydialkylsiloxane monomer of Formula IX or the styryl polydialkylsiloxane monomer of Formula X:




Formula IX




Formula X

wherein $R_{12}$ is H or methyl;

X is O or $NR_{16}$;

each $R_{14}$ is independently a $C_1$ to $C_4$ alkyl which may be fluorine substituted, or phenyl;

$R_{15}$ is a $C_1$ to $C_4$ alkyl;

$R_{13}$ is a divalent alkyl group, which may further be functionalized with a group selected from the group consisting of ether groups, hydroxyl groups, carbamate groups and combinations thereof;

a is 3 to 50;

$R_{16}$ is selected from H, $C_{1-4}$, which may be further substituted with one or more hydroxyl groups.

62. The silicone hydrogel of claim 61 wherein each $R_{14}$ is independently selected from ethyl and methyl groups.

63. The silicone hydrogel of claim 61 wherein all $R_{14}$ are methyl.

64. The silicone hydrogel of claim 61 wherein $R_{12}$ and each $R_{14}$ are methyl.

65. The silicone hydrogel of claim 61 wherein at least one $R_{14}$ is 3,3,3-trifluoropropyl.

66. The silicone hydrogel of claim 61 wherein $R_{13}$ is selected from $C_1$-$C_6$ alkylene groups which may be substituted with ether, hydroxyl and combinations thereof.

67. The silicone hydrogel of claim 61 wherein $R_{13}$ is selected from C1 or $C_3$-$C_6$ alkylene groups which may be substituted with ether, hydroxyl and combinations thereof.

68. The silicone hydrogel of claim 61 wherein a is 5 to 15

69. The silicone hydrogel of claim 61 wherein$R_{16}$ is H or methyl.

70. The silicone hydrogel of claim 61 wherein said monomethacryloxyalkylpolydimethylsiloxane methacrylate is selected from the group consisting of monomethacryloxypropyl terminated mono-n-butyl terminated polydimethylsiloxane, monomethacryloxypropyl terminated mono-n-methyl terminated polydimethylsiloxane, monomethacryloxypropyl terminated mono-n-butyl terminated polydiethylsiloxane, monomethacryloxypropyl terminated mono-n-methyl terminated polydiethylsiloxane, N-(2,3-dihydroxypropane)-N'-(propyl tetra(dimethylsiloxy) dimethylbutylsilane)acrylamide, $\alpha$-(2-hydroxy-1-methacryloxypropyloxypropyl)-$\omega$-butyl-octamethylpentasiloxane, and mixtures thereof.

71. The silicone hydrogel of claim 61 wherein said monomethacryloxyalkylpolydimethylsiloxane methacrylate is selected from the group consisting of monomethacryloxypropyl terminated mono-n-butyl terminated polydimethylsiloxane, monomethacryloxypropyl terminated mono-n-methyl terminated polydimethylsiloxane, N-(2,3-dihydroxypropane)-N'-(propyl tetra(dimethylsiloxy) dimethylbutylsilane)acrylamide, and mixtures thereof.

72. The silicone hydrogel of claim 1 further comprising at least one crosslinking monomer.

73. The silicone hydrogel of claim 1 wherein further comprising at least one photoinitiator.

74. The silicone hydrogel of claim 1 further comprising an advancing contact angle of less than about 80°.

75. The silicone hydrogel of claim 1 further comprising an advancing contact angle of less than about 70°.

76. The silicone hydrogel of claim 1 further comprising from about 5 to about 20 wt% of at least one polar diluent, based upon all components in the reaction mixture.

77. The silicone hydrogel of claim 1 wherein said reaction mixture further comprises at least one slow reacting crosslinker and at least one fast reacting crosslinker.

78. The silicone hydrogel of claim 77 wherein said slow reacting crosslinkers have only vinyl reactive functionality and said fast reacting crosslinkers have (meth)acrylate reactive functionality only.

79. The silicone hydrogel of claim 77wherein said slow reacting crosslinker comprises triallylcyanurate and said fast reacting crosslinker is selected from the group consisting of ethylene glycol dimethacrylate, tetraethyleneglycol dimethacrylate and mixtures thereof.

80. The silicone hydrogel of claim 1 wherein said reaction mixture comprises less than about 5% of intermediate reacting hydrophilic components which have a kinetic half life between 20% and 70% faster than the slowest reacting silicone component.

81. The silicone hydrogel of claim 77 wherein said at least one slow reacting crosslinker and at least one fast reacting crosslinker are each present in said reaction mixture in amounts between about 0.05 to about 0.3 wt%.

82. The silicone hydrogel of claim 77 wherein said at least one slow reacting crosslinker and at least one fast reacting crosslinker are each present in said reaction mixture in amounts between about 0.1 to about 0.2 wt%.

83. The silicone hydrogel of claim 77 wherein all crosslinkers are present in an amount less than about 0.5 wt%.