What is claimed is:

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

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 ;

at least one photoinitiator; and

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

wherein ratio of said slow-reacting hydrophilic component half life 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 kinetic half life ratio is at least about 3.

6. The silicone hydrogel of claim 5 wherein said kinetic half life ratio is at least about 5.

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

8. The silicone hydrogel of claim 7 further comprising a Dk of at least about 85.

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

10. The silicone hydrogel of claim 9 further comprising a %haze of less than about 50%.

11. The silicone hydrogel of claim 10 further comprising a %haze of less than about 10%.

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

13. The silicone hydrogel of claim 12 further comprising a water content of at least about 60%.

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

15. The silicone hydrogel of claim 14 further comprising a modulus of about 100 psi or less.

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

17. The silicone hydrogel of claim 16 wherein said at least one UV absorbing compound is reactive.

18. The silicone hydrogel of claim 16 or 17 wherein said at least one UV absorbing compound is selected from benzotriazoles.

19. The silicone hydrogel of claim 16 or 17 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.

20. The silicone hydrogel of claim 16 or 17 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.

21. The silicone hydrogel of any of claims 16 to 20 comprising between about 0.5 and about 4 wt.%, of at least one UV absorber.

22. The silicone hydrogel of claim 21 comprising between about 1 wt% and about 2 wt% UV absorber.

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

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

25. The silicone hydrogel of any preceding claim wherein said reaction mixture is substantially free of silicone containing macromers or prepolymers.

26. 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.

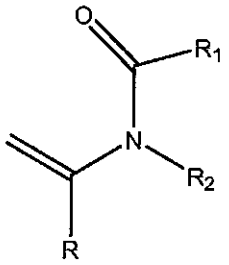
27. The silicone hydrogel of claim 26 wherein said slow-reacting hydrophilic monomer comprises a reactive group selected from the group consisting of vinyls, allyls and combinations thereof and said silicone-containing component comprises a reactive group selected from the group consisting of (meth)acrylates, styryls, amides and mixtures thereof.

28. 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.

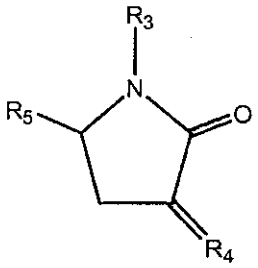
29. The silicone hydrogel of any preceding claim wherein said slow reacting hydrophilic monomer comprises at least one hydrophilic group selected from the group consisting of hydroxyls, amines, ethers, amides, ammonium groups, carboxylic acid, carbamates and combinations thereof.

30. The silicone hydrogel of claim 29 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.

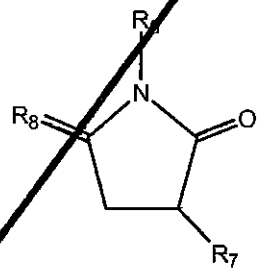
31. The silicone hydrogel of claims 1 to 25 wherein said slow reacting hydrophilic monomer is selected from N-vinylamide monomer of Formula I, a vinyl pyrrolidone of Formula II-IV, n-vinyl piperidone of Formula V :



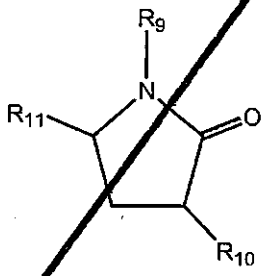
Formula I



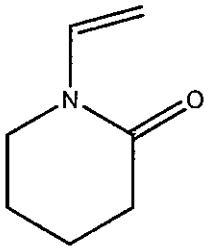
Formula II



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 $CH{=}CHCH_3$.

32. The silicone hydrogel of claim 31 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.

33. The silicone hydrogel of claim 31 wherein 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.

34. The silicone hydrogel of claim 31 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.

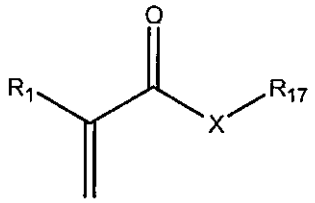
35. The silicone hydrogel of claim 34 wherein the slow-reacting hydrophilic monomer is selected from NVP, VMA and 1-methyl-5-methylene-2-pyrrolidone.

36. The silicone hydrogel of claim 35 wherein the slow-reacting hydrophilic monomer comprises NVP.

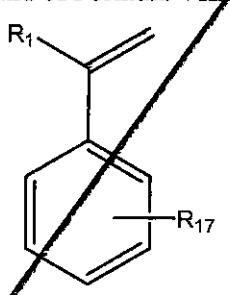
37. The silicone hydrogel of any preceding claim wherein said silicone-containing component comprises at least one hydroxyl group.

38. The silicone hydrogel of any preceding claim further comprising at least one hydroxyalkyl monomer.

39. The silicone hydrogel of claim 38 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.

40. The silicone hydrogel of claim 39 wherein R_1 is H or methyl, X is oxygen and R_{17} is selected from C_2-C_4 mono or dihydroxy substituted alkyl, and poly(ethylene glycol) having 1-10 repeating units.

41. The silicone hydrogel of claim 39 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.

42. The silicone hydrogel of claim 39 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-

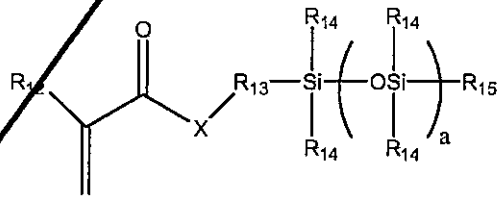
hydroxyethyl) (meth)acrylamide, 2,3-dihydroxypropyl (meth)acrylamide, and mixtures thereof.

43. The silicone hydrogel of claim 42 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.

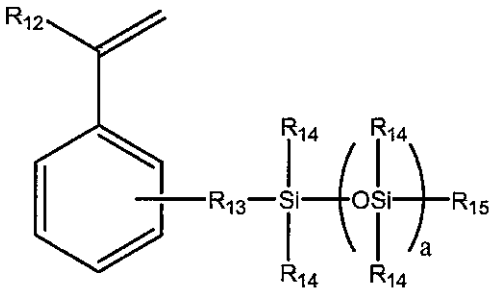
44. The silicone hydrogel of claim 43 wherein said hydroxyalkyl monomer comprises 2-hydroxyethyl methacrylate, 3-hydroxy-2,2-dimethyl-propyl methacrylate, glycerol methacrylate and mixtures comprising them.

45. The silicone hydrogel of any preceding claim 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.

46. The silicone hydrogel of any preceding claim 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.

47. The silicone hydrogel of claim 46 wherein each R_{14} is independently selected from ethyl and methyl groups.

48. The silicone hydrogel of claim 47 wherein all R_{14} are methyl.

49. The silicone hydrogel of claim 46 wherein R_{12} and each R_{14} are methyl.

50. The silicone hydrogel of claim 46 wherein at least one R_{14} is 3,3,3-trifluoropropyl.

51. The silicone hydrogel of claim 46 wherein R_{13} is selected from C1-C6 alkylene groups which may be substituted with ether, hydroxyl and combinations thereof.

52. The silicone hydrogel of claim 46 wherein R_{13} is selected from C1 or C3-C6 alkylene groups which may be substituted with ether, hydroxyl and combinations thereof.

53. The silicone hydrogel of claim 46 wherein a is 5 to 15.

54. The silicone hydrogel of claim 46 whereinR_{16} is H or methyl.

55. The silicone hydrogel of claim 46 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.

56. The silicone hydrogel of claim 55 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.

57. The silicone hydrogel of claim 56 wherein said slow reacting hydrophilic monomer and said hydroxyl monomer form a molar ratio of hydroxyl groups to the slow-reacting hydrophilic monomer of between about 0.15 and about 0.4.

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

59. The silicone hydrogel of any of claims 37 to 58 wherein said slow-reacting hydrophilic monomer is selected from N-vinylpyrrolidone, N-vinylacetamide, 1-methyl-3-methylene-2-pyrrolidone, 1-methyl-5-methylene-2-pyrrolidone, 5-methyl-3-methylene-2-pyrrolidone, and mixtures thereof.

60. The silicone hydrogel of any preceding claim wherein said photoinitiator is a visible light initiator.

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

62. The silicone hydrogel of claim 61 further comprising an advancing contact angle of less than about 70°.

63. A silicone hydrogel formed from a reaction mixture comprising

about 30 to about 75 wt% of at least one slow-reacting hydrophilic monomer;

at least one silicone-containing component; and

at least one photoinitiator;

wherein at least one of said silicone-containing component, optional additional hydrophilic components or both comprises at least one hydroxyl group and wherein said slow-reacting hydrophilic component and said silicone-containing component are selected to have a conversion ratio at 90% conversion of at least about 90.

64. The silicone hydrogel of claim 63 formed from a reaction mixture comprising about 37 to about 75 wt% of at least one slow-reacting hydrophilic monomer.

65. The silicone hydrogel of claim 63 formed from a reaction mixture comprising about 37 to about 70 wt% of at least one slow-reacting hydrophilic monomer

66. The silicone hydrogel of claim 63 formed from a reaction mixture comprising about 39 to about 60 wt% of at least one slow-reacting hydrophilic monomer.

67. The silicone hydrogel of any of claims 1 to 62 or 63 to 66 further comprising from about 5 to about 20 wt% of at least one polar diluent, based upon all components in the reaction mixture.

68. The silicone hydrogel of claim 67 wherein said diluent further comprises at least polyhydric codiluent.

69. The silicone hydrogel of claim 64 wherein said polyhydric codiluent is present in an amount between about 0.5 and 5 wt%, based upon all components in the reaction mixture.

70. The silicone hydrogel of claim 67 wherein said polar diluent is selected from the group consisting of carboxylic acids, secondary and tertiary alcohols.

71. The silicone hydrogel of claim 68 wherein said polyhydric codiluent is selected from the group consisting of glycerin, boric acid, boric acid glycerol esters, polyalkylene glycols and mixtures thereof.

72. The silicone hydrogel of claim 68 wherein said polar diluent further comprises up to about 3 wt% of at least one lactam polymer or copolymer.

73. The silicone hydrogel of claim 1 to 62 or 63 to 72 wherein said reaction mixture further comprises at least one slow reacting crosslinker and at least one fast reacting crosslinker.

74. The silicone hydrogel of claim 73 wherein said slow reacting crosslinkers have only vinyl reactive functionality and said fast reacting crosslinkers have (meth)acrylate reactive functionality only.

75. The silicone hydrogel of claim 73 wherein said slow reacting crosslinker comprises TAC and said fast reacting crosslinker is selected from the group consisting of EDGMA, TEGDMA and mixtures thereof.

76. The silicone hydrogel of claim 1 to 62 or 63 to 75 wherein said reaction mixture is substantially free from additional hydrophilic components.

77. The silicone hydrogel of claim 67 wherein said reaction mixture comprises less than about 5% of intermediate reacting hydrophilic components.

78. The silicone hydrogel of claim 74 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 0.7 to about 6.0 mmol/100 g of polymerizable components.

79. The silicone hydrogel of claim 78 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 0.7 to about 4.0 mmoles per 100 g of reactive components.

80. The silicone hydrogel of claim 74 wherein all crosslinkers are present in an amount less than about 2 wt%.

81. A process for forming the silicone hydrogel of any of claims 1 to 80 comprising photocuring the reaction mixture, wherein said photocuring is completed in about 30 minutes or less.

82. A process for forming the silicone hydrogel of any of claims 1 to 80 comprising photocuring the reaction mixture via ebeam irradiation.

Claims

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

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 ;

at least one photoinitiator; and

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

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

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

3. The silicone hydrogel of claim 1 wherein said kinetic half life ratio is at least about 5.

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

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

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

7. The silicone hydrogel of claim 1 further comprising a %haze of less than about 10%.

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

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

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

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

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

13. The silicone hydrogel of claim 12 wherein said at least one UV absorbing compound is selected from benzotriazoles.

14. The silicone hydrogel of claim 12 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.

15. The silicone hydrogel of claim 12 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.

16. The silicone hydrogel of claim 12 comprising between about 0.5 and about 4 wt.%, of at least one UV absorber.

17. The silicone hydrogel of claim 12 comprising between about 1 wt% and about 2 wt% UV absorber.

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

19. The silicone hydrogel of claim 1 wherein said reaction mixture is substantially free of TRIS.

20. The silicone hydrogel of claim 1 wherein said reaction mixture is substantially free of silicone containing macromers or prepolymers.

21. 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.

22. 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.

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

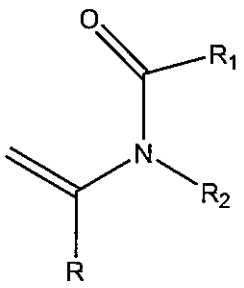
24. The silicone hydrogel of claim 1 wherein said slow-reacting hydrophilic monomer is present in an amount between about 39 and about 60 wt%.

25. 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.

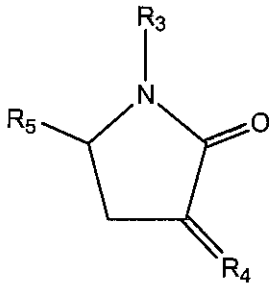
26. The silicone hydrogel of claim 1 wherein said slow reacting hydrophilic monomer comprises at least one hydrophilic group selected from the group consisting of hydroxyls, amines, ethers, amides, ammonium groups, carboxylic acid, carbamates and combinations thereof.

27. 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.

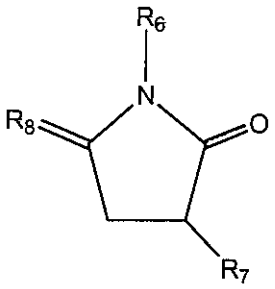
28. The silicone hydrogel of claim 1 wherein said said slow reacting hydrophilic monomer is selected from N-vinylamide monomer of Formula I, a vinyl pyrrolidone of Formula II-IV, n-vinyl piperidone of Formula V :



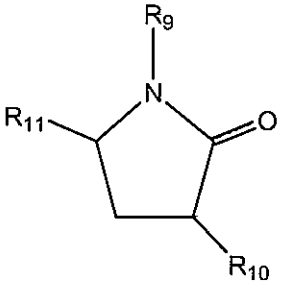
Formula I



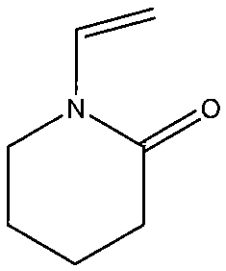
Formula II



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 $CH{=}CHCH_3$.

29. The silicone hydrogel of claim 28 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.

30. The silicone hydrogel of claim 28 wherein 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.

31. 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-β-alanine (VINAL), N-carboxyvinyl-α-alanine and mixtures thereof.

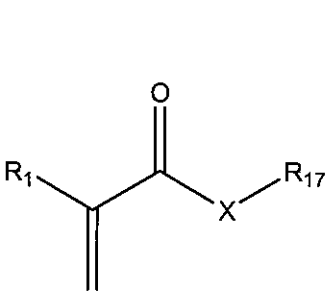
32. The silicone hydrogel of claim 1 wherein the slow-reacting hydrophilic monomer is selected from NVP, VMA and 1-methyl-5-methylene-2-pyrrolidone.

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

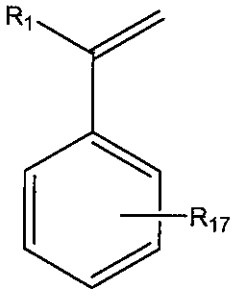
34. The silicone hydrogel of claim 1 wherein said silicone-containing component comprises at least one hydroxyl group.

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

36. The silicone hydrogel of claim 35 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.

37. The silicone hydrogel of claim 36 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.

38. The silicone hydrogel of claim 36 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.

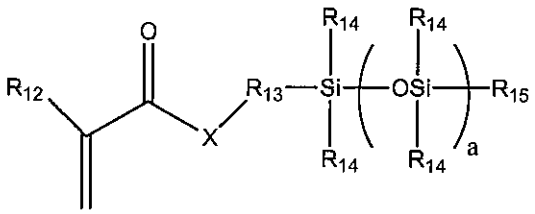
39. The silicone hydrogel of claim 36 wherein said hydroxyalkyl monomer is selected from 2-hydroxyethyl methacrylate, 2-hydroxyethyl acrylate, 3-hydroxypropyl (meth)acrylate, 2-hydroxypropyl (meth)acrylate, 1-hydroxypropyl-2-(meth)acrylate, 2-hydroxy-2-methyl-propyl (meth)acrylate, 3-hydroxy-2,2-dimethyl-propyl (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.

40. The silicone hydrogel of claim 36 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.

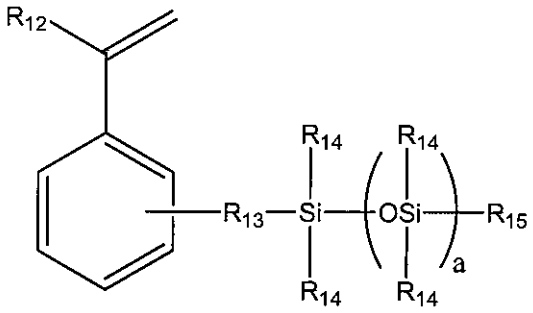
41. The silicone hydrogel of claim 36 wherein said hydroxyalkyl monomer comprises 2-hydroxyethyl methacrylate, 3-hydroxy-2,2-dimethyl-propyl methacrylate, glycerol methacrylate and mixtures comprising them.

42. The silicone hydrogel of claim 1 wherein the at least one silicone-containing component 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.

43. 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.

44. The silicone hydrogel of claim 43 wherein each R_{14} is independently selected from ethyl and methyl groups.

45. The silicone hydrogel of claim 43 wherein all R_{14} are methyl.

46. The silicone hydrogel of claim 43 wherein R_{12} and each R_{14} are methyl.

47. The silicone hydrogel of claim 43 wherein at least one R_{14} is 3,3,3-trifluoropropyl.

48. The silicone hydrogel of claim 43 wherein R_{13} is selected from C1-C6 alkylene groups which may be substituted with ether, hydroxyl and combinations thereof.

49. The silicone hydrogel of claim 43 wherein R_{13} is selected from C1 or C3-C6 alkylene groups which may be substituted with ether, hydroxyl and combinations thereof.

50. The silicone hydrogel of claim 43 wherein a is 5 to 15

51. The silicone hydrogel of claim 43 whereinR_{16} is H or methyl.

52. The silicone hydrogel of claim 43 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.

53. The silicone hydrogel of claim 43 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.

54. The silicone hydrogel of claim 35 wherein said slow reacting hydrophilic monomer and said hydroxyl monomer form a molar ratio of hydroxyl groups to the slow-reacting hydrophilic monomer of between about 0.15 and about 0.4.

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

56. The silicone hydrogel of claim 1 wherein said slow-reacting hydrophilic monomer is selected from N-vinylpyrrolidone, N-vinylacetamide, 1-methyl-3-methylene-2-pyrrolidone, 1-methyl-5-methylene-2-pyrrolidone, 5-methyl-3-methylene-2-pyrrolidone, and mixtures thereof.

57. The silicone hydrogel of claim 1 wherein said photoinitiator is a visible light initiator.

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

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

60. 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.

61. The silicone hydrogel of claim 60 wherein said diluent further comprises at least polyhydric codiluent.

62. The silicone hydrogel of claim 61 wherein said polyhydric codiluent is present in an amount between about 0.5 and 5 wt%, based upon all components in the reaction mixture.

63. The silicone hydrogel of claim 60 wherein said polar diluent is selected from the group consisting of carboxylic acids, secondary and tertiary alcohols.

64. The silicone hydrogel of claim 60 wherein said polyhydric codiluent is selected from the group consisting of glycerin, boric acid, boric acid glycerol esters, polyalkylene glycols and mixtures thereof.

65. The silicone hydrogel of claim 60 wherein said polar diluent further comprises up to about 3 wt% of at least one lactam polymer or copolymer.

66. 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.

67. The silicone hydrogel of claim 66 wherein said slow reacting crosslinkers have only vinyl reactive functionality and said fast reacting crosslinkers have (meth)acrylate reactive functionality only.

68. The silicone hydrogel of claim 66 wherein said slow reacting crosslinker comprises TAC and said fast reacting crosslinker is selected from the group consisting of EDGMA, TEGDMA and mixtures thereof.

69. The silicone hydrogel of claim 1 wherein said reaction mixture is substantially free from additional hydrophilic components.

70. The silicone hydrogel of claim 60 wherein said reaction mixture comprises less than about 5% of intermediate reacting hydrophilic components.

71. The silicone hydrogel of claim 67 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%.

72. The silicone hydrogel of claim 67 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%.

73. The silicone hydrogel of claim 67 wherein all crosslinkers are present in an amount less than about 0.5 wt%.

74. The silicone hydrogel of claim 12 wherein said at least one UV absorbing compound is reactive.

75. The silicone hydrogel of claim 1 wherein said reactive mixture further comprises at least one additional hydrophilic monomer, provided that if said at least one hydrophilic monomer has a kinetic half life between 120% and 170% of said silicone-containing component kinetic half life, said additional hydrophilic monomer is present in a concentration which provides said silicone hydrogel with a contact angle less than about 80°.

76. The silicone hydrogel of claim 75 wherein said at least one hydrophilic monomer has a kinetic half life between 120% and 170% of said silicone-containing component kinetic half life, and said reactive mixture comprises less than about 3 weight% said additional hydrophilic monomer.