What is claimed is:

1. A method for producing silicone hydrogel contact lenses, comprising the steps of:
   (1) obtaining a polymerizable composition which is clear at room temperature, wherein the polymerizable composition comprises
      (a) at least one siloxane-containing vinylic monomer,
      (b) at least one polysiloxane vinylic crosslinker,
      (c) from about 15% to about 55% by weight of at least one hydrophilic (meth)acrylamido monomer having 3 to 8 carbon atoms,
      (d) from 0 to about 25% by weight of an organic solvent having relative to the total weight of the polymerizable composition, wherein the organic solvent has 2 to 8 carbon atoms,
      (e) at least one thermal free radical initiator, and
      (f) at least one radical scavenger present in an amount for providing the polymerizable composition with a bi-phase curing profile determined by using thermal DSC to polymerization kinetics of the polymerizable composition at a curing temperature of from about 45°C to about 100°C as function of time;
   (2) introducing the polymerizable composition into a lens mold, wherein the lens mold comprises a male mold half having a first molding surface and a female mold half having a second molding surface, wherein the male and female mold halves are configured to receive each other such that a mold cavity is formed between the first and second molding surfaces when the mold is closed;
   (3) curing thermally the polymerizable composition in the lens mold in an oven at the curing temperature for at least 30 minutes to form an unprocessed silicone hydrogel lens contact lens;
   (4) separating the lens mold the male and female mold halves, with the unprocessed silicone hydrogel contact lens being adhered on a lens-adhered mold half which is one of the male and female mold halves; and
   (5) removing the unprocessed silicone hydrogel contact lens from the lens-adhered mold half.

2. The method of claim 1, wherein at least one hydrophilic (meth)acrylamido monomer is (meth)acrylamide, N-methyl (meth)acrylamide, N,N-dimethyl (meth)acrylamide, N-ethyl (meth)acrylamide, N,N-diethyl (meth)acrylamide, N-propyl (meth)acrylamide, N-isopropylacrylamide, N-3-methoxypropyl (meth)acrylamide, N-tert-butylacrylamide, N-2-hydroxyethyl (meth)acrylamide, N,N-bis(2-hydroxyethyl) (meth)acrylamide, N-2-hydroxypropyl (meth)acrylamide, N-3-hydroxypropyl (meth)acrylamide, N-2,3-

dihydroxypropyl (meth)acrylamide, *N*-[tris(hydroxymethyl)methyl]-acrylamide, N-2-aminoethyl (meth)acrylamide, N-2-methylaminoethyl (meth)acrylamide, N-2-ethylaminoethyl (meth)acrylamide, N-2-dimethylaminoethyl (meth)acrylamide, N-3-aminopropyl (meth)acrylamide, N-3-methylaminopropyl (meth)acrylamide, N-3-dimethylaminopropyl acrylamide, 2-(meth)acrylamidoglycolic acid, or a combination thereof.

3. The method of claim 2, wherein the organic solvent is ethanol, 1-propanol, isopropanol, 1-butanol, sec-butanol, isobutanol, tert-butyl alcohol, 1-pentanol, 2-pentanol, 3-pentanol, 3-methyl-2-butanol, 2-methyl-1-butanol, 2,2-dimethyl-1-propanol, tert-amyl alcohol, 1-methoxy-2-propanol, 3-ethoxy-1-propanol, 1-ethoxy-2-propanol, or a combination thereof.
4. The method of claim 3, wherein the radical scavenger is a N-oxyl or nitroxide compound, a quinone methide, a nitroso compound, phenothiazine, phenols, or a naturally-occurring antioxidant free-radical scavenger.
5. The method of claim 4, wherein the polymerizable composition in the lens mold is thermally cured in the oven at the curing temperature under a nitrogen environment, wherein the nitrogen environment in the oven is maintained by flowing nitrogen gas through the oven at a first flow rate.
6. The method of claim 5, wherein the organic solvent has a boiling point of lower than 105°C, wherein the method further comprises, between steps (3) and (4), the steps of: raising oven temperature to a post-curing temperature of about 110°C or higher while increasing the flow rate of nitrogen gas through the oven to a second flow rate which is at least about 2.0 folds of the first flow rate; and heating the lens mold with the unprocessed silicone hydrogel contact lens therewithin in the oven at the post-curing temperature under nitrogen gas flow through the oven at the second flow rate for at least about 30 minutes.
7. The method of claim 6, wherein the lens mold with the unprocessed silicone hydrogel contact lens therewithin is heated in the oven at the post-curing temperature for at least about 60 minutes.
8. The method of claim 7, wherein the sum of the amounts of components (a) to (d) is at least about 90% by weight relative to the total weight of the polymerizable composition.
9. The method of claim 8, wherein the step (5) of removing is performed, before the unprocessed silicone hydrogel contact lens is contact with water or any liquid, by (a) bring a ultrasonic horn in direct contact with at least one area of a non-optical surface of the lens-adhered mold half having the unprocessed silicone hydrogel lens precursor attached thereon and (b) applying a ultrasonic vibrational energy of from about 0.2 to about 18 J to the at least one area of the non-optical surface of the lens-adhered mold half having the unprocessed silicone hydrogel contact lens adhered thereon so as to remove the

unprocessed silicone hydrogel contact lens from the lens-adhered mold half.

10. The method of claim 9, wherein the ultrasonic horn has a convex surface which is in contact with the lens-adhered mold half.
11. The method of claim 9, wherein the ultrasonic horn has a concave surface which is in contact with the lens-adhered mold half.
12. The method of claim 9, wherein the ultrasonic horn has a flat surface which is in contact with the lens-adhered mold half.
13. The method of claim 9, further comprising a step of subjecting the unprocessed silicone hydrogel contact lens obtained in step (5) to one or more post-molding processes selected from the group consisting of extraction, hydration, surface treatment, packaging, sterilization, and combinations thereof.
14. The method of claim 9, wherein the polymerizable composition further comprises about 10% or less by weight of one or more polymerizable components selected from the group consisting of an N-vinyl amide monomer, a hydrophilic (meth)acryloxy monomer, a hydrophobic acrylic monomer capable of forming a homopolymer with a T_g of at least about 60°C, a non-silicone vinylic crosslinker, and combinations thereof, relative to the total weight of the polymerizable composition,

wherein the N-vinyl amide monomer is selected from the group consisting of N-vinylpyrrolidone, N-vinyl piperidone, N-vinyl caprolactam, N-vinyl-N-methyl acetamide, N-vinyl formamide, N-vinyl acetamide, N-vinyl isopropylamide, N-vinyl-N-methyl acetamide, N-vinyl-N-ethyl acetamide, N-vinyl-N-ethyl formamide, and mixtures thereof,

wherein the hydrophilic (meth)acryloxy monomer is selected from the group consisting of 2-hydroxyethyl (meth)acrylate, 3-hydroxypropyl (meth)acrylate, 2-hydroxypropyl (meth)acrylate, glycerol methacrylate (GMA), di(ethylene glycol) (meth)acrylate, tri(ethylene glycol) (meth)acrylate, tetra(ethylene glycol) (meth)acrylate, poly(ethylene glycol) (meth)acrylate having a number average molecular weight of up to 1500, ethylene glycol methyl ether (meth)acrylate, di(ethylene glycol) methyl ether (meth)acrylate, tri(ethylene glycol) methyl ether (meth)acrylate, tetra(ethylene glycol) methyl ether (meth)acrylate, C_1-C_4-alkoxy poly(ethylene glycol) (meth)acrylate having a weight average molecular weight of up to 1500, (meth)acrylic acid, ethylacrylic acid, 2-aminoethyl (meth)acrylate, 2-methylaminoethyl (meth)acrylate, 2-ethylaminoethyl (meth)acrylate, 3-aminopropyl (meth)acrylate, 3-methylaminopropyl (meth)acrylate, 3-ethylaminopropyl (meth)acrylate, 3-amino-2-hydroxypropyl (meth)acrylate,

trimethylammonium 2-hydroxy propyl (meth)acrylate hydrochloride, dimethylaminoethyl (meth)acrylate, and combinations thereof,

wherein the hydrophobic acrylic monomer is selected from the group consisting of methyl methacrylate, ethyl methacrylate, isopropyl methacrylate, sec-butyl methacrylate, tert-butyl methacrylate, cyclohexyl methacrylate, isobornyl acrylate, isobornyl methacrylate, phenyl methacrylate, 4-tert-butylstyrene, 2-methylstyrene, styrene, 4-ethoxystyrene, 2,4-dimethystyrene, 2,5-dimethylstyrene, 3,5-dimethylstyrene, and combinations thereof.

15. The method of claim 14, wherein the polymerizable composition comprises from about 1.5% or less by weight of the non-silicone vinylic crosslinker relative to the total weight of all polymerizable components in the polymerizable composition, wherein the non-silicone vinylic crosslinker is ethyleneglycol di-(meth)acrylate, diethyleneglycol di-(meth)acrylate, triethyleneglycol di-(meth)acrylate, tetraethyleneglycol di-(meth)acrylate, glycerol di-(meth)acrylate, 1,3-propanediol di-(meth)acrylate, 1,3-butanediol di-(meth)acrylate, 1,4-butanediol di-(meth)acrylate, glycerol 1,3-diglycerolate di-(meth)acrylate, ethylenebis[oxy(2-hydroxypropane-1,3-diyl)] di-(meth)acrylate, bis[2-(meth)acryloxyethyl] phosphate, trimethylolpropane di-(meth)acrylate, and 3,4-bis[(meth)acryloyl]tetrahydrofuan, diacrylamide (i.e., N-(1-oxo-2-propenyl)-2-propenamide), dimethacrylamide (i.e., N-(1-oxo-2-methyl-2-propenyl)-2-methyl-2-propenamide), N,N-di(meth)acryloyl-N-methylamine, N,N-di(meth)acryloyl-N-ethylamine, N,N'-methylene bis(meth)acrylamide, N,N'-ethylene bis(meth)acrylamide, N,N'-dihydroxyethylene bis(meth)acrylamide, N,N'-propylene bis(meth)acrylamide, N,N'-2-hydroxypropylene bis(meth)acrylamide, N,N'-2,3-dihydroxybutylene bis(meth)acrylamide, 1,3-bis(meth)acrylamide-propane-2-yl dihydrogen phosphate (i.e., N,N'-2-phophonyloxypropylene bis(meth)acrylamide), piperazine diacrylamide (or 1,4-bis(meth)acryloyl piperazine), tetraethyleneglycol divinyl ether, triethyleneglycol divinyl ether, diethyleneglycol divinyl ether, ethyleneglycol divinyl ether, triallyl isocyanurate, triallyl cyanurate, trimethylopropane trimethacrylate, pentaerythritol tetramethacrylate, bisphenol A dimethacrylate, or combinations thereof.

16. The method of claim 14, wherein said at least one siloxane-containing vinylic monomer is tris(trimethylsilyloxy)silylpropyl (meth)acrylate, [3-(meth)acryloxy-2-hydroxypropyloxy]propylbis(trimethylsiloxy) methylsilane, [3-(meth)acryloxy-2-hydroxypropyloxy]propylbis(trimethylsiloxy)butylsilane, 3-(meth)acryloxy-2-(2-

hydroxyethoxy)-propyloxy)propylbis(trimethylsiloxy)methylsilane, 3-(meth)acryloxy-2-hydroxypropyloxy)propyltris(trimethylsiloxy)silane, N-[tris(trimethylsiloxy)silylpropyl]-(meth)acrylamide, N-(2-hydroxy-3-(3-(bis(trimethylsilyloxy)methylsilyl)propyloxy)-propyl)-2-methyl (meth)acrylamide, N-(2-hydroxy-3-(3-(bis(trimethylsilyloxy)methylsilyl)-propyloxy)propyl) (meth)acrylamide, N-(2-hydroxy-3-(3-(tris(trimethylsilyloxy)silyl)-propyloxy)propyl)-2-methyl acrylamide, N-(2-hydroxy-3-(3-(tris(trimethylsilyloxy)silyl)-propyloxy)propyl) (meth)acrylamide, N-[tris(dimethylpropylsiloxy)silylpropyl]-(meth)acrylamide, N-[tris(dimethylphenylsiloxy) silylpropyl] (meth)acrylamide, N-[tris(dimethylethylsiloxy)silylpropyl] (meth)acrylamide, N,N-bis[2-hydroxy-3-(3-(bis(trimethylsilyloxy)methylsilyl)propyloxy)propyl]-2-methyl (meth)acrylamide, N,N-bis[2-hydroxy-3-(3-(bis(trimethylsilyloxy)methylsilyl)propyloxy)-propyl] (meth)acrylamide, N,N-bis[2-hydroxy-3-(3-(tris(trimethylsilyloxy)silyl)propyloxy)-propyl]-2-methyl (meth)acrylamide, N,N-bis[2-hydroxy-3-(3-(tris(trimethylsilyloxy)-silyl)propyloxy)propyl] (meth)acrylamide, N-[2-hydroxy-3-(3-(t-butyldimethylsilyl)-propyloxy)propyl]-2-methyl (meth)acrylamide, N-[2-hydroxy-3-(3-(t-butyldimethylsilyl)propyloxy)propyl] (meth)acrylamide, N,N-bis[2-hydroxy-3-(3-(t-butyldimethylsilyl)propyloxy)propyl]-2-methyl (meth)acrylamide, N-2-(meth)acryloxyethyl-O-(methyl-bis-trimethylsiloxy-3-propyl)silyl carbamate, 3-(trimethylsilyl)propylvinyl carbonate, 3-(vinyloxycarbonylthio)-propyl-tris(trimethyl-siloxy)silane, 3-[tris(trimethylsiloxy)silyl]propylvinyl carbamate, 3-[tris(trimethylsiloxy)silyl] propyl allyl carbamate, 3-[tris(trimethylsiloxy)silyl]propyl vinyl carbonate, or a combination thereof.

17. The method of claim 14, wherein said at least one siloxane-containing vinylic monomer is tris(trimethylsilyloxy)silylpropyl (meth)acrylate, [3-(meth)acryloxy-2-hydroxypropyloxy]propylbis(trimethylsiloxy) methylsilane, [3-(meth)acryloxy-2-hydroxypropyloxy]propylbis(trimethylsiloxy)butylsilane, 3-(meth)acryloxy-2-(2-hydroxyethoxy)-propyloxy)propylbis(trimethylsiloxy)methylsilane, 3-(meth)acryloxy-2-hydroxypropyloxy)propyltris(trimethylsiloxy)silane, or a combination thereof.

18. The method of claim 14, wherein said at least one siloxane-containing vinylic monomer is N-[tris(trimethylsiloxy)silylpropyl]-(meth)acrylamide, N-(2-hydroxy-3-(3-(bis(trimethylsilyloxy)methylsilyl)propyloxy)-propyl)-2-methyl (meth)acrylamide, N-(2-hydroxy-3-(3-(bis(trimethylsilyloxy)methylsilyl)-propyloxy)propyl) (meth)acrylamide, N-(2-hydroxy-3-(3-(tris(trimethylsilyloxy)silyl)-propyloxy)propyl)-2-methyl acrylamide, N-(2-

hydroxy-3-(3-(tris(trimethylsilyloxy)silyl)-propyloxy)propyl) (meth)acrylamide, or a combination thereof.

19. The method of claim 14, wherein said at least one siloxane-containing vinylic monomer is α-(meth)acryloxypropyl terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-(meth)acryloxy-2-hydroxypropyloxypropyl terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-(2-hydroxyl-methacryloxypropyloxypropyl)-ω-C_1-C_4-alkyl-decamethylpentasiloxane, α-[3-(meth)acryloxyethoxy-2-hydroxypropyloxypropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[3-(meth)acryloxy-propyloxy-2-hydroxypropyloxypropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[3-(meth)acryloxyisopropyloxy-2-hydroxypropyloxypropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[3-(meth)acryloxybutyloxy-2-hydroxypropyloxypropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[3-(meth)acryloxyethylamino-2-hydroxypropyloxypropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[3-(meth)acryloxypropylamino-2-hydroxypropyloxypropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[3-(meth)acryloxy-butylamino-2-hydroxypropyloxypropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-(meth)acryloxy(polyethylenoxy)-2-hydroxypropyloxypropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[(meth)acryloxy-2-hydroxypropyloxy-ethoxypropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[(meth)acryloxy-2-hydroxypropyl-N-ethylaminopropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[(meth)acryloxy-2-hydroxypropyl-aminopropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[(meth)acryloxy-2-hydroxypropyloxy-(polyethylenoxy)propyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-(meth)acryloylamidopropyloxypropyl terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-N-methyl-(meth)acryloylamidopropyloxypropyl terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[3-(meth)acrylamidoethoxy-2-hydroxypropyloxy-propyl]-terminated ω-C_1-C_4-alkyl polydimethylsiloxane, α-[3-(meth)acrylamidopropyloxy-2-hydroxypropyloxypropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[3-(meth)acrylamidoisopropyloxy-2-hydroxypropyloxypropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[3-(meth)acrylamidobutyloxy-2-hydroxypropyloxypropyl]-terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, α-[3-(meth)acryloylamido-2-hydroxypropyloxypropyl] terminated ω-C_1-C_4-alkyl

polydimethylsiloxane, α-[3-[N-methyl-(meth)acryloylamido]-2-hydroxypropyloxypropyl] terminated ω-C_1-C_4-alkyl terminated polydimethylsiloxane, N-methyl-N'-(propyltetra(dimethylsiloxy)dimethylbutylsilane) (meth)acrylamide, N-(2,3-dihydroxypropane)-N'-(propyltetra(dimethylsiloxy)dimethylbutylsilane) (meth)acrylamide, (meth)acryloylamidopropyltetra(dimethylsiloxy)dimethylbutylsilane, α-vinyl carbonate-terminated ω-C_1-C_4-alkyl-terminated polydimethylsiloxanes, α-vinyl carbamate-terminated ω-C_1-C_4-alkyl-terminated polydimethylsiloxane, or a mixture thereof.

20. The method of claim 14, wherein the polymerizable materials comprise at least one silicone-containing vinylic crosslinker which is α,ω-bis[3-(meth)acrylamidopropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acryloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acryloxy-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acryloxyethoxy-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acryloxypropyloxy-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acryloxy-isopropyloxy-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acryloxybutyloxy-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acrylamidoethoxy-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acrylamidopropyloxy-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acrylamidoisopropyloxy-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acrylamidobutyloxy-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acryloxyethylamino-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acryloxypropylamino-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acryloxybutylamino-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[(meth)acrylamidoethylamino-2-hydroxypropyloxy-propyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acrylamidopropylamino-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[3-(meth)acrylamide-butylamino-2-hydroxypropyloxypropyl]-terminated polydimethylsiloxane, α,ω-bis[(meth)acryloxy-2-hydroxypropyloxy-ethoxypropyl]-terminated polydimethylsiloxane, α,ω-bis[(meth)acryloxy-2-hydroxypropyl-N-ethylaminopropyl]-terminated polydimethylsiloxane, α,ω-bis[(meth)acryloxy-2-hydroxypropyl-aminopropyl]-

polydimethylsiloxane, α,ω-bis[(meth)acryloxy-2-hydroxypropyloxy-(polyethylenoxy)propyl]-terminated polydimethylsiloxane, α,ω-bis[(meth)acryloxyethylamino-carbonyloxy-ethoxypropyl]-terminated polydimethylsiloxane, α,ω-bis[(meth)acryloxyethylamino-carbonyloxy-(polyethylenoxy)propyl]-terminated polydimethylsiloxane, or a combination thereof.