WHAT IS CLAIMED IS:

1. An apparatus for forming a silicone article, comprising:

a pumping system to deliver a silicone formulation to a die, the silicone formulation having a viscosity of less than about 2,000,000 centipoise;

the die having a distal end, a proximal end, and a channel there between, wherein the silicone formulation flows through the channel of the die; and

a source of radiation energy, wherein the radiation energy substantially cures the silicone formulation as the silicone formulation flows out the channel of the die to form the silicone article.

2. The apparatus according to claim 1, wherein the die has an operating temperature of about 25°C to about 60°C.

3. The apparatus according to any one of the preceding claims, wherein at least a first portion of the die, a portion of the pumping system, or combination thereof is substantially transparent to a radiation source.

4. The apparatus according to claim 3, wherein at least about 50% of the radiation source at about 300 nanometers radiates through the at least first portion of the die, the portion of the pumping system, or combination thereof.

5. The apparatus according to claim 3, wherein the first portion of the die, the portion of the pumping system, or combination thereof is a quartz, a glass, a polymer, or combination thereof.

6. The apparatus according to claim 5, wherein the polymer is polymethyl methacrylate (PMMA), polystyrene, or combinations thereof.

7. The apparatus according to any one of the preceding claims, wherein the radiation source is ultraviolet light.

8. The apparatus according to any one of the preceding claims, wherein the silicone formulation has a viscosity of about 200,000 cPs to about 1,000,000 cPs, prior to flowing through the distal end of the die.

9. The apparatus according to any one of the preceding claims, wherein the silicone formulation is a liquid silicone rubber (LSR), a room temperature vulcanizable silicone, (RTV), or combination thereof.

10. The apparatus according to any one of the preceding claims, wherein the silicone article has a Shore A durometer of about 10 to about 80 as the silicone formulation exits the proximal end of the die.

11. The apparatus according to any one of the preceding claims, wherein a second portion of the die is a metal.

12. The apparatus according to any one of the preceding claims, wherein the die has a cylindrical ring shape extending from the distal end to the proximal end of the die.

13. The apparatus according to any one of the preceding claims, wherein the die further includes an interior insert having a outside diameter smaller than an outside diameter of the cylindrical ring shape.

14. The apparatus according to claim 13, wherein the distance between the outside diameter of the cylindrical ring shape and the outside diameter of the interior insert is about 1.0mm to about 10.0mm.

15. The apparatus according to claim 13, wherein the interior insert has a distal end, a proximal end, and a channel there between.

16. The apparatus according to any one of the preceding claims, wherein the silicone formulation is formed into a tube.

17. A method of forming a silicone article, comprising:

providing a silicone formulation within a pumping system, wherein the silicone formulation has a viscosity of less than about 2,000,000 centipoise;

providing a die having a distal end, a proximal end, and a channel there between;

delivering the silicone formulation from the pumping system and through the channel of the die; and

irradiating the silicone formulation with a radiation source to substantially cure the silicone formulation as the silicone formulation flows out the channel of the die to form the silicone article.

18. The method according to claim 17, wherein delivering the silicone formulation is at an operating temperature of about 25°C to about 60°C.

19. The method according to any one of claims 17-18, wherein at least a first portion of the die, a portion of the pumping system, or combination thereof is substantially transparent to a radiation source.

20. The method according to claim 19, wherein at least about 50% of the radiation source at about 300 nanometers radiates through the at least first portion of the die, the portion of the pumping system, or combination thereof.

21. The method according to claim 19, wherein the first portion of the die, the portion of the pumping system, or combination thereof is a quartz, a glass, a polymer, or combination thereof.

22. The method according to claim 21, wherein the polymer is polymethyl methacrylate (PMMA), polystyrene, or combinations thereof.

23. The method according to any one of claims 17-22, wherein the radiation source is ultraviolet light.

24. The method according to any one of claims 17-23, wherein the silicone formulation is delivered to the distal end of the die at a viscosity of about 200,000 cPs to about 1,000,000 cPs.

25. The method according to any one of claims 17-24, wherein the silicone material is a liquid silicone rubber (LSR), a room temperature vulcanizable silicone, (RTV), or combination thereof.

26. The method according to any one of claims 17-25, wherein the silicone article has a Shore A durometer of about 10 to about 80 as the silicone formulation exits the proximal end of the die.

27. The method according to any one of claims 17-26, wherein a second portion of the die is a metal.

28. The method according to any one of claims 17-27, wherein the die has a cylindrical ring shape extending from the distal end to the proximal end of the die.

29. The method according to claim 28, wherein the die further includes an interior insert having a outside diameter smaller than an outside diameter of the cylindrical ring shape.

30. The method according to claim 29, wherein the distance between the outside diameter of the cylindrical ring shape and the outside diameter of the interior insert is about 1.0mm to about 10.0mm.

31. The method according to claim 29, wherein the silicone formulation is formed into a tube.

32. The method according to claim 31, further comprising forming the silicone formulation tube over a polymer.

33. The method according to claim 32, wherein the polymer is a fluoropolymer.

34. The method according to claim 32, wherein the silicone formulation and the polymer are co-extruded.

35. The method according to claim 32, wherein the polymer is in the form of a tube having a fluid channel there through.

36. An extruded silicone tube comprising:

a distal end, a proximal end, and a lumen there through having a continuous length from the distal end to the proximal end of at least about 0.5 meters;

wherein the silicone tube comprises a cured silicone formulation having a viscosity of less than about 2,000,000 centipoise prior to cure.

37. The silicone tube according to claim 36, wherein the tube has a length of at least about 10.0 meters.

38. The silicone tube according to any one of claims 36-37, having a standard deviation of an inner diameter of the silicone tube no greater than about 1.1% of an average inner diameter of the silicone tube over an entire length of the silicone tube.

39. The silicone tube according to any one of claims 36-38, having a standard deviation of a wall thickness of the silicone tube no greater than about 3.6% of an average wall thickness of the silicone tube over an entire length of the tube.

40. The silicone tube according to any one of claims 36-39, wherein the tube is free of a parting line, a knit line, flash, or combination thereof.

41. The silicone tube according to any one of claims 36-40, wherein the tube is radiation cured.

42. The silicone tube according to any one of claims 36-41, having a filler content of up to about 80% by weight of the total weight of the silicone formulation.

43. The silicone tube according to claim 42, wherein the filler content is about 10% by weight to about 50% by weight of the total weight of the silicone formulation.

44. The silicone tube according to any one of claims 36-43, having a crosslink density of about 0.002 mmole/gram to about 0.2 mmole/gram.

45. The silicone tube according to claim 44, having a crosslink density of about 0.006 mmole/gram to about 0.1 mmole/gram.

46. The silicone tube according to any one of claims 36-45, having a loss modulus of about 0.01 MPa to about 1.0 MPa, measured at 25°C at 1 hertz.

47. The silicone tube according to claim 46, having a loss modulus of about 0.02 MPa to about 0.5 MPa, measured at 25°C at 1 hertz.

48. The silicone tube according to any one of claims 36-47, having an absolute flow rate change of about 0% to about 10%, measured after 24 hours using a precision peristaltic pump.

49. The silicone tube according to claim 48, having an absolute flow rate change of about 0% to about 5%, measured after 24 hours using a precision peristaltic pump.

50. A silicone extrudate comprising:

a configuration of a film, a block, a circular tube, a rectangular tube, or a profile;

wherein the silicone extrudate comprises a radiation cured silicone formulation having a viscosity of less than about 2,000,000 centipoise prior to cure.

51. The silicone extrudate according to claim 50, wherein the profile is shaped with an open geometry or a closed geometry.

52. The silicone extrudate according to claim 51, wherein profile is a gasket, a seal, or a multilumen.

53. The silicone extrudate according to any one of claims 50-52, having a filler content of up to about 80% by weight of the total weight of the silicone formulation.

54. The silicone extrudate according to claim 53, wherein the filler content is about 10% by weight to about 50% by weight of the total weight of the silicone formulation.

55. The silicone extrudate according to any one of claims 50-54, having a crosslink density of about 0.002 mmole/gram to about 0.2 mmole/gram.

56. The silicone extrudate according to claim 55, having a crosslink density of about 0.006 mmole/gram to about 0.1 mmole/gram.

57. The silicone extrudate according to any one of claims 50-56, having a loss modulus of about 0.01 MPa to about 1.0 MPa, measured at 25°C at 1 hertz.

58. The silicone extrudate according to claim 57, having a loss modulus of about 0.02 MPa to about 0.5 MPa, measured at 25°C at 1 hertz.

WHAT IS CLAIMED IS:

1. An apparatus for forming a silicone article, comprising:

a pumping system to deliver a silicone formulation to a die, the silicone formulation having a viscosity of less than about 2,000,000 centipoise;

the die having a distal end, a proximal end, and a channel there between, wherein the silicone formulation flows through the channel of the die; and

a source of radiation energy, wherein the radiation energy substantially cures the silicone formulation as the silicone formulation flows out the channel of the die to form the silicone article.

2. The apparatus according to claim 1, wherein at least a first portion of the die, a portion of the pumping system, or combination thereof is substantially transparent to a radiation source.

3. The apparatus according to claims 1 or 2, wherein the radiation source is ultraviolet light.

4. A method of forming a silicone article, comprising:

providing a silicone formulation within a pumping system, wherein the silicone formulation has a viscosity of less than about 2,000,000 centipoise;

providing a die having a distal end, a proximal end, and a channel there between;

delivering the silicone formulation from the pumping system and through the channel of the die; and

irradiating the silicone formulation with a radiation source to substantially cure the silicone formulation as the silicone formulation flows out the channel of the die to form the silicone article.

5. The method according to claim 4, wherein delivering the silicone formulation is at an operating temperature of about 25°C to about 60°C.

6. The method according to claim 4, wherein the silicone formulation is formed into a tube.

7. The method according to claim 6, further comprising forming the silicone formulation tube over a polymer.

8. The method according to claim 7, wherein the silicone formulation and the polymer are co-extruded.

9. An extruded silicone tube comprising:

a distal end, a proximal end, and a lumen there through having a continuous length from the distal end to the proximal end of at least about 0.5 meters;

wherein the silicone tube comprises a cured silicone formulation having a viscosity of less than about 2,000,000 centipoise prior to cure.

10. The silicone tube according to claim 9, having a standard deviation of an inner diameter of the silicone tube no greater than about 1.1% of an average inner diameter of the silicone tube over an entire length of the silicone tube.

11. The silicone tube according to claims 9 or 10, having a standard deviation of a wall thickness of the silicone tube no greater than about 3.6% of an average wall thickness of the silicone tube over an entire length of the tube.

12. The silicone tube according to claims 9 or 10, wherein the tube is free of a parting line, a knit line, flash, or combination thereof.

13. The silicone tube according to claims 9 or 10, wherein the tube is radiation cured.

14. The silicone tube according to claims 9 or 10, having a crosslink density of about 0.002 mmole/gram to about 0.2 mmole/gram.

15. A silicone extrudate comprising:

a configuration of a film, a block, a circular tube, a rectangular tube, or a profile;

wherein the silicone extrudate comprises a radiation cured silicone formulation having a viscosity of less than about 2,000,000 centipoise prior to cure.