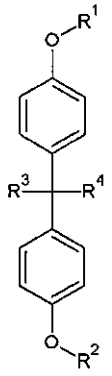
CLAIMS

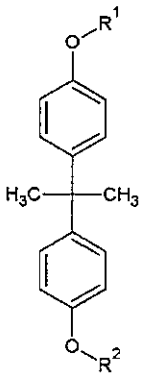
1. A radome comprising a plurality of plies coupled to each other, in which at least one of the plurality of plies comprises a substrate and a cured resin blend produced from an effective amount of a cyanate monomer and an effective amount of a cyanate ester oligomer to provide a dielectric constant of less than 2.7, a glass transition temperature of at least 150 °C and a moisture absorption of less than 1.5% for the radome.

2. The radome of claim 1, in which the monomer is a compound of formula (I)

(I) 

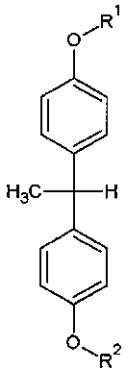
wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl, and wherein R^3 and R^4 are independently selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

3. The radome of claim 1, in which the monomer is a compound of formula (II)

(II) 

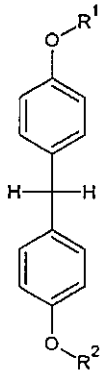
wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

4. The radome of claim 1, in which the monomer is a compound of formula (III)

(III) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

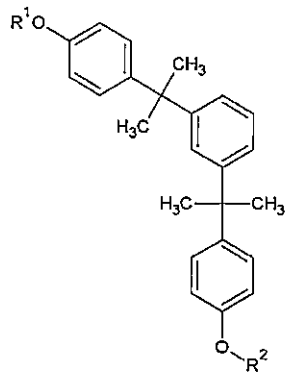
5. The radome of claim 1, in which the monomer is a compound of formula (IV)

(IV) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a

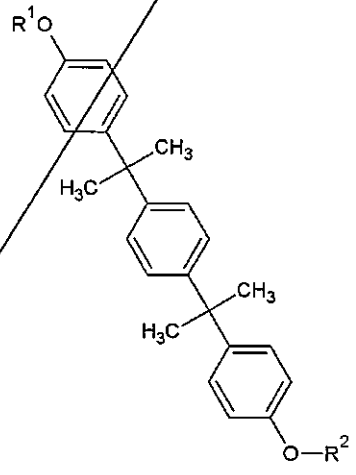
hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

6. The radome of claim 1, in which the monomer is a compound of formula (V)

(V) 

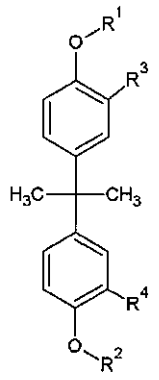
wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

7. The radome of claim 1, in which the monomer is a compound of formula (VI)

(VI) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

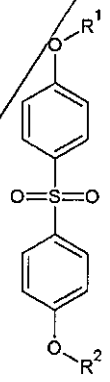
8. The radome of claim 1, in which the monomer is a compound of formula (VII)

(VII) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl, and wherein R^3 and R^4 are independently selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

9. The radome of claim 1, in which the monomer is a compound of formula (VIII)

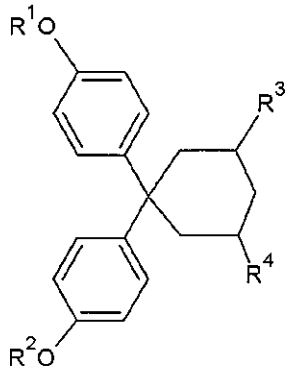
formula (VIII)

(VIII) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

10. The radome of claim 1, in which the monomer is a compound of formula (IX)

(IX)



wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl, wherein R^3 and R^4 are each independently selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

11. The radome of any of claims 1-10, in which the oligomer is a cyanate ester oligomer comprising two or more monomeric units each selected from a compound having the formula (I)-(IX).

12. The radome of claim 1, in which the cyanate monomer comprises a bisphenol dicyanate group and the cyanate ester oligomer comprises a diphenylcyanate group.

13. The radome of claim 1, in which the monomer is present from about 30-70 weight percent.

14. The radome of claim 13, in which the oligomer is present from about 70-30 weight percent.

15. The radome of claim 1, further comprising at least one phenol added to the resin blend.

16. The radome of claim 15, further comprising at least one metal catalyst added to the resin.

17. The radome of claim 1, in which the substrate comprises one or more of a woven fabric, a non-woven fabric, a ceramic, a plastic, a glass, a fiberglass, a nylon, a polyester, a polyethersulfone, an aramid, a polyethylene, a polypropylene, a polyolefin, a polyimide, a polyamide, a polyamide-imide, a polyphenylene sulfide, a carbon, a carbon black, a graphite, a diamond, a polybenzimidazole, a polybenzoxazole or a halocarbon.

18. The radome of claim 1, in which the effective amount of the monomer by weight exceeds the effective amount of the oligomer by weight.

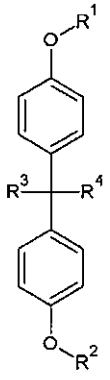
19. The radome of claim 1, in which the radome further comprises a loss tangent of less than 0.004.

20. The radome of claim 1, further comprising an insulation material disposed on the inner surface of the radome.

21. A prepreg comprising a plurality of plies coupled to each other, in which at least one of the plurality of plies comprises a substrate and a resin blend comprising an effective amount of a cyanate monomer and an effective amount of a cyanate ester oligomer to provide a cured resin comprising a dielectric constant of less than 2.7, a glass transition temperature of at least 150 °C and a moisture absorption of less than 1.5%.

22. The prepreg of claim 21, in which the monomer is a compound of formula (I)

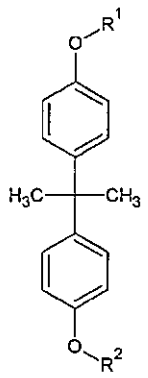
(I)



wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a

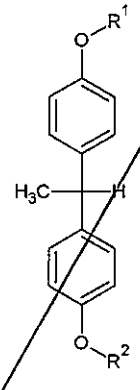
hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

23. The prepreg of claim 21, in which the monomer is a compound of formula (II)

(II) 

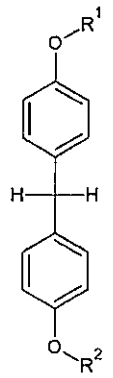
wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

24. The prepreg of claim 21, in which the monomer is a compound of formula (III)

(III) 

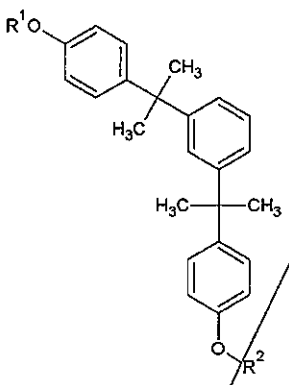
wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

25. The prepreg of claim 21, in which the monomer is a compound of formula (IV)

(IV) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

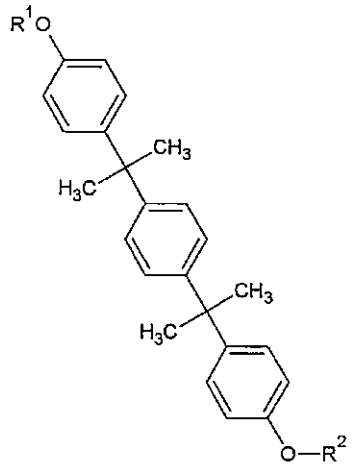
26. The prepreg of claim 21, in which the monomer is a compound of formula (V)

(V) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

27. The prepreg of claim 21, in which the monomer is a compound of formula (VI)

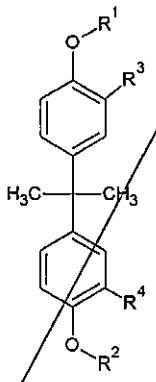
(VI)



wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

28. The prepreg of claim 21, in which the monomer is a compound of formula (VII)

(VII)

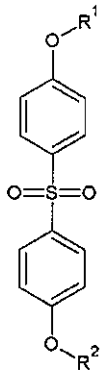


wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl, and wherein R3 and R4 are independently selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

29. The prepreg of claim 21, in which the monomer is a compound of formula (VIII)

formula (VIII)

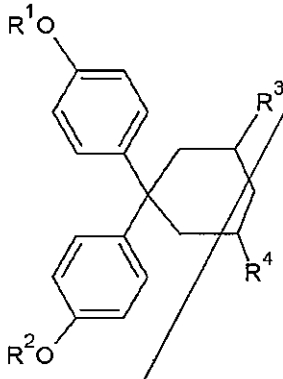
(VIII)



wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

30. The prepreg of claim 21, in which the monomer is a compound of formula (IX)

(IX)



wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl, wherein R^3 and R^4 are each independently selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

31. The prepreg of any of claims 21-30, in which the oligomer is a cyanate ester oligomer comprising two or more monomeric units each selected from a compound having the formula (I)-(IX).

32. The prepreg of claim 21, in which the cyanate monomer comprises a bisphenol dicyanate group and the cyanate ester oligomer comprises a diphenylcyanate group.

33. The prepreg of claim 21, in which the monomer is present from about 30-70 weight percent.

34. The prepreg of claim 33, in which the oligomer is present from about 70-30 weight percent.

35. The prepreg of claim 21, further comprising at least one phenol added to the resin blend.

36. The prepreg of claim 35, further comprising at least one metal catalyst added to the resin blend.

37. The prepreg of claim 21, in which the substrate comprises one or more of a woven fabric, a non-woven fabric, a ceramic, a plastic, a glass, a fiberglass, a nylon, a polyester, a polyethersulfone, an aramid, a polyethylene, a polypropylene, a polyolefin, a polyimide, a polyamide, a polyamide-imide, a polyphenylene sulfide, a carbon, a carbon black, a graphite, a diamond, a polybenzimidazole, a polybenzoxazole or a halocarbon.

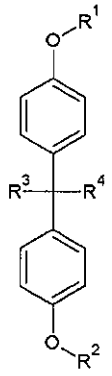
38. The prepreg of claim 21, in which the effective amount of the monomer by weight exceeds the effective amount of the oligomer by weight.

39. The prepreg of claim 21, in which the prepreg further comprises a loss tangent of less than 0.004.

40. The prepreg of claim 21, further comprising a covering coupled to at least one of the plies of the prepreg.

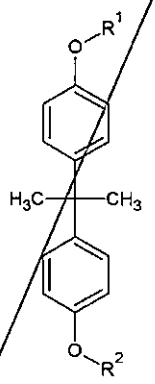
41. A resin blend comprising an effective amount of a cyanate ester monomer and an effective amount of a cyanate ester oligomer to provide a cured resin comprising a dielectric constant of less than 2.7, a loss tangent of less than 0.004, a glass transition temperature of at least 150 °C and a moisture absorption of less than 1.5%.

42. The resin of claim 41, in which the monomer is a compound of formula (I)

(I) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

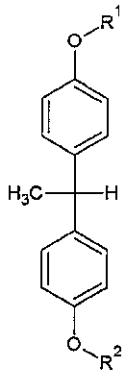
43. The resin of claim 41, in which the monomer is a compound of formula (II)

(II) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a

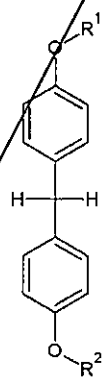
hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

44. The resin of claim 41, in which the monomer is a compound of formula (III)

(III) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

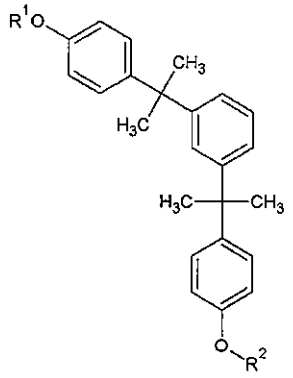
45. The resin of claim 41, in which the monomer is a compound of formula (IV)

(IV) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

46. The resin of claim 41, in which the monomer is a compound of formula (V)

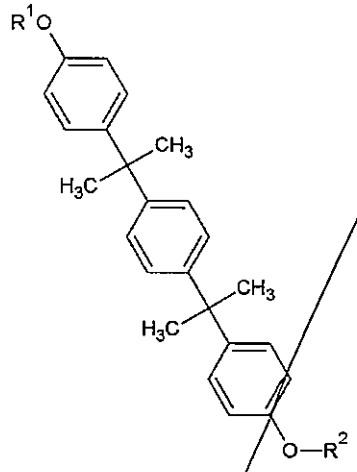
(V)



wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

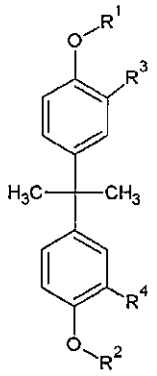
47. The resin of claim 41, in which the monomer is a compound of formula (VI)

(VI)



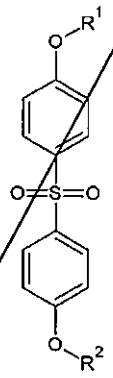
wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

48. The resin of claim 41, in which the monomer is a compound of formula (VII)

(VII) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl, and wherein R3 and R4 are independently selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

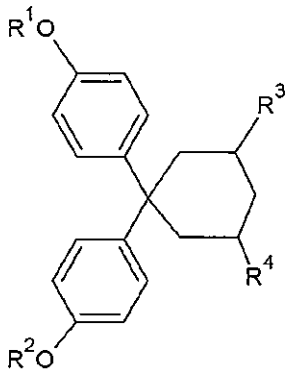
49. The resin of claim 41, in which the monomer is a compound of formula (VIII)

(VIII) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

50. The resin of claim 41, in which the monomer is a compound of formula (IX)

(IX)

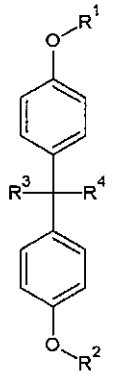


wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl, wherein R^3 and R^4 are each independently selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

51. A resin blend comprising an effective amount of at least two cyanate monomers and an effective amount of a cyanate ester oligomer to provide a cured resin comprising a dielectric constant of less than 2.7, a loss tangent of less than 0.004, a glass transition temperature of at least 150 °C and a moisture absorption of less than 1.5%.

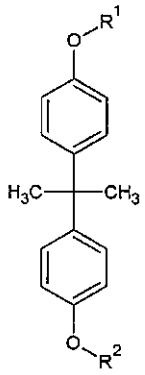
52. The resin of claim 51, in which at least one of the monomers is a compound of formula (I)

(I)



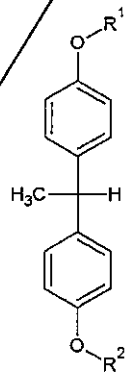
wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

53. The resin of claim 51, in which at least one monomer is a compound of formula (II)

(II) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

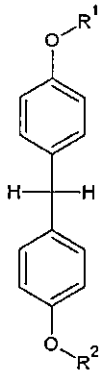
54. The resin of claim 51, in which at least one monomer is a compound of formula (III)

(III) 

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

55. The resin of claim 51, in which at least one monomer is a compound of formula (IV)

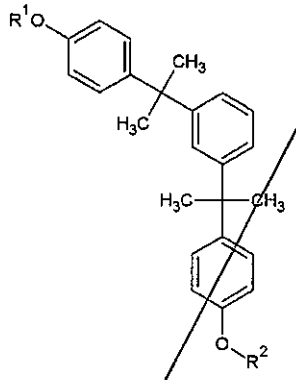
(IV)



wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

56. The resin of claim 51, in which at least one monomer is a compound of formula (V)

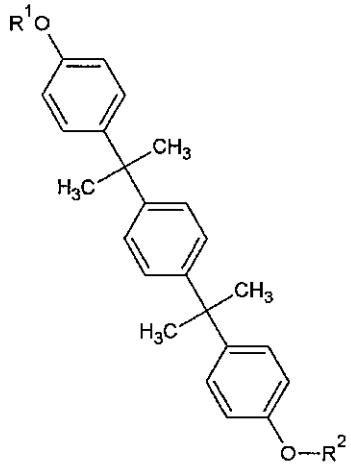
(V)



wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

57. The resin of claim 51, in which at least one monomer is a compound of formula (VI)

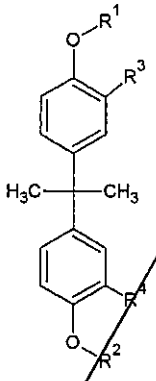
(VI)



wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

58. The resin of claim 51, in which at least one monomer is a compound of formula (VII)

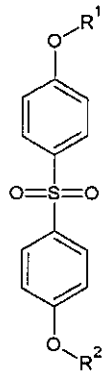
(VII)



wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl, and wherein R3 and R4 are independently selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

59. The resin of claim 51, in which at least one monomer is a compound of formula (VIII)

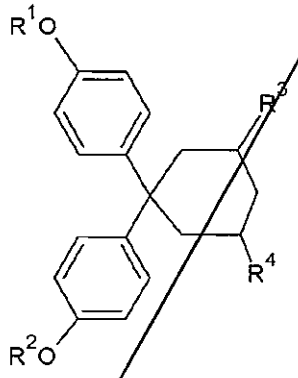
(VIII)



wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

60. The resin of claim 51, in which at least one monomer is a compound of formula (IX)

(IX)



wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl, and wherein R^3 and R^4 are each independently selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

61. A system comprising:

the radome of any of claims 1-20; and

an electronic device covered by the radome.

62. The system of claim 61, in which the electronic device comprises an antenna.

63. The system of claim 61, in which the radome is sized and arranged to be placed on an aircraft.

64. The system of claim 61, in which the radome is sized and arranged to be placed on a ship.

65. The system of claim 61, in which the radome is sized and arranged to be placed on a hull of a ship, in which the radome is immersed in the water during operation of the ship.

66. The system of claim 61, in which the electronic device is part of a radar system.

67. The system of claim 61, in which the electronic device is part of a sonar system.

68. The system of claim 61, in which the electronic device is part of a communication system.

69. The system of claim 68, in which the communication system is selected from the group consisting of Wi-Fi systems, Bluetooth systems, radio systems, cellular communication systems and satellite systems.

70. A satellite comprising a transmitter/receiver and the radome of any of claims 1-20 sized and arranged to protect the transmitter/receiver.

71. An automotive vehicle comprising a transmitter/receiver configured to couple to a bumper of the vehicle, the vehicle further comprises the radome of any of claims 1-20 sized and arranged to protect the coupled transmitter/receiver.

72. An aircraft comprising a radar system and the radome of any of claims 1-20 configured to cover and protect the radar system.

73. The aircraft of claim 72, in which the radar system is positioned in a nose cone or an undersurface of the aircraft.

74. A ship comprising a radar system and the radome of any of claims 1-20 configured to cover and protect the radar system.

75. The ship of claim 74, in which the radar system is positioned external to the hull of the ship and beneath the water surface in operation of the ship.

76. A submarine comprising a sonar system and the radome of any of claims 1-20 configured to cover and protect the sonar system.

77. The submarine of claim 76, in which the sonar system is positioned external to the hull of the submarine.

78. A method of producing a radome comprising:

disposing the resin blend of any of claims 41-60 on a substrate; and

polymerizing the disposed resin to provide a radome comprising a dielectric constant of less than 2.7, a glass transition temperature of at least 150 °C and a moisture absorption of less than 1.5%.

79. The method of claim 78, in which polymerizing the disposed resin also provided a radome with a loss tangent of less than 0.004.

80. The method of claim 78, further comprising adding at least one additive to the resin before or after polymerization of the resin.

81. The method of claim 80, in which the additive is a flame retardant, a smoke suppressant or a pigment.

82. The radome of any of claims 1-20, further comprising one or more of a flame retardant, a filler and a curing agent.

83. The prepreg of any of claims 21-40, further comprising one or more of a flame retardant, a filler and a curing agent.

84. The resin of any of claims 41-60, further comprising one or more of a flame retardant, a filler and a curing agent.

85. The radome of claim 1, in which the monomer is a dicyclopentadienyl bisphenol cyanate ester.

86. The prepreg of claim 21, in which the monomer is a dicyclopentadienyl bisphenol cyanate ester.

87. The resin of claim 41 or claim 51, in which the monomer is a dicyclopentadienyl bisphenol cyanate ester.

88. The radome of claim 1 or the prepreg of claim 21, in which the oligomer comprises a dicyclopentadienyl bisphenol cyanate ester monomeric unit.

89. The resin of claim 41 or claim 51, in which the oligomer comprises a dicyclopentadienyl bisphenol cyanate ester monomeric unit.

90. A radome comprising a plurality of plies coupled to each other, in which at least one of the plurality of plies comprises a substrate and a cured resin produced from an effective amount of a cyanate monomer selected from monomers of formula (I)-(IX) and dicyclopentadienyl bisphenol cyanate ester monomers to provide a dielectric constant of less than 2.7, a glass transition temperature of at least 150 °C and a moisture absorption of less than 1.5% for the radome.

91. A prepreg comprising a plurality of plies coupled to each other, in which at least one of the plurality of plies comprises a substrate and a resin comprising an effective amount of a cyanate monomer selected from monomers of formula (I)-(IX) and dicyclopentadienyl

bisphenol cyanate ester monomers to provide a cured resin comprising a dielectric constant of less than 2.7, a glass transition temperature of at least 150 °C and a moisture absorption of less than 1.5%.

92. A resin comprising an effective amount of a cyanate ester monomer selected from monomers of formula (I)-(IX) and dicyclopentadienyl bisphenol cyanate ester monomers to provide a cured resin comprising a dielectric constant of less than 2.7, a loss tangent of less than 0.004, a glass transition temperature of at least 150 °C and a moisture absorption of less than 1.5%.

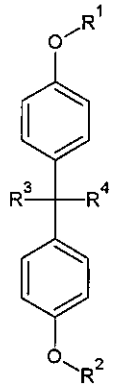
93. The radome of claim 90 or the prepreg of claim 91 or the resin of claim 92, further comprising at least one phenol added to the resin.

94. The radome of claim 90 or the prepreg of claim 91 or the resin of claim 92, further comprising at least one metal catalyst added to the resin.

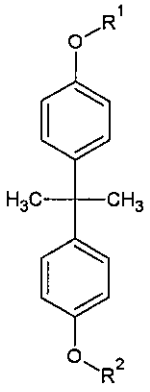
95. The radome of claim 90 or the prepreg of claim 91, in which the substrate comprises one or more of a woven fabric, a non-woven fabric, a ceramic, a plastic, a glass, a fiberglass, a nylon, a polyester, a polyethersulfone, an aramid, a polyethylene, a polypropylene, a polyolefin, a polyimide, a polyamide, a polyamide-imide, a polyphenylene sulfide, a carbon, a carbon black, a graphite, a diamond, a polybenzimidazole, a polybenzoxazole or a halocarbon.

CLAIMS

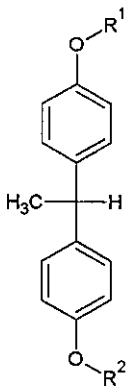
1. A radome comprising a plurality of plies coupled to each other, in which at least one of the plurality of plies comprises a substrate and a cured resin blend produced from an effective amount of a cyanate monomer and an effective amount of a cyanate ester oligomer to provide a dielectric constant of less than 2.7, a glass transition temperature of at least 150 °C and a moisture absorption of less than 1.5% for the radome, wherein the cyanate monomer is a compound of formulae (I) –(IX):



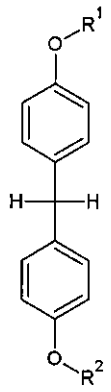
(I)



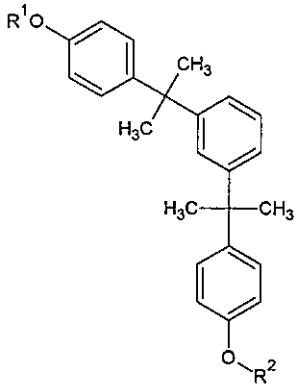
(II)



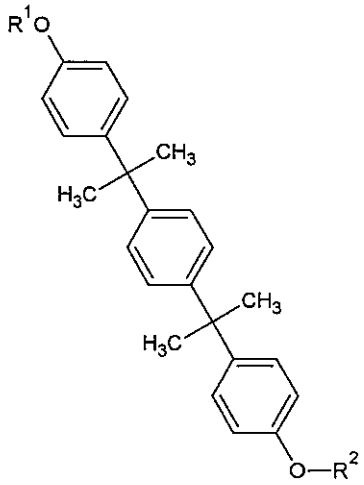
(III)



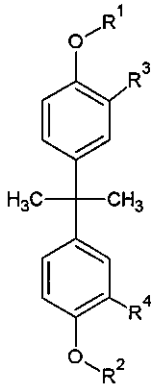
(IV)



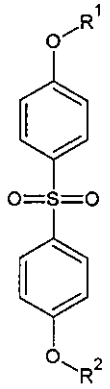
(V)



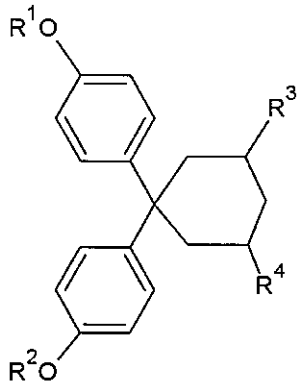
(VI)



(VII)



(VIII)



(IX)

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1

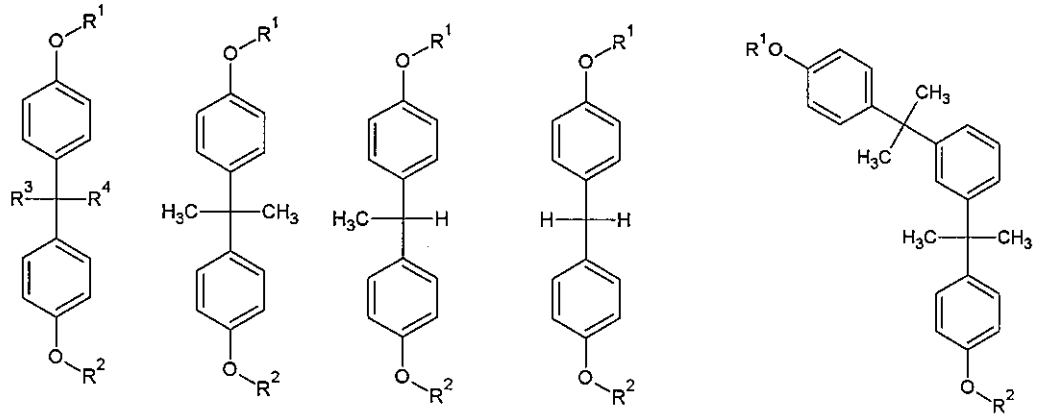
to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl, and wherein R^3 and R^4 are independently selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

2. The radome of claim 1, in which the oligomer is a cyanate ester oligomer comprising two or more monomeric units each selected from a compound having the formula (I)-(IX).

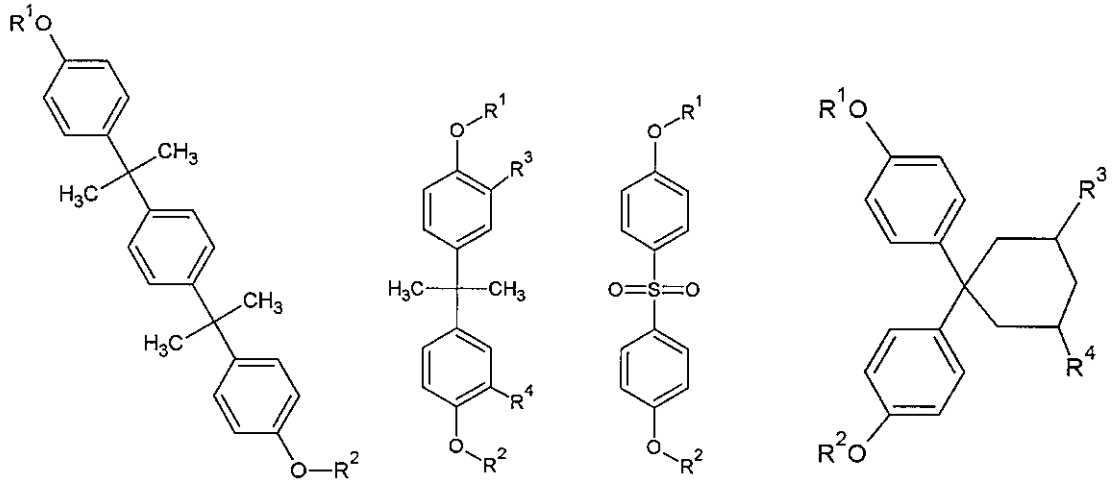
3. The radome of claim 1, further comprising at least one phenol added to the resin or at least one metal catalyst added to the resin.

4. The radome of claim 1, in which the cyanate monomer comprises a bisphenol dicyanate group, a dicyclopentadienyl bisphenol dicyanate, a dicyclopentadienyl bisphenol dicyanate, and the cyanate ester oligomer comprises a diphenylcyanate group.

5. A prepreg comprising a plurality of plies coupled to each other, in which at least one of the plurality of plies comprises a substrate and a resin blend comprising an effective amount of a cyanate monomer and an effective amount of a cyanate ester oligomer to provide a cured resin comprising a dielectric constant of less than 2.7, a glass transition temperature of at least 150 °C and a moisture absorption of less than 1.5%, wherein the cyanate monomer is a compound of formulae (I) –(IX):



(I) (II) (III) (IV) (V)



(VI) (VII) (VIII) (IX)

wherein at least one of R^1 and R^2 is --CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl, wherein R^3 and R^4 are each independently selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

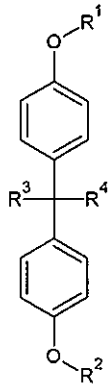
6. The prepreg of claim 5, in which the oligomer is a cyanate ester oligomer comprising two or more monomeric units each selected from a compound having the formula (I)-(IX).

7. The prepreg of claim 5, in which the cyanate monomer comprises a bisphenol dicyanate group and the cyanate ester oligomer comprises a diphenylcyanate group.

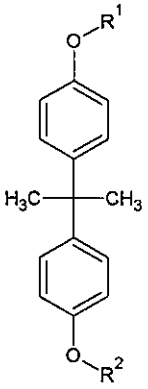
8. The prepeg of claim 5, further comprising at least one phenol added to the resin or at least one metal catalyst added to the resin.

9. The prepeg of claim 5, in which the cyanate monomer comprises a bisphenol dicyanate group, a dicyclopentadienyl bisphenol dicyanate, a dicyclopentadienyl bisphenol dicyanate, and the cyanate ester oligomer comprises a diphenylcyanate group.

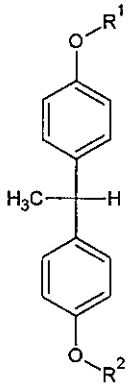
10. A resin blend comprising an effective amount of one or more cyanate monomer(s) and an effective amount of a cyanate ester oligomer to provide a cured resin comprising a dielectric constant of less than 2.7, a loss tangent of less than 0.004, a glass transition temperature of at least 150 °C and a moisture absorption of less than 1.5%, wherein the cyanate monomer(s) is a compound of formulae (I) –(IX):



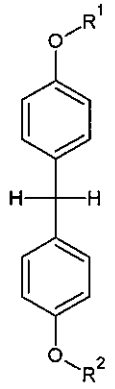
(I)



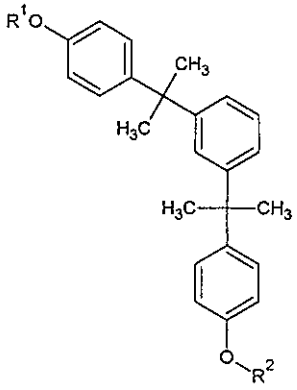
(II)



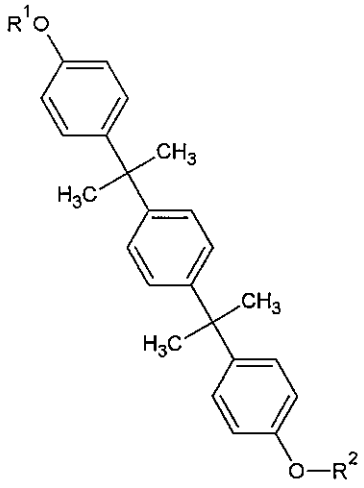
(III)



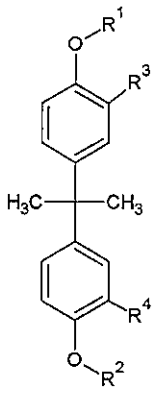
(IV)



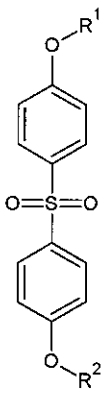
(V)



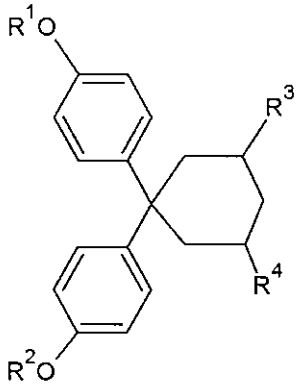
(VI)



(VII)



(VIII)



(IX)

wherein at least one of R^1 and R^2 is –CN and the other of R^1 and R^2 is selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl, and wherein R^3 and R^4 are independently selected from hydrogen, -CN, -COOH, a hydrocarbon group comprising 1 to 6 carbon atoms, a hydrocarbonyl group comprising 1 to 6 carbon atoms, a halohydrocarbon group comprising 1 to 6 carbon atoms, a halohydrocarbonyl group comprising 1 to 6 carbon atoms and phenyl.

11. The resin blend of claim 10, further comprising at least one phenol added to the resin.

12. The resin blend of claim 10, further comprising at least one metal catalyst added to the resin.

13. The resin blend of claim 10, in which the cyanate monomer comprises a bisphenol dicyanate group, a dicyclopentadienyl bisphenol dicyanate, a dicyclopentadienyl bisphenol dicyanate, and the cyanate ester oligomer comprises a diphenylcyanate group.

14. A system comprising:

the radome of any of claims 1-5; and

an electronic device covered by the radome.

15. A method of producing a radome comprising:

disposing the resin blend of any of claims 10-13 on a substrate; and

polymerizing the disposed resin to provide a radome comprising a dielectric constant of less than 2.7, a glass transition temperature of at least 150°C and a moisture absorption of less than 1.5%.