

WHAT IS CLAIMED IS:

1. A fiber-reinforced polymer composition a plurality of continuous fibers embedded and distributed within a thermoplastic polymer matrix, wherein the thermoplastic polymer matrix constitutes from about 20 wt.% to about 90 wt.% of the composition and the continuous fibers constitute from about 10 wt.% to about 80 wt.% of the composition, wherein the polymer composition has a deflection temperature under load of about 60°C or more as determined in accordance with ISO 75:2013 at a load of 3.5 MPa.
2. The fiber-reinforced polymer composition of claim 1, wherein the polymer matrix includes an aromatic polyester.
3. The fiber-reinforced polymer composition of claim 2, wherein the aromatic polyester includes poly(ethylene terephthalate), poly(1,4-butylene terephthalate), poly(1,3-propylene terephthalate), poly(1,4-butylene 2,6-naphthalate), poly(ethylene 2,6-naphthalate), poly(1,4-cyclohexylene dimethylene terephthalate), or a copolymer, derivative, or mixture thereof.
4. The fiber-reinforced polymer composition of claim 2, wherein the aromatic polyester includes poly(ethylene terephthalate) or a derivative thereof.
5. The fiber-reinforced polymer composition of claim 2, wherein the aromatic polyester has an intrinsic viscosity of from about 0.1 dl/g to about 6 dl/g as determined in accordance with ISO 1628-5:1998.
6. The fiber-reinforced polymer composition of claim 2, wherein the aromatic polyester has a glass transition temperature of from about 30°C to about 120°C as determined by ISO 11357-2:2013 and/or a Vicat softening temperature of from about 40°C to about 150°C as determined in accordance with ISO 306:2004.
7. The fiber-reinforced polymer composition of claim 2, wherein the aromatic polyester has a deflection temperature under load of from about 20°C to about 80°C as determined in accordance with ISO 75:2013 at a load of 1.8 MPa.
8. The fiber-reinforced polymer composition of claim 1, wherein the polymer matrix contains an additional polymer.
9. The fiber-reinforced polymer composition of claim 8, wherein the additional polymer has a deflection temperature under load of about 80°C to about 300°C as determined in accordance with ISO 75:2013 at a load of 1.8 MPa.

10. The fiber-reinforced polymer composition of claim 8, wherein the additional polymer has a melt volume rate of about 2 cm³/10 min or more as determined at a temperature of 250°C and load of 2.16kg in accordance with ISO 1133:2011.

11. The fiber-reinforced polymer composition of claim 8, wherein the additional polymer is an aromatic polycarbonate.

12. The fiber-reinforced polymer composition of claim 11, wherein the aromatic polycarbonate has an intrinsic viscosity of from about 0.1 dl/g to about 6 dl/g as determined in accordance with ISO 1628-4:1998.

13. The fiber-reinforced polymer composition of claim 11, wherein the aromatic polycarbonate has a glass transition temperature of from about 50°C to about 250°C as determined by ISO 11357-2:2013 and/or a Vicat softening temperature of from about 50°C to about 250°C as determined in accordance with ISO 306:2004.

14. The fiber-reinforced polymer composition of claim 8, wherein aromatic polyesters constitute from about 40 wt.% to about 99 wt.% of the polymer matrix and additional polymers constitute from about 1 wt.% to about 60 wt.% of the polymer matrix.

15. The fiber-reinforced polymer composition of claim 1, wherein the polymer matrix further comprises a coupling agent, flow modifier, pigment, antioxidant, stabilizer, filler, antistatic agent, surfactant, wax, flame retardant, additional polymer, or a combination thereof.

16. The fiber-reinforced polymer composition of claim 15, wherein the coupling agent includes a polyolefin that is modified with a polar functional group.

17. The fiber-reinforced polymer composition of claim 1, wherein the continuous fibers include glass fibers, carbon fibers, or a combination thereof.

18. The fiber-reinforced polymer composition of claim 1, wherein the continuous fibers are contained in rovings.

19. The fiber-reinforced polymer composition of claim 1, wherein the continuous fibers are unidirectional.

20. The fiber-reinforced polymer composition of claim 18, wherein the fibers are oriented at an angle relative to an axis of loading that ranges from about 30° to about 60°.

21. The fiber-reinforced polymer composition of claim 1, wherein the composition is in the form of a tape.

22. The fiber-reinforced polymer composition of claim 21, wherein the tape has an upper outer surface and an opposing lower outer surface, and further wherein an upper region is defined adjacent to the upper outer surface, a lower region is defined adjacent to the lower outer surface, and a central region is defined between the upper region and the lower region, wherein the central region is fiber-rich and the upper and/or lower regions are polymer-rich.

23. A composite laminate that comprises multiple plies, wherein at least one of the plies contains the tape of claim 21.

24. A blade comprising the composite laminate of claim 23.

25. The blade of claim 24, wherein the blade is a rotor blade.

26. A method for forming a fiber-reinforced polymer composition of claim 1, the method comprising impregnating a plurality of rovings formed from the continuous fibers with the thermoplastic matrix within an impregnation die to form a composite structure, and pulling the composite structure through the impregnation die.