Claims

1. A core/sheath structure composing a forming material or a formed product which is generated from the forming material, comprising:

a core having a linear shape and an outer peripheral surface and including at least one thermoplastic polymer; and

a sheath at least partly covering the outer peripheral surface and including one or both of fibers or particles.

2. The core/sheath structure of claim 1, wherein the at least one thermoplastic polymer of the core comprising a first thermoplastic polymer; and

wherein the sheath further includes a second thermoplastic polymer with the one or both of fibers or particles dispersed in the second thermoplastic polymer.

3. The core/sheath structure of claim 2, wherein the first thermoplastic polymer and the second thermoplastic polymer are a same type of thermoplastic elastomer; or

wherein the first thermoplastic polymer and the second thermoplastic polymer are different types of thermoplastic elastomers.

4. The core/sheath structure of claim 2, wherein the sheath further includes a water-soluble substance so that after exposure to water, at least a part of the water-soluble substance is removed in the sheath.

5. The core/sheath structure of any of claims 1-4, wherein the sheath entirely covers the outer peripheral surface.

6. The core/sheath structure of any of claims 1-4, wherein the core/sheath structure composes the forming material; and

wherein at least one of the core and the sheath comprises one or more of a foaming agent and a whipping agent.

7. The core/sheath structure of any of claims 1-4, wherein the sheath includes at least a rigid component and a flexible component.

8. The core/sheath structure of any of claims 1-4, wherein the one or both of fibers or particles are one or both of natural materials or synthetic materials.

9. The core/sheath structure of any of claims 1-4, wherein a diameter of the core is at least five times greater than a thickness of the sheath.

10. The core/sheath structure of any of claims 1-4, wherein at least one of the core or the sheath includes a reinforcing component that includes filler.

11. The core/sheath structure of any of claims 1-4, wherein the one or both of fibers or particles comprise at least one of ramie, cotton, wool, silk, or chitosan.

12. The core/sheath structure of any of claims 1-4, wherein the core/sheath structure consists of a two-layer structure.

13. The core/sheath structure of any of claims 1-4, wherein the one or both of the fibers or particles at least partly protrude an outer peripheral surface of the core/sheath structure.

14. The core/sheath structure of any of claims 1-4, wherein the sheath includes a water-soluble material.

15. The core/sheath structure of any of claims 1-4, wherein a ratio of an outer diameter of the sheath and a diameter of the core is at least 1:10.

16. The core/sheath structure of any of claims 1-4, wherein the core further includes one or more of the fibers, the particles, or additives.

17. A formed product comprising:

one or more layers, the one or more layers comprising at least one core/sheath structure comprising:

a core having a linear shape and an outer peripheral surface and including at least one thermoplastic polymer; and

a sheath at least partly covering the outer peripheral surface and including one or both of fibers or particles.

18. The formed product of claim 17, wherein the formed product is formed by 3D printing.

19. The formed product of claim 18, wherein the at least one thermoplastic polymer of the core comprising a first thermoplastic polymer; and

wherein the sheath further includes a second thermoplastic polymer with the one or both of fibers or particles dispersed in the second thermoplastic polymer.

20. The formed product of any of claims 17-19, wherein the sheath further includes a water-soluble substance so that after exposure to water, at least a part of the water-soluble substance is removed in the sheath.

21. The formed product of any of claims 17-19, wherein the sheath is entirely covering the outer peripheral surface.

22. The formed product of any of claims 17-19, wherein the formed product comprises an outer surface configured for contact; and

wherein the one or both of fibers or particles at least partly form protrusions on an outer surface of the formed product.

23. The formed product of claim 22, wherein the protrusions are configured to form a roughness on the outer surface of the formed product; and

wherein the roughness is determined based on one or both of shape or size of the one or both of fibers or particles.

24. The formed product of claim 22, wherein the one or both of fibers or particles intersect with the outer peripheral surface with one end forming the protrusions and an opposite end buried in a thermoplastic layer.

25. The formed product of claim 22, wherein the formed product comprises clothing; and

wherein the protrusions are configured to contact skin of a person using the clothing.

26. The formed product of claim 22, wherein the formed product comprises first linear bodies and second linear bodies;

wherein the first linear bodies extend in a first direction;

wherein the second linear bodies extend in a second direction perpendicular to the first direction; and

wherein the first linear bodies and the second linear bodies form a lattice-like planar shape.

27. A method for producing a filament comprising:

using one or more extruders to extrude a first set of materials for a core of the filament and a second set of materials for a sheath of the filament, wherein the second set of materials comprises at least one or both of fibers or particles;

using a core section and a sheath section of at least one die head in order to route the first set of materials and the second set of materials, respectively, that are extruded from the one or more extruders; and

during or after using the core section and the sheath section of the at least one die head, forming the filament by cooling the first set of materials and the second set of materials.

28. The method of claim 27, wherein the one or more extruders comprises at least first extruder to melt, mix, and extrude the first set of materials and at least second extruder to melt, mix, and extrude the second set of materials; and

wherein the at least second extruder comprise a twin-screw extruder.

29. The method of claim 28, wherein the second set of materials comprises at least one thermoplastic polymer and the at least one or both of the fibers or the particles.

30. The method of any of claims 27-29, wherein the second set of materials further comprises a water-soluble polymer.