CLAIMS

1. A pressure hose, comprising:

a tube layer defining an interior passageway of the pressure hose;

a single layer reinforcement layer disposed over the tube layer, the single layer reinforcement layer comprising:

a plurality of beams braided together around the tube layer, each of the beams comprising greater than or equal to 14 ends;

wherein the single layer reinforcement layer has a reinforcement volumetric ratio (RVR) of greater than or equal to 126%; and

a cover layer disposed over the reinforcement layer.

2. The pressure hose of claim 1, wherein the RVR is greater than or equal to 133%.

3. The pressure hose of claim 1, wherein the tube layer comprises a polymer material, a plastic material, a rubber material, or combinations thereof.

4. The pressure hose of claim 3 wherein the tube layer comprises less than 5 wt% white filler.

5. The pressure hose of claim 1, wherein the thickness of the tube layer is in the range of from 1.25 mm to 13 mm.

6. The pressure hose of claim 1, wherein the ends comprise a metal material, a textile material, a plastic material, a polymer material, an amorphous material, a crystalline material, a ceramic material, or a combination thereof.

7. The pressure hose of claim 1, wherein the ends comprise carbon fiber.

8. The pressure hose of claim 1, wherein the ends in each beam comprise a first group of ends and a second group of ends, and the material of the first group of ends is different from the material of the second group of ends.

9. The pressure hose of claim 8, wherein the first group of ends is made from carbon fiber and the second group of ends is made from steel.

10. A pressure hose, comprising:

a tube layer defining an interior passageway of the pressure hose;

a single layer reinforcement layer disposed over the tube layer, the single layer reinforcement layer comprising

a plurality of beams braided together around the tube layer, each of the beams comprising a plurality of ends;

wherein the plurality of ends within each beam are arranged in a multiple-layer orientation such that the ends within the beam have varying overall length;

wherein each beam of the plurality of beams includes the same number of ends arranged in an identical multiple-layer orientation such that all of the beams in the reinforcement layer have the same overall length;

wherein the single layer reinforcement layer has a reinforcement volumetric ratio (RVR) of greater than or equal to 126%, and

a cover layer disposed over the reinforcement layer.

11. The pressure hose of claim 10, wherein the number of ends in each beam is greater than or equal to 14.

12. The pressure hose of claim 10, wherein the diameter of the ends in each beam is the range of from 0.2 mm to 0.5 mm.

13. The pressure hose of claim 10, wherein the ends within each beam have a circular cross section, and the plurality of ends comprises a first group of ends having a first diameter and a second group of ends having a second diameter larger than the first diameter.

14. The pressure hose of claim 13, wherein the first group of ends having a first diameter are located proximate the exterior of the beams and the second group of ends having a second diameter are located proximate the center of the beams.

15. The pressure hose of claim 10, wherein the plurality of ends comprises a first group of ends having a first cross-sectional shape and a second group of ends having a second cross-sectional shape different from the first cross-sectional shape.

16. The pressure hose of claim 10, wherein the plurality of ends comprises a first group of ends having a first tensile strength and a second group of ends having a second tensile strength greater than the first tensile strength.

17. The pressure hose of claim 16, wherein the first group of ends having a first tensile strength are located proximate the exterior of the beams and the second group of ends having a second tensile strength are located proximate the center of beams.

18. The pressure hose of claim 10, wherein the plurality of ends is a plurality of carbon fiber ends.

19. The pressure hose of claim 10, wherein the plurality of ends comprises a first group of ends that are carbon fiber ends and a second group of ends that are steel ends.

20. A pressure hose, comprising:

a tube layer defining an interior passageway of the pressure hose;

a reinforcement layer disposed over the tube layer, the reinforcement layer comprising:

a first inner layer; and

a second outer layer, wherein both the first layer and the second layer comprise:

a plurality of beams braided together around the tube layer, each of the beams comprising:

a plurality of ends grouped together in a multi-layered orientation;

wherein each of the plurality of beams comprises an identical number of ends arranged in an identical multi-layered orientation;

wherein the reinforcement layer has a reinforcement volumetric ratio (RVR) of greater than or equal to 110%; and

wherein the first inner layer and the second outer layer each have a braid angle less than a neutral angle of the pressure hose; and

a cover layer disposed over the reinforcement layer.

21. The pressure hose of claim 20, wherein the neutral angle is 54° 44' and the braid angle of the first inner layer is less than the braid angle of the second outer layer.

22. The pressure hose of claim 20, wherein the braid angle of the first inner layer is about 94% of the braid angle of the second outer layer.

23. The pressure hose of claim 20, wherein the plurality of ends within each beam are provided in a twisted configuration.

24. The pressure hose of claim of claim 20, wherein the plurality of ends are composite ends made from two or more materials.

25. The pressure hose of claim 24, wherein the composite ends have a co-axial composite structure.

26. The pressure hose of claim 24, wherein the composite ends have a matrix composite structure.

27. The pressure hose of claim 20, wherein the ends within each beam vary by two or more of size, cross-sectional shape, material, and tensile strength.

28. The pressure hose of claim 20, wherein the ends within each beam vary by three or more of size, cross-sectional shape, material, and tensile strength.

29. The pressure hose of claim 20, wherein the ends within each beam vary by each of size, cross-sectional shape, material, and tensile strength.