CLAIMS

1. An assembly capable of being disposed in a bore of a subterranean formation, the assembly comprising: a first component; a second component threadedly coupled to the first component to define an inner region, the first component being easier to mill than the second component; an inner sealing member; and an outer sealing member, wherein the inner sealing member and the outer sealing member are capable of cooperating with the first component and the second component to provide a pressure seal between the inner region and an environment exterior to the first component and the second component.

2. A assembly according to claim 1, wherein the first component comprises a first component groove and the second component comprises a second component groove, wherein the inner sealing member is disposed in the first component groove and the outer sealing member is disposed in the second component groove.

3. A assembly according to claim 1 or 2, wherein the inner sealing member and the outer sealing member each comprise at least one of: a ring seal; a T-seal; a bonded seal; or an injectable sealing material.

4. A assembly according to claim 1, 2 or 3, wherein the inner sealing member comprises a part of the first component coupled by a metal-to-metal interference fit to a part of the second component to form a seal against an inside pressure, wherein the outer sealing member comprises a second part of the first component coupled by a metal-to-metal interference fit to a second part of the second component to form a seal against an outside pressure.

5. A casing joint of a casing string capable of being disposed in a bore of a subterranean formation, the casing joint comprising: a first component; a second component threadedly coupled to the first component to define at least one chamber between the first component and the second component, the first component being easier to mill than the second component; and a venting member in fluid

communication with the at least one chamber and in fluid communication with an area outside of the second component threadedly coupled to the first component.

6. A casing joint according to claim 5, wherein the venting member is adapted to equalize pressure of the at least one chamber with the pressure of the area outside of the second component threadedly coupled to the first component.

7. A casing joint according to claim 5 or 6, wherein the venting member comprises a pressure compensator capable of decreasing a differential pressure of the at least one chamber.

8. A casing joint according to claim 5 or 6, wherein the venting member is a channel for allowing an epoxy to traverse to the at least one chamber, wherein the epoxy is configured to seal the at least one chamber from the area outside of the second component threadedly coupled to the first component.

9. An assembly capable of being disposed in a bore of a subterranean formation, the assembly comprising: a first component made from aluminum and comprising an inner wall having threads for coupling to a second component to define an inner region and to provide a pressure seal between the inner region and an environment exterior to the first component and the second component, wherein the threads are coated by a coating material capable of being between the threads and the second component when the threads are coupled to the second component, the coating material being nonconductive.

10. A assembly according to claim 9, wherein the first component comprises an outer wall having a second coating material disposed on at least part of the outer wall, the second coating material being at least one of more corrosion resistant than aluminum or nonconductive.

11. A assembly according to claim 9 or 10, wherein the coating material and the second coating material are the same type of material.

12. A assembly according to claim 9, 10 or 11, wherein the threads are capable of being coated by the coating material by at least one of: soft anodize coating; electroless nickel plating; anodized coating; or thermal spray coating.

13. A casing string capable of being disposed in a bore of a subterranean formation, the casing string comprising:a plurality of steel joints; and an aluminum joint coupled to a steel joint of the plurality of steel joints, the aluminum joint comprising an inner wall, wherein at least part of the inner wall is coated with a coating material to improve wear resistance of the inner wall.

14. A casing string according to claim 13, wherein the coating material comprises at least one of: epoxy-phenolic material; epoxy and polyphenylene sulfide composite material; or a synergistic coating material.

15. A casing string according to claim 13 or 14, wherein the inner wall is coated by at least one of: soft anodize coating; electroless nickel plating; hard anodized coating; anodized coating; or a nano high velocity oxygen fuel (HVOF) coating; thermal spray coating.

Claims:

1. An assembly for a casing string capable of being disposed in a bore of a subterranean formation, the assembly including:

a first component;

a second component coupled to the first component to define an inner region, the first component configured for being easier to mill than the second component, wherein the second component coupled to the first component includes an outer diameter that is equal to or less than an outer diameter of a portion of the casing string to which at least one of the first component or second component is coupled;

an inner sealing member; and

an outer sealing member,

wherein the inner sealing member and the outer sealing member are capable of cooperating with the first component and the second component to provide a pressure seal between the inner region and an environment exterior to the first component and the second component.

2. The assembly of claim 1, wherein the first component includes a first component groove and the second component includes a second component groove,

wherein the inner sealing member is disposed in the first component groove and the outer sealing member is disposed in the second component groove.

3. The assembly of claim 2, wherein the inner sealing member and the outer sealing member each include at least one of:

a ring seal;

a T-seal;

a bonded seal; or

an injectable sealing material.

4. The assembly of claim 1, wherein the inner sealing member includes a part of the first component coupled by a metal-to-metal interference fit to a part of the second component to form a seal against an inside pressure,

wherein the outer sealing member includes a second part of the first component coupled by a metal-to-metal interference fit to a second part of the second component to form a seal against an outside pressure.

5. The assembly of claim 1, further including:

a sleeve disposed in the inner region such that at least part of the sleeve is adjacent to at least part of the first component, the sleeve being capable of reducing at least one of wear or corrosion of at least part of the assembly.

6. The assembly of claim 5, wherein the sleeve is coupled to the first component by at least one:

a mechanical fastener;

an adhesive;

a weld;

a snap ring; or

a castellation.

7. The assembly of claim 1, wherein the first component is made from aluminum and includes an inner wall having threads for coupling to the second component, and

wherein the threads are coated by a coating material capable of being between the threads and the second component when the threads are coupled to the second component, the coating material being nonconductive.

8. The assembly of claim 1, wherein the second component coupled to the first component defines at least one chamber between the first component and the second component,

wherein the assembly further includes a venting member in fluid communication with the at least one chamber and in fluid communication with an area outside of the first component and the second component.

9. The assembly of claim 1, wherein the first component includes:

a first element threadedly coupled to the second component; and

a second element capable of being milled after being disposed in the bore, the second element being made from a material including at least one of:

aluminum;

fabric reinforced polymer;

carbon fiber;

fiberglass;

para-aramid synthetic fiber;

silicon carbide; or

carbon nanotubes.

10. A casing joint of a casing string capable of being disposed in a bore of a subterranean formation, the casing joint including:

a first component;

a second component coupled to the first component to define at least one chamber between the first component and the second component, the first component configured for being easier to mill than the second component, wherein the second component coupled to the first component includes an outer diameter that is equal to or less than an outer diameter of portion of the casing string to which at least one of the first component or second component is coupled; and

a venting member in fluid communication with the at least one chamber and in fluid communication with an area outside of the second component coupled to the first component.

11. The casing joint of claim 10, wherein the venting member is adapted to equalize pressure of the at least one chamber with the pressure of the area outside of the second component coupled to the first component.

12. The casing joint of claim 11, wherein the venting member includes a pressure compensator capable of decreasing a differential pressure of the at least one chamber.

13. The casing joint of claim 10, wherein the venting member is a channel for allowing an epoxy to traverse to the at least one chamber, wherein the epoxy is configured to seal the at least one chamber from the area outside of the second component coupled to the first component.

14. The casing joint of claim 10, wherein the second component coupled to the first component defines an inner region, the casing joint further including:

an inner sealing member disposed in a first component groove; and

an outer sealing member disposed in a second component groove,

wherein the inner sealing member and the outer sealing member are capable of cooperating with the first component and the second component to provide a pressure seal between the inner region and the environment exterior to the second component coupled to the first component.

15. The casing joint of claim 14, wherein the inner sealing member and the outer sealing member each include at least one of:

a ring seal;

a T-seal;

a bonded seal; or

an injectable sealing material.

16. The casing joint of claim 10, wherein the first component is made from aluminum and includes an inner wall having threads for coupling to the second component,

wherein the threads are coated by a coating material capable of being between the threads and the second component when the threads are coupled to the second component, the coating material being nonconductive.

17. An assembly for a casing string capable of being disposed in a bore of a subterranean formation, the assembly including:

a first component made from aluminum and including an inner wall having threads for coupling to a second component to (i) define an inner region, (ii) define an outer diameter, and (iii) provide a pressure seal between the inner region and an environment exterior to the first component and the second component,

wherein the outer diameter is equal to or less than an outer diameter of portion of the casing string to which at least one of the first component or second component is configured to couple,

wherein the threads are coated by a coating material capable of being between the threads and the second component when the threads are coupled to the second component, the coating material configured for being nonconductive.

18. The assembly of claim 17, wherein the first component includes an outer wall having a second coating material disposed on at least part of the outer wall, the second coating material being at least one of more corrosion resistant than aluminum or nonconductive.

19. The assembly of claim 18, wherein the coating material and the second coating material are the same type of material.

20. The assembly of claim 17, wherein the threads are capable of being coated by the coating material by at least one of:

soft anodize coating;

electroless nickel plating;

anodized coating; or

thermal spray coating.

21. The assembly of claim 17, wherein the coating material includes at least one of:

polytetrafluoroethylene;

a plastic;

a ceramic;

a non-conducting material; or

a metal.

22. The assembly of claim 17, further including:

the second component coupled to the first component, the first component configured for being easier to mill than the second component;

an inner sealing member disposed in a first component groove; and

an outer sealing member disposed in a second component groove,

wherein the inner sealing member and the outer sealing member are capable of cooperating with the first component and the second component to provide a seal between the inner region and the environment exterior to the first component and the second component.

23. The assembly of claim 17, wherein the second component coupled to the first component defines at least one chamber between the first component and the second component,

wherein the assembly further includes a venting member capable of being in fluid communication with the at least one chamber and in fluid communication with an area outside of the first component and the second component.

24. A casing string capable of being disposed in a bore of a subterranean formation, the casing string including:

a plurality of steel joints; and

an aluminum joint coupled to a steel joint of the plurality of steel joints, the aluminum joint including an inner wall, the aluminum joint coupled to the steel joint having an outer diameter that is equal to or less than an outer diameter of a portion of the casing string to which at least one of the aluminum joint or steel joint is coupled,

wherein at least part of the inner wall is coated with a coating material to improve wear resistance of the inner wall.

25. The casing string of claim 24, wherein the coating material includes at least one of:

epoxy-phenolic material;

epoxy and polyphenylene sulfide composite material; or

a synergistic coating material.

26. The casing string of claim 24, wherein the inner wall is coated by at least one of:

soft anodize coating;

electroless nickel plating;

hard anodized coating;

anodized coating; or

a nano high velocity oxygen fuel (HVOF) coating;

thermal spray coating.

27. The casing string of claim 24, wherein the aluminum joint is threadedly coupled to the steel joint to define an inner region, the casing string further including:

an inner sealing member disposed in an aluminum joint groove;

an outer sealing member disposed in a steel joint groove,

wherein the inner sealing member and the outer sealing member are capable of cooperating with the aluminum joint and the steel joint to provide a pressure seal between the inner region and an environment exterior to the aluminum joint and the steel joint.

28. The casing string of claim 24, wherein the aluminum joint includes an outer wall, at least part of the outer wall being coated with a second coating material to improve wear resistance of the outer wall and to improve corrosion resistance of the outer wall.

29. The casing string of claim 28, wherein the second coating material is the same type of material as the coating material.

30. The casing string of claim 24, wherein the coating material is capable of improving corrosion resistance of the inner wall.