Claims

1. A method of pretreating a vessel to maintain storage of a precursor material in a stabilized form within the vessel, said method comprising:

providing a pressure vessel and/or conduit extending therefrom having an interior volume defined by one or more surfaces;

pretreating the one or more surfaces by applying an organic-containing material onto the one or more surfaces of the vessel and/or conduit;

forming a protected surface;

introducing the gaseous precursor material at a predetermined concentration into the interior volume of the vessel at a pressure of up to 150 psia,

wherein said material is remains chemically stable with said protected surface so as to not undergo substantial decomposition during storage within the vessel.

2. The method of claim 1, wherein the gaseous precursor material has a concentration of 2% or less.

3. The method of claim 1 wherein the organic-containing material is selected from the group consisting of octadecyltrichlorosilane (OTS), quercetin, dioctylphthlate (DOP) and dioctylterephthlate (DOT) and combinations thereof.

4. The method of claim 3, wherein the protected surface comprises a film of self-assembled monolayers of OTS.

5. The method of claim 1, wherein the gaseous precursor material is SnD4.

6. The method of claim 5, wherein the SnD4 is introduced into the pressure vessel at a concentration of 2% or less.

7. The method of claim 6, wherein the SnD4 is introduced into the pressure vessel at a concentration of 1% or less.

8. The method of claim 1, wherein the gaseous precursor material is selected from the group consisting of SnD4, SnH4, SiH4, Si2H6, B2H6 and GeH4.

9. The method of claim 1, wherein the organic-containing material comprises quercetin and wherein said gaseous precursor material is SnD4, said vessel containing a concentration of about 1% SnD4 at a pressure of about 50psia.

10. The method of claim 1, wherein the organic-containing material comprises OTS and wherein said gaseous precursor material is SnD4, said vessel containing a concentration of about 1% SnD4 at a pressure of about 50psia.

11. The method of claim 1, wherein said organic-containing material comprises OTS provided with the addition of water.

12. The method of claim 1, wherein said surfaces are not pre-cleaned or pre-dried prior to said pretreating the one or more surfaces.

13. The method of claim 1, wherein said organic-containing material comprises an organosiloxane.

14. The method of claim 1, wherein said organic-containing material comprises a non-nitroso antioxidant.

15. A pretreated pressure vessel prepared according to the process of:

providing a pressure vessel and/or conduit extending therefrom having an interior volume defined by one or more surfaces;

pretreating the one or more surfaces by applying an organic-containing material comprising a non-nitroso antioxidant, organosiloxane or combination thereof onto said one or more surfaces of the vessel;

bonding said material onto said one or more surfaces in a manner sufficient to substantially delay onset of a metal forming film, said film formation resulting from decomposition of a gaseous precursor material introduced into said pressure vessel.

16. The pretreated pressure vessel preparerd according to claim 15, said organic-containing material comprising an organosiloxane.

17. The pretreated pressure vessel prepared according to claim 15, wherein said organosiloxane comprises OTS, said OTS applied onto one or more surfaces in the presence of water.

18. The pretreated pressure vessel prepared according to claim 15, wherein said non-nitroso antioxidant comprises quercetin.

19. The pretreated pressure vessel prepared according to claim 15, wherein said vessel is substantially devoid of oxygen impurities.

20. The pretreated pressure vessel prepared according to claim 15, wherein said surfaces are not pre-cleaned or pre-dried prior to said pretreating the one or more surfaces.

21. The pretreated pressure vessel prepared according to claim 1, further comprising storage of a gaseous precursor material at a predetermined concentration into the interior volume of the vessel at a pressure of up to 150 psia, wherein said material remains chemically stable so as to not undergo substantial decomposition within the vessel.

22. A pretreated pressure vessel, comprising:

a pressure vessel and/or conduit extending therefrom having an interior volume defined by one or more surfaces;

the one or more surfaces protected with an organic-containing material to form a passivated region, said material comprising a non-nitroso antioxidant, organosiloxane, stabilizing agent or combination thereof;

wherein bonding said material onto said one or more surfaces is in a manner sufficient to substantially delay onset of a metal forming film, said film formation resulting from decomposition of a gaseous precursor material introduced into said pressure vessel.

23. The pretreated pressure vessel of claim 22, further comprising a gaseous precursor material disposed therein, said gaseous precursor material is selected from the group consisting of SnD4, SnH4, SiH4, Si2H6, B2H6 and GeH4.

24. The pretreated pressure vessel of claim 22, wherein said gaseous precursor material is SnD4 stored within said vessel at 70°F and up to 50 psia, and said organic-containing material is selected from the group consisting of quercetin, OTS and combinations thereof, said SnD4 remaining chemically stable with said passivated region so as to not undergo substantial decomposition within the vessel for at least 200 days.

25. The pretreated pressure vessel of claim 22, wherein said gaseous precursor material is SnD4 stored within said vessel at 70°F and said organic-containing material is a stabilizing agent selected from DOP, DOT or combinations thereof, said SnD4 remaining chemically stable with said passivated region so as to not undergo substantial decomposition within the vessel for at least 20 days.

Claims

1. A method of pretreating a vessel to maintain storage of a precursor material in a stabilized form within the vessel, said method comprising:

providing a pressure vessel and/or conduit extending therefrom having an interior volume defined by one or more surfaces;

pretreating the one or more surfaces by applying an organic-containing material onto the one or more surfaces of the vessel and/or conduit;

forming a protected surface;

introducing the gaseous precursor material at a predetermined concentration into the interior volume of the vessel at a pressure of up to 150 psia,

wherein said material is remains chemically stable with said protected surface so as to not undergo substantial decomposition during storage within the vessel, wherein said surfaces are not pre-cleaned or pre-dried prior to said pretreating the one or more surfaces.