

5. A method of producing a nitrogenated metal alloy powder according to claim 1, wherein said metal alloy includes one or more elements which are capable of reacting with nitrogen to form a nitride.

6. A method of producing a nitrogenated metal alloy powder according to claim 1, wherein the average particle size of the resulting metal alloy powder is less than about 100 μm.

7. A method of producing a nitrogenated metal alloy powder according to claim 1, wherein more than about 30-50 percent of said nitrogenated metal alloy particles are greater than about 10 μm.

8. A method of producing a nitrogenated metal alloy powder according to claim 4, wherein said metal alloy is stainless steel.

9. A method of producing a nitrogenated metal alloy powder according to claim 4 wherein said metal alloy is a nickel-based super alloy.

10. A method of producing a nitrogenated metal alloy powder according to claim 8, wherein said metal alloy is austenitic stainless steel.

11. A method of producing a nitrogenated metal alloy powder according to claim 10, wherein said austenitic stainless steel comprises 0.3 wt. % C; 2.0 wt. % Mn; 1.0 wt. % Si; 18.0 to 22.0 wt. % Cr; 8.0 to 12.0 wt. % Ni and a balance of Fe prior to melting and includes up to about 0.21 wt. % nitrogen after the gas atomization step.

12. A method of fabricating a metal alloy article which comprises consolidating a nitrogenated metal alloy powder produced by:

(a) melting a metal alloy under a nitrogen atmosphere to increase the nitrogen content of said alloy; and thereafter

(b) subjecting said molten alloy to a gas atomization process to produce solid, substantially spherical shaped nitrogenated metal alloy particles, wherein nitrogen is utilized as the atomizing gas in said gas atomizing process and said gas atomization process is controlled so that nitrogen provided to increase

said nitrogen content in step (a) is absorbed into the resulting metal alloy particles.

13. A method of fabricating a metal alloy article according to claim 12, wherein said nitrogenated metal alloy powder is consolidated by a hot isostatic pressing or injection molding process.

14. A method of fabricating a metal alloy article according to claim 12, wherein less than about 1 percent of the metal alloy powder particles produced by the gas atomization step include hollow particles.

15. A method of fabricating a metal alloy article according to claim 12 wherein said metal alloy is selected from the group consisting of steels, nickel alloys, aluminum alloys and titanium alloys.

16. A method of fabricating a metal alloy article according to claim 12, wherein said metal alloy includes one or more elements which are capable of reacting with nitrogen to form a nitride.

17. A method of fabricating a metal alloy article according to claim 12, wherein the average particle size of the resulting metal alloy powder is less than about 100 μm.

18. A method of fabricating a metal alloy article according to claim 12, wherein more than about 30-50 percent of said nitrogenated metal alloy particles are greater than about 10 μm.

19. A method of fabricating a metal alloy article according to claim 15, wherein said metal alloy is stainless steel.

20. A method of fabricating a metal alloy article according to claim 15 wherein said metal alloy is a nickel-based super alloy.

21. A method of fabricating a metal alloy article according to claim 19, wherein said metal alloy is austenitic stainless steel.

22. A method of fabricating a metal alloy article according to claim 21 wherein said austenitic stainless steel comprises 0.3 wt. % C; 2.0 wt. % Mn; 1.0 wt. % Si; 18.0 to 22.0 wt. % Cr; 8.0 to 12.0 wt. % Ni and a balance of Fe prior to melting and includes up to about 0.21 wt. % nitrogen after the gas atomization step.

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