CLAIMS

1) A component of an electric submersible pump made by casting an austenitic alloy consisting of: from 25 to 35 wt.% nickel; 25% to 42.5 wt.% chromium; 1.5 to 2.5 wt.% carbon; 0.5 to 2.0 wt.% manganese; 0.25 to 2.0 wt.% silicon; 0 to 1.5 wt.% aluminum; 0 to 0.5 wt.% of a combination of titanium, niobium, and tantalum, 0 to 1 wt.% copper, residual elements 0 to 0.5 wt.%, and iron as the remainder to bring the total percentage to 100 wt.%.

2) The component of claim 1, wherein nickel is 25 to 30 wt.%; chromium is 30 to 40 wt.%; carbon is 1.5 to 2.0 wt.%; manganese is 0.50 to 1.50 wt.%; and silicon is 0.25 to 1.5 wt.%.

3) The component of claim 1, wherein nickel is 25 to 30 wt.%; chromium is 30 to 40 wt.%; carbon is 1.5 to 2.0 wt.%; manganese is 0.50 to 1.50 wt.%; silicon is 0.25 to 1.5 wt.%; and having a minimum of 25% carbides within an austenite phase having at least 9 wt.% chromium.

4) The component of claim 1, wherein nickel is 25 to 30 wt.%; chromium is 30 to 40 wt.%; carbon is 1.5 to 2.0 wt.%; manganese is 0.50 to 1.50 wt.%; and silicon is 0.5 to 2 wt.%.

5) The component of claim 1, wherein nickel is 25 to 30 wt.%; chromium is 35 to 40 wt.%; carbon is 1.5 to 2.0 wt.%; manganese is 0.25 to 1.50 wt.%; silicon is 0.25 to 2 wt.%; and 0 to 0.5wt.% copper.

6) The component of claim 1, wherein the aluminum is 0.25 to 1.25 wt.%.

7) The component of claim 1, having one or more surface(s) subject to a nitrogen, carbon, or boron diffusion thermal treatment after casting.

8) The component of claim 1, wherein a hard coating comprised of carbon or nitrogen is applied to said component and forms a topcoat with hardness in excess of 1200 HVN.

9) The component of claim 1, wherein said component is heat treated at a temperature in a range of from 200°C to 650°C.

10) The component of claim 1, wherein said component is heat treated at a temperature in a range of about from 200°C to 650°C and then cooled down below 0°C.

11) The component of claim 1, where said component is an impeller, a propeller, a diffuser, a flow diverter, a slinger, a ring, a seat, or a spacer.

12) A method for manufacturing a component made from an alloy, said method comprising:

a) casting an austenite alloy to obtain a near-shape of a desired article, wherein the austenite alloy has a composition consisting of: 25 to 35 wt.% nickel; 25% to 42.5 wt.% chromium; 1.5 to 2.5 wt.% carbon; 0.5 to 2.0 wt.% manganese; 0.25 to 2.0 wt.% silicon; 0 to 1.5 wt.% aluminum; 0 to 0.5 wt.% of a combination of titanium, niobium, and tantalum, 0 to 1.0 wt.% copper, residual elements 0 to 0.5 wt.%, and having iron as the remainder to bring the total percentage to 100 wt.%;

b) machining said near-net shape to obtain a final shape of said article; and

c) surface treating said article with nitrogen, carbon or boron, and/or a coating selected from TiN, TiAlCrN, TiAlN, CrN, Ti(B,C,N), TiCN, and DLC;

wherein said component is part of an electric submersible pump.

13) The method of claim 12, said austenite alloy having a minimum of 25% carbides within an austenite phase having at least 9 wt.% chromium.

14) The method of claim 12, wherein said austenite alloy has 25 to 30 wt.% Ni, 30 to 40 wt.% Cr; 1.5 to 2.0 wt.% C; 0.50 to 1.50 wt.% Mn; and 0.25 to 1.5 wt.% Si.

15) The method of claim 12, wherein said austenite alloy has 25 to 30 wt.% Ni; 30 to 40 wt.% Cr; 1.5 to 2.0 wt.% C; 0.50 to 1.50 wt.% Mn; and 0.5 to 2 wt.% Si.

16) The method of claim 12, wherein said austenite alloy has 25 to 30 wt.% Ni; 35 to 40 wt.% Cr; 1.5 to 2.0 wt.% C; 0.5 to 1.50 wt.% Mn; 0.25 to 2 wt.% Si; and 0 to 0.5wt.% copper.

17) The method of claim 12, wherein said austenite alloy has 0.25-1.25 wt.% Si.