



US005856625A

United States Patent [19]

[11] **Patent Number:** **5,856,625**

Saunders et al.

[45] **Date of Patent:** **Jan. 5, 1999**

[54] **STAINLESS STEEL POWDERS AND ARTICLES PRODUCED THEREFROM BY POWDER METALLURGY**

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[57] ABSTRACT

Articles produced by a powder metallurgy process involving forming of a shape by compaction followed by sintering without the application of external pressure from a stainless steel alloy powder produced by rapid atomization followed by an annealing treatment, which powder consists essentially of in weight percent, chromium 14–30, molybdenum 1 to 5, vanadium 0 to 5, tungsten 0 to 6, silicon 0 to 1.5, carbon minimum as specified below to one fifth chromium content minus 2, other strong carbide forming elements such as Nb, Ta, Ti totaling together 0 to 5, the total of Mo, V and W being at least 3, the balance being iron including incidental impurities; the alloy powder (including any addition of free graphite powder mixed therewith before sintering having a sufficient carbon content to form carbides with all the Mo, V, W and other strong carbide forming elements present; the articles consisting of distribution of carbides embedded in a substantially ferritic matrix containing at least 12% by weight of chromium in solution, and which articles do not require further heat treatment.

14 Claims, No Drawings

[73] Assignee: **Powdrex Limited**, Kent, England

[21] Appl. No.: **913,230**

[22] PCT Filed: **Mar. 7, 1996**

[86] PCT No.: **PCT/GB96/00532**

§ 371 Date: **Dec. 4, 1997**

§ 102(e) Date: **Dec. 4, 1997**

[87] PCT Pub. No.: **WO96/28580**

PCT Pub. Date: **Sep. 19, 1996**

[30] Foreign Application Priority Data

Mar. 10, 1995 [GB] United Kingdom 9504931
Apr. 1, 1995 [GB] United Kingdom 9506771

[51] **Int. Cl.⁶** **C22C 33/00**

[52] **U.S. Cl.** **75/236; 75/246; 75/252; 419/31; 419/38**

[58] **Field of Search** **75/246, 252, 236; 419/31, 38**

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