

Title (en)

Bond coat for a thermal barrier coating system

Title (de)

Haftbeschichtung für wärmedämmendes Beschichtungssystem

Title (fr)

Couche de liaison pour système de revêtement de barrière thermique

Publication

**EP 0985745 A1 20000315 (EN)**

Application

**EP 98307244 A 19980908**

Priority

- EP 98307244 A 19980908
- JP 26927098 A 19980924

Abstract (en)

A thermal barrier coating system (20) for the surface of an article (22) designed for use in a hostile thermal environment, such as turbine, combustor and augmentor components of a gas turbine engine. The thermal barrier coating system (20) employs a bond coat (24) of a nickel aluminide alloy over which a thermal-insulating ceramic layer (26) is deposited. The nickel aluminide bond coat (24) contains zirconium, but is otherwise predominantly of the beta ( beta ) NiAl phase. The bond coat (24) is preferably deposited by a physical vapor deposition process (PVD), such as by magnetron sputtering, electron beam physical vapor deposition (EBPVD), jet vapor deposition (JVD) and plasma spray. The NiAl bond coat (24) with zirconium additions of between 0.05 and 0.5 atomic percent have been shown to exhibit drastically improved thermal fatigue life over prior art bond coats, with optimal results appearing to be obtained at or near 0.1 atomic percent zirconium. <IMAGE>

IPC 1-7

**C23C 28/00**

IPC 8 full level

**B23P 9/00** (2006.01); **C23C 4/10** (2006.01); **C23C 8/20** (2006.01); **C23C 14/14** (2006.01); **C23C 28/00** (2006.01)

CPC (source: EP)

**C23C 28/00** (2013.01)

Citation (search report)

- [X] WO 9729219 A2 19970814 - INTERTURBINE NV [NL], et al
- [A] US 5759640 A 19980602 - MANNAVA SEETHARAMAIAH [US], et al
- [A] US 5302465 A 19940412 - MILLER ROBERT A [US], et al
- [A] EP 0471505 A2 19920219 - JOHNSON MATTHEY PLC [GB]
- [A] PATENT ABSTRACTS OF JAPAN vol. 10, no. 203 (C - 360) 16 July 1986 (1986-07-16)

Cited by

EP1600518A3; US6607789B1; EP1260602A1; US7264887B2; EP1541714A1; CN115198271A; US7838083B1; US8168261B2; US7371426B2; WO2009053992A1; US7070866B2; US7094444B2; US7078073B2

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