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PROCESS FOR SIMULTANEOUSLY ALUMINIZING NICKEL-BASE AND COBALT-BASE SUPERALLOYS

ABSTRACT OF THE DISCLOSURE

A process for simultaneously vapor phase aluminizing nickel-base and cobalt-base superalloys within a single process chamber using the same aluminum donor and activator, to yield diffusion aluminide coatings of approximately equal thickness. The process entails the use of an aluminum donor containing about 50 to about 60 weight percent aluminum, and an aluminum fluoride activator present in an amount of at least 1 gram per liter of coating chamber volume. Nickel-base and cobalt-base superalloys are simultaneously vapor phase aluminized for 4.5 to 5.5 hours at a temperature of about 1900 F to about 1950 F in an inert or reducing atmosphere. With these materials and process parameters, diffusion aluminide coatings are developed on both superalloys whose thicknesses do not differ from each other by more than about 30%.

