

METHOD OF CONTROLLING THICKNESS AND ALUMINUM CONTENT
OF A DIFFUSION ALUMINIDE COATING

ABSTRACT OF THE DISCLOSURE

A process for forming a diffusion aluminide coating (12) on a substrate (10), such as a component for a gas turbine engine. The process generally entails placing the substrate (10) in a suitable coating chamber, flowing an inert or reducing gas into and through the coating chamber, and then aluminizing the substrate (10) using an aluminizing technique with a substantially constant aluminum activity, such as a vapor phase deposition process. During the aluminizing process, the amount of unreacted aluminum within the coating chamber is controlled by altering the flow rate of the gas through the coating chamber so that a portion of the unreacted aluminum is swept from the coating chamber by the gas. The amount of unreacted aluminum swept from the coating chamber is regulated by metering the gas flow rate in order to control the aluminizing rate and aluminum content of the resulting aluminide coating (12).

Fig 1