

Technical Specification of CVD Coatings – Diffusion

Chemical Vapour Aluminizing (CVA-Al), Isobaric Vapour Aluminizing (IVA-Al), Chromizing and Siliconizing

Applications

CVA-Al – used on internal and external surfaces, complex internal passages, allows better control over composition and thickness of coating.

IVA-Al – used on gas turbine components, complex shaped components.

Siliconizing – used to improve a materials resistance against high-temperature oxidation, hot corrosion, carburization and wear.

Chromizing – used to extend the service life of tools and components exposed to wear and corrosion.

Properties

Coating	CVA-Al	IVA-Al	Siliconizing	Chromizing
Purity (%)	n/a	n/a	n/a	n/a
Density (g/cm ³)	n/a	n/a	n/a	n/a
Flexural Strength (MPa)	n/a	n/a	n/a	n/a
Hardness (Kg/mm ²)	n/a	n/a	n/a	n/a
Thermal Expansion Coefficient (10 ⁻⁶ /°C)	n/a	n/a	n/a	n/a
Thermal Conductivity (W/mK)	n/a	n/a	n/a	n/a
Electrical Resistivity (Ωcm)	n/a	n/a	n/a	n/a
Standard Thickness	25-125µm	25-125µm	50-100µm	50-100µm
Oxidation Temperature (°C)	n/a	n/a	n/a	n/a
Friction Coefficient	n/a	n/a	n/a	n/a
Colour	Grey	Grey	Grey	Grey

CVD Methods

CVA-Al

Uses a flow of AlCl₃ vapor to convert the surface of a nickel alloy component into a diffusion layer of nickel aluminide. It is then passed over an aluminum source to increase concentration of aluminum monochloride.

1160°C, 50–300mBar

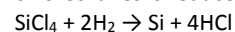
IVA-Al

Aluminum content of the layer can be adjusted by the process conditions and also by subsequent heat treatments

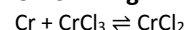
900-1150°C, 1–50mBar

Siliconizing

Gaseous medium containing chlorosilanes is reduced by hydrogen.



Chromizing



Chromium formed in equilibrium forms a carbide with the metal being chromized.



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