

عنوان مقاله:

Effect of Dilution and Cooling Rate on Hardness in Laser Metal Deposition of Ti-6Al-4V

محل انتشار:

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خلاصه مقاله:

Laser metal deposition of Ti-6Al-4V is conducted on a commercially pure titanium grade ۲ substrate with different processing conditions. The dilution, grain size, and microhardness of the tracks are measured as important properties of the deposited material. Dilution and cooling rate are studied as the two mechanisms affecting the deposition hardness. Increased dilution results in lower hardness while a higher cooling rate results in a higher hardness. Laser power and wire feeding rate are examined as two controlling parameters for dilution and cooling rate. A higher laser power leads to increased dilution and decreased cooling rate. In contrast, a higher wire feeding rate decreases dilution and increases the cooling rate. Results show that deposition dilution has the main role in defining the hardness during laser metal deposition of Ti-6Al-4V.

کلمات کلیدی:

Laser Metal Deposition, Ti-6Al-4V, Dilution, Cooling Rate, Grain Size, Hardness

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