Short Communication

Effects of Heat Treatment on Microstructure and Properties of Inconel625 Alloy Blades Prepared by Selective Laser Melting

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Inconel625 alloy blades were prepared by selective laser melting (SLM). Optical microscope (OM), scanning electron microscope (SEM), electron backscatter diffraction (EBSD), energy dispersive spectrometer (EDS) analysis techniques were employed the microstructure and properties under as-prepared and heat-treated conditions. The results show that the density of the as-prepared blades is as high as 99.9%. The microscopic morphology exhibits obvious anisotropy with an angle of 67° between two adjacent layers. MC granular phase and γ phase are generated during solidification. The microstructures of blades at different positions are similar, which shows that the support design and production sequence during the preparation process have small effect on them. After heat treatment at 900°C for 4h, anisotropy with an angle of 67° of as-prepared blades disappeared and new uniform crystal grains and Mo-rich phase area are discovered instead, and also with the improved corrosion resistance.

Keywords: SLM; Inconel625; blades; heat-treated

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