HIGH-TEMPERATURE OXIDATION OF THE ADDITIVELY MANUFACTURED 1.2709 MARAGING STEEL

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Maraging steel 1.2709 is due to its chemical composition a relatively soft material with good machinability in the as-produced state. After being heat-treated at a temperature in the range of 400 – 600 °C, the steel shows significant strengthening is characterized by outstanding mechanical properties. Dimensional stability at high temperatures is another advantage of this material. Additively manufactured 1.2709 maraging steel prepared by selective laser melting technology (SLM) was studied in this work. The aim of the work was to thoroughly describe the influence of the long-time oxidation at 500 °C with respect to the oxide-layer formation and the microhardness changes. For this purpose, weight changes and the HV0.1 were measured at regular intervals. A scanning electron microscope (SEM) equipped with energy-dispersive X-ray spectroscopy (EDS) was used to characterize the surface of the as-printed 1.2709 maraging steel prior to and after being exposed to long-term oxidation at 500 °C.

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