EVALUATION OF AN INCONEL 718 SUPERALLOY IN CREEP TESTS AFTER AGING TREATMENT

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A superalloy is an alloy developed for elevated temperature service, where relatively severe mechanical stressing is encountered, and a high surface stability is frequently required. High temperature deformation of Ni-base superalloys is very important since the blades and discs of aeroengine turbine, since they need to work at elevated temperature for an expected long life. Nickel-base alloys type Inconel 718 has being investigated because it is one of the superalloys most widely used. This alloy is also commercially competitive due to the fact that the alloy contains no cobalt and has a relatively high content of iron.. Inconel 718 has been solubilized in two different temperatures 940°C, 1095°C for 1 hour and water quenched. After solubilization samples was aged at 720°C for 8 hours and furnace cooled. Ageing causes a significant increasing in mechanical strength. The objective of this work is to evaluate creep behavior of the Inconel 718, after ageing treatment, focusing on the determination of the experimental parameters related to primary and secondary creep conditions. Constant load creep tests were conducted at 650°C. Samples with a gage length of 18.5 mm and a 3.0 mm diameter were used for all tests. Creep tests were performed according to ASTM E139 standard.