

## ABSTRACT

The effect of standard heat treatment on tensile and creep properties of nickel-base superalloy, Inconel 718 was investigated. Solution treatment was applied on the as-received material at 980oC for 1 hour before water quenched followed by double aging treatments at 720oC and 621oC for 8 hours, respectively and then cooled in air. Standard heat treatment was significantly improved the tensile strength and creep rupture properties. However, the ductility of heat treated material drastically reduced compared to the as-received material. Precipitations of gamma prime ( $\gamma'$ ), gamma double prime ( $\gamma''$ ) and long needle-like delta ( $\delta$ ) phase observed preferably at the grain boundary and transgranular which restricted the grain growth and block grain boundary sliding are believed to be the reasons for increase in mechanical properties of Inconel 718.

**Keywords:** Heat treatment, tensile, creep, precipitation, Inconel 718