

## Improvement of Mechanical Properties and Corrosion Resistance of AA7056 Aluminum Alloys by the Non-isothermal Aging Process

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**Abstract :** The effect of non-isothermal aging on the mechanical properties and corrosion resistance of Al-9Zn-2.3Mg-1.9Cu (AA7056) alloys was investigated. The results revealed that thick materials were limited to retrogression and re-aging treatment (RRA). It could not reach the retrogression temperature in the RRA treatment. Compared with the RRA treatment, the non-isothermal aging (NIA) treatment produced discontinuous precipitates at grain boundaries, while the intragranular precipitates were fine and dense. The strength was similar to that of the RRA treatment; the corrosion resistance of the alloy was significantly improved by NIA aging. NIA treatment was less affected by the thickness of the alloy. The difference between the actual temperature and the setting temperature of the alloy is minimal during the aging process. The combination of properties could overcome the fact that RRA treatment cannot handle thick materials.

**Keywords :** Al-Zn-Mg-Cu alloy, corrosion, retrogression, re-aging, non-isothermal aging

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