

## EROSION-CORROSION BEHAVIOR OF AA 6066 ALUMINUM ALLOY

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### ABSTRACT

Erosion-Corrosion (E-C) behavior of AA 6066 aluminum alloy has been studied in two different environments namely; 3.5 wt.% NaCl solution and 3.5 wt.% NaCl solution contains 20 wt.% sand particles. E-C tests were carried out using a test rig designed particularly for this purpose. The tests aims to study the effect of testing time, flow velocity, the projected area and impact angle on the E-C behavior of the alloy. The eroded–corroded surfaces were examined using scanning electron microscopic (SEM) to elucidate the mechanism of material removal.

The obtained results indicate that the weight-loss increased with increasing testing time, flow velocity and the projected area due to the increase in the severity of erosive/abrasive attacks. While for impact angle, as it increased from 15° up to 90°, the weight-loss decreased. SEM observations of E-C surfaces exhibited that an increase in the testing time leads to uniform pits formation that accommodated and covered the whole surface, resulting in an increase in their size. It is observed that erosion process is the dominant mode of material removal in the present E-C environment.

**KEYWORDS:** Erosion- Corrosion, AA 6066, NaCl Solution, Sand Particles, Pits, Weight-Loss