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[\[Image PDF \(1449K\)\]](#) [\[References\]](#)**Corrosion Behavior of Pure Titanium and Titanium Alloys in Various Concentrations of Acidulated Phosphate Fluoride (APF) Solutions**[Yoshinari MATONO](#)<sup>1)2)</sup>, [Masaharu NAKAGAWA](#)<sup>1)</sup>, [Shigeki MATSUYA](#)<sup>1)</sup>, [Kunio ISHIKAWA](#)<sup>1)</sup> and [Yoshihiro TERADA](#)<sup>2)</sup>

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**Abstract:**

The corrosion behaviors of Ti, Ti-6Al-7Nb and Ti-6Al-4V alloys, and an experimentally produced Ti-0.5Pt alloy in 0.05% to 2.0% concentrations of Acidulated Phosphate Fluoride (APF) solutions (corresponding to 226 to 9,050 ppm fluoride at pH 3.5 or 3.6) were examined. While the corrosion of Ti, Ti-6Al-7Nb and Ti-6Al-4V alloys might occur easily even in a diluted 0.05% APF solution, dissolution of Ti from the Ti-0.5Pt alloy was observed only in test solutions with APF concentration exceeding 0.2%. When Ti-6Al-7Nb and Ti-6Al-4V alloys were immersed in 2.0% APF solution, their surfaces were entirely covered by compact corrosion products of  $\text{Na}_3\text{TiF}_6$  due to severe corrosion. As a result, Ti dissolution was prevented and the amount of Ti dissolved decreased. However, since Ti was covered by porous, large-sized corrosion products of  $\text{Na}_3\text{TiF}_6$  and that Ti-0.5Pt alloy was not covered with any corrosion product, the amount of Ti dissolved increased in the 2.0% APF solution.

**Key words:**[Titanium alloy](#), [Corrosion](#), [Acidulated phosphate fluoride \(APF\) solution](#)



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