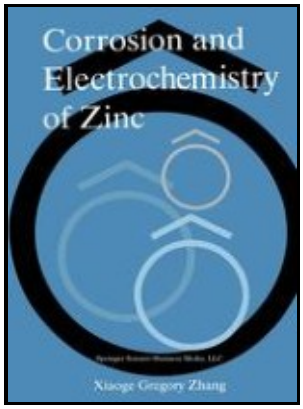
Corrosion - aqueous processes and passive films

Academic Press - Factors Affecting the Corrosion Resistance of Materials under Irradiation in the Early Stage of Growth of the Passive Films



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The chemical composition and microstructure of a passive film are different from the metal on which it is formed. Zinc coatings, however, act in the opposite manner.

Passivity breakdown, its relation to pitting and stress

Several cathodic reactions are possible depending on what reducible species are present in the solution. The anodic reaction is the to form either soluble products or an insoluble compound of the metal, usually an oxide. These interactions of mechanical and chemical processes occur at surfaces of metals and involve the mechanically-induced breaking of films followed in sequence by transient film-free dissolution and repassivation.

What is a Passive Film?

Evans diagrams are used extensively by corrosion scientists and engineers to evaluate the effect of various factors on corrosion rates.

Factors Affecting the Corrosion Resistance of Materials under Irradiation in the Early Stage of Growth of the Passive Films

Waste glasses are made of an alumino-boro-silicate network partly depolymerized by network modifiers.

Kinetics of Aqueous Corrosion

In many of these instances, corrosion is a limiting factor preventing the development of economically or even technologically workable systems. When Mg is supplied by Mg-bearing minerals, both dissolution of the primary phase and transport of reactive species can affect the composition and the thickness of the passivating layer, and thus the alteration rate.

A comparative review of the aqueous corrosion of glasses, crystalline ceramics, and metals

Once the protective or passive film is removed in an , the electrochemical processes for the types of corrosion described above take place. Three main kinetic regimes have been identified, which depend on the glass composition and many environmental factors. This discussion is concerned with the fundamental interactions of mechanical and chemical processes as they affect transient breaking and re-formation of passive films.

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