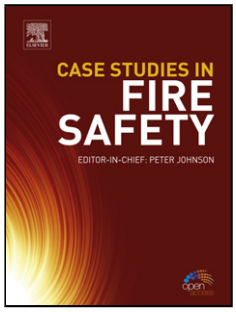

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<AT>Corrosion protection of AA2024-T3 by poly (phenylenesulfide-phenyleneamine) (PPSA), a soluble copolymer of polyaniline

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Graphical absract

<ABS-HEAD>Highlights► *PPSA as effective protective coating for AA2024-T3.* ► *Corrosion protection of AA2024-T3 by a soluble copolymer of polyaniline.* ► *The PPSA film, in the reduced form, acts as physical barrier.*

<ABS-HEAD>Abstract

<ABS-P>This work focused on the elucidation of the corrosion behavior of a soluble copolymer of polyaniline, called poly(phenylenesulfide-phenyleneamine) (PPSA), deposited on aluminum alloy (AA2024-T3). The insulating (reduced) and conducting (oxidized) forms of this polymer were analyzed and it was observed that the reduced form of a PPSA film with a thickness of about 40 μm showed the best performance as physical barrier. Thicker films did not show satisfactory results due to their poor adherence to the alloy surface. In the conducting form, PPSA was not efficient.

<KWD>Keywords: Corrosion; Aluminum alloy; PPSA; polyaniline; copolymer

<H1>1. Introduction

Methods of protecting aluminum alloys against corrosion usually involve chromium (VI) based compounds. Features such as high solubility, low cost, high oxidizing power justify their use in large-scale [1]. In this corrosion protection process, aluminum alloys are treated with chromate to generate a double layer of insoluble chromium and aluminum oxides on the metallic surface. This coat covers the entire surface