

Electrodeposition of Zn-Mo alloy layers from citrate solutions

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Zn-Mo alloy layers are proposed as environmentally friendly corrosion protective coatings. They are especially interesting as replacement materials for cadmium layers and for zinc coatings with Cr(VI) based conversion layers. The preparation of Zn-Mo alloys is difficult by conventional thermal method because there are great differences in melting and boiling temperatures of zinc and molybdenum. Therefore electrodeposition can be considered as the best way to obtain such alloys. Citrate are non toxic and form complexes with Zn(II) and Mo(VI). Thus the idea of this work is to produce new environment friendly corrosion protective coatings in an ecologic process from non toxic baths. The main problems to solve are the following:

- developing the stable baths for electrodeposition of Zn-Mo alloys.
- determining the kinetics and mechanism of Zn-Mo electrodeposition,
- modeling the electrodeposition process,
- determining the optimal ranges of the electrodeposition parameters,
- characterization of Zn-Mo layers.
- studying and optimizing the corrosion resistance of the Zn-Mo layers.