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## High corrosion resistance of electroless Ni/Ni-B coating from fluoride-free baths on AZ31 magnesium alloy

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**Abstract.** Electroless nickel/nickel-boron (Ni/Ni-B), Ni/alkaline Ni-P and Ni/acidic Ni-P double-layer coatings were deposited on AZ31 magnesium (Mg) alloy prepared by environmental fluoride-free solution under low temperatures. The morphologies, compositions, and crystal structures of three different double-layer coatings were characterized by field emission scanning electron microscopy (FESEM), energy dispersive X-ray spectroscopy (EDS) and X-ray diffraction (XRD), respectively. The corrosion resistance of the different double-layer coatings on Mg alloy surface was studied by electrochemical polarization and electrochemical impedance spectroscopic (EIS) tests, which indicated that the Ni/Ni-B coating presented the more superior corrosion resistance than the Ni/alkaline Ni-P and Ni/acidic Ni-P coatings. Meanwhile, the Ni/Ni-B coating exhibited

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