Theoretical & Practical Aspects of Direct Nickel Plating on Aluminum for Electrical Connectors

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Aluminum is widely used for electrical applications because of its interesting properties, especially its weight and electrical conductivity. In some particular cases, however, especially for electrical connections, the surface of the metal has to be modified in order to promote a good and durable electrical contact. Nickel plating greatly enhances the surface conductivity of aluminum, but traditional processes of nickel plating on this metal (chemical pretreatment, several sub-layers) are rather long and complex to achieve. A direct nickel plating method has been developed, requiring only two steps to cover the substrate with an adherent layer (obtained in sulfamate solution) with excellent electrical contact properties. The key characteristics of the deposit will be presented, together with some practical aspects of the industrial process.

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