

PROPER SURFACE PREPARATION FOR INDIUM PLATING

As in all electroplating processes, proper surface preparation prior to actual electroplating of indium is essential to ensure adequate adhesion and coverage of the deposited metal. Indium can be successfully electroplated onto most metallic surfaces such as copper, nickel, silver, platinum, and gold. Electroplating any metal, including indium, onto stainless steel and high refractory oxide metals such as aluminum and molybdenum, require special surface preparation procedures that are described in most textbooks on electroplating.

Preparation of the base metallization consists of two separate steps – cleaning and activation. The cleaning step removes oils, grease, and other soils from the base metallization surface. The activation step removes oxides from the base metallization surface, which is necessary for proper electrodeposition. The base metal should be cleaned either by ultrasonic solvent vapor degreasing or by immersion in a commercial alkaline cleaning bath operated at 80-90 °C for 10-15 minutes, followed by a thorough hot water rinse.

The base metal should then be acid-activated by immersion in a 10-15 percent volume of sulfuric or hydrochloric acid solution at room temperature for 3-5 minutes, followed by a quick cold water spray rinse. Commercial proprietary activation solutions can be substituted for the mineral acid solutions. The manufacturer's operational procedures should be followed. For highly passivated metals such as nickel, a Woods nickel strike should be substituted for the acid activation step. The preparation and operation of the Woods nickel strike bath are described in detail in most textbooks on electroplating.

Immediately following the acid activation or Woods nickel strike rinse step, the base metal should then be immersed in a 5 weight percent solution of sulfamic acid solution for 1-3 minutes. This is to ensure that the pH of the base metallization surface remains acidic so no reformation of oxide occurs. This also protects the indium sulfamate plating bath from drag-in of activator chemicals. The substrate is now ready for indium plating. Detailed information on indium plating can be found in *A Guide to Indium Plating*, available from the Indium Corporation.

APPLICATION NOTE

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