Indium-Copper Intermetallics

Indium and copper diffuse into one another creating brittle intermetallic formations that could cause failures in applications that are sensitive to shock or thermal cycling.

An effective way of preventing this diffusion is to plate a minimum of 50 microinches of nickel onto the copper. It can be electroplated or electroless. This nickel will act as a barrier to prevent the solid state diffusion from occurring.

Studies have been made to track the diffusion rate of indium into copper. One study indicates that at room temperature, over a 5 year period, indium and copper will completely diffuse into one another. The rate of diffusion will increase with an increase in temperature.

Some applications are not sensitive to the diffusion of indium into copper. Tests need to be performed to determine if this is the case with any application.

APPLICATION NOTE

This application note is provided for general information only. It is not intended, and shall not be construed, to warrant or guarantee the performance of the products described which are sold subject exclusively to written warranties and limitations thereon included in product packaging and invoices. All Indium Corporation's products and solutions are designed to be commercially available unless specifically stated otherwise.

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