

The MECER Process

Recovery of Copper from Ammoniacal Etching Liquors



MECER Recovery Unit Integrated in the Production of Printed Circuit Boards

In the manufacturing of printed circuit boards (PCB) in the electronics industry, copper is commonly etched with an ammoniacal solution (etchant), containing free ammonia, ammonium chloride and some oxidants. Optimal etching efficiency is obtained when the copper concentration in the etchant is 140 - 160 g/l.

In the etching procedure, copper is continuously added by the etching and to keep the etching efficiency constant and optimal, spent etchant has to be withdrawn and replaced with fresh etchant (replenisher). An alternative would be to remove a part of the copper content from the spent etchant without changing other conditions in the solution, in such a way that the barren etching solution can be recycled. This process is called the MECER process.

In the process, spent etchant is withdrawn and fed through a mixer-settler unit, where about 30 % of the copper is transferred to an organic solution containing a selective reagent (H^+R) for copper in kerosene. The raffinate (barren etchant) is recycled back to the etching line. The copper containing rinse water, obtained by rinsing the boards after etching, is also treated in a second extraction mixer-settler to reduce the copper content (< 5 ppm). Finally, copper is stripped from the organic solution to a sulfuric acid copper electrolyte and pure copper metal is produced by electrowinning.

Over one hundred MECER installations are in operation at PCB manufacturers all over the world, recovering almost all the copper and reducing their consumption of chemicals with more than 95 %.

MEAB Know-how Info 04-2010

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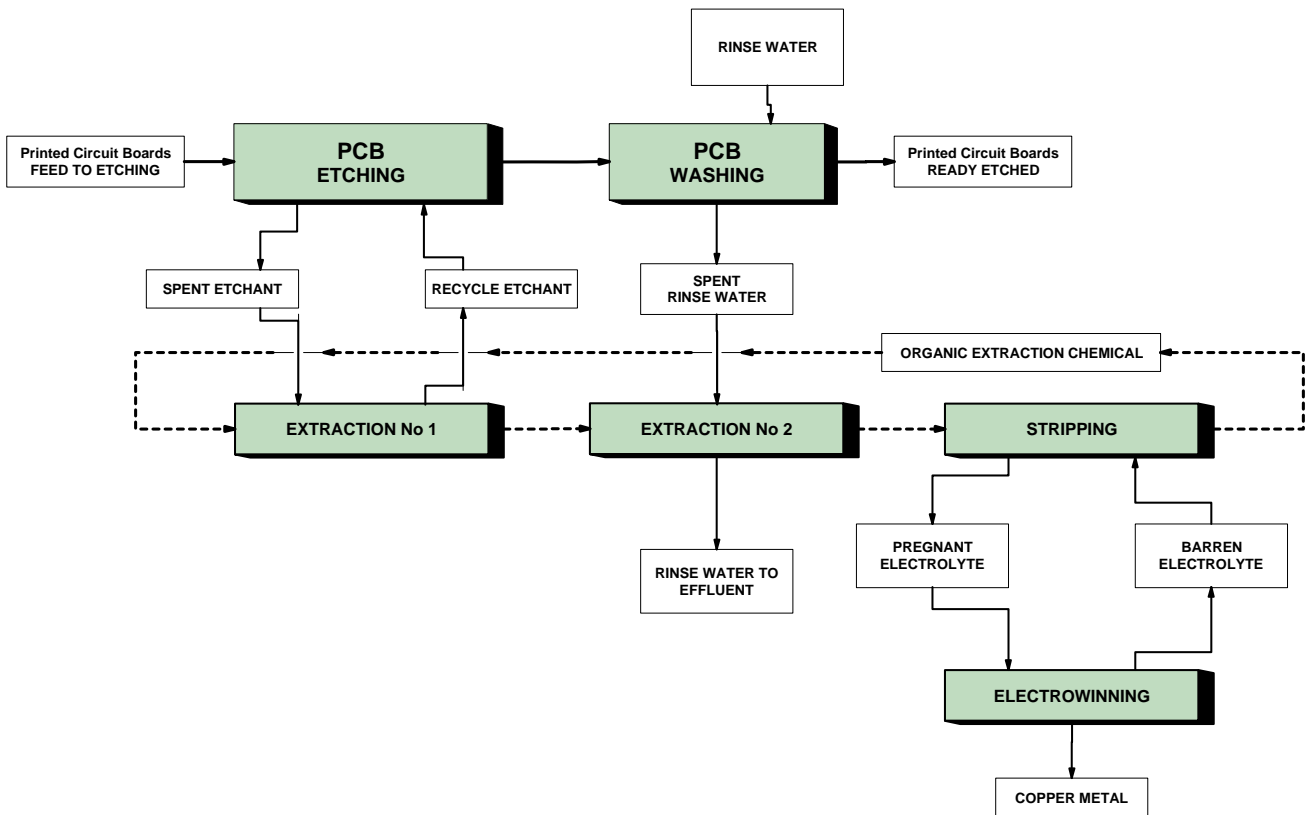
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