

What makes a better anode?

If you were to ask an electroplater that question, he would be certain to emphasize the importance of anode cleanliness. IMC uses the most innovative technology and manufacturing methods to ensure our customers receive tank-ready anodes. Our process eliminates the presence of oxides, organics (such as oil and grease) and dirt for optimal results at the cathode – elevating plating efficiency and cost control.

So what happens if contaminants enter the plating tank?

Contaminants can come from many sources and can cause major plating problems. These contaminants can be caused by dragout from previous tanks, or from organic compounds or particulates in the bath. In all of these situations, the plating quality will be compromised. As an example, organics can cause spotty or intermittent deposits, or deposits that do not adhere properly to the substrate. On decorative plated parts, blemishes and bleed-through can occur.

Anodes that are clean and free of any contaminants alleviate plating problems for the electroplater, thereby making manufacturing more efficient and producing a high-quality end product.

How can contamination occur during the manufacturing process?

Before our anodes are packaged and shipped, we take the cleaning process a step further. By the time manufacturing is complete, there are two additional types of anode contamination that should be addressed, dependent on the processing history of the product: oxidation (or copper oxide) and hydrocarbons.

Copper oxide is created when hot copper has contact with the air. This usually happens as the copper exits the caster, during hot processing, or when it is exposed to the environment for significant lengths of time.

The presence of hydrocarbons, such as oil and grease, can occur during rolling, drawing, drilling and tapping, or during any additional processing steps where lubricants are used. Processing techniques may create surface roughness, rolled-in oxides or metal flakes. Our cleaning methods are utilized to eliminate all sorts of potential contaminants before, during and after the manufacturing process.

What type of cleaning methods does IMC implement?

Our cleaning methods are tailored to meet the need of the customer and the product. IMC incorporates the specific techniques necessary to remove potential contaminants on the anode, in addition to any necessary conditioning. Abrasive shot blasting is a prime example of an excellent way to remove oxides, dirt and any surface contamination from the anode, especially for shapes that do not clean more efficiently by other methods. However, the use of non-metallic cleaning media, such as sand or glass, or the use of a metal media other than copper shot could potentially contaminate the anode surface. Our facility uses copper shot to abrasively clean copper anodes. Because copper shot is soft and ductile, it doesn't perform as efficiently as a harder media, but it produces a clean, non-contaminated surface.

An alternative to abrasive shot blasting is pickling for metal oxide removal. During this process, the anode is dipped in an acid bath, usually at elevated temperatures, whereby the acid dissolves the oxides on the anode surface. Acids are selected and inhibitors are added to protect the integrity of the base metal. In some instances, oxidizers are added to speed up the cleaning process. While strong acids may be cheaper and more efficient, these hazardous chemicals must be kept away from human contact and generally

require special constructed cleaning equipment for use. Following IMC's pickling process, the anodes are rinsed in warm water, dried and packaged.

Another excellent method for removing oxides and contaminates is vibratory cleaning. This process uses a vibrating rubber-lined tub to vibrate the anodes against each other. A liquid spray is used during this process to wash away the oxide dust generated by the vibration. Mild acids can be added to speed up this process and create a bright, shiny anode surface. In addition, detergents can be added to the solution to remove oil and grease, ensuring an oxide and hydrocarbon-free anode. Finally, a clean water spray rinses off the solution. The anodes are then dried and packaged.

After any of these cleaning methods are administered, IMC's anodes are ready to be placed directly in the electroplater's tank without further attempts to clean. Our processes guarantee a superior product that is ready for immediate use.

