Editorial

PRECIOUS METAL COATING

THE coating of precious metals like gold, silver, rhodium, platinum etc., was started with the sole aim as a decorative finish. Precious metal plating is coming into vogue for the past two decades to improve the corrosion resistance. The technological advances in the electronic and communication fields during the past decade with the increasing use of precious metal electrolytes have led to the entirely new concepts in the formulation of these electrolytes. These demands could be met only by radical deviations from the conventional formulae. Consequently the responsibility imposed on the plater and the plating solutions is heavy, and this indirectly necessitates absolute control of thickness of deposit, uniformity of colour and expected service.

Among the various precious metals in use in the industrial field gold is in great demand because of its comparative cheapness vis-a-vis its excellent tarnish resistance and resistance to various chemicals. Though silver is used widely next perhaps to gold, its great draw back is its poor resistance to tarnishing. A number of attempts are being made to overcome this defect; still there is a vast ground to be covered before a completely tarnish resistance silver is made available to the consumer. Rhodium and platinum plating are used to lesser degree because of their high cost. Though palladium is the cheapest among the commonly used precious metals, the plating technique requires considerable refinement to achieve perfection commercially.

The plating technique of gold has received considerable attention for the past ten years. Conventional cyanide gold plating solution is in use for a century now. The demand for a good thin gold plate saw the evolution of high speed gold cyanide bath. This was modified by neutral baths which could give brightness as well as levelling property. Because of the occlusion of cyanide and subsequent tarnish effect under humid conditions, the free cyanide baths had to be modified. Especially the need of the electronic industry had to be met by modifying the gold bath with a small percentage of alloying metals like, cobalt, nickel, indium, etc. The printed circuit plating requires a non-cyanide bath, or otherwise the bond between the copper laminate and the phenol board will be affected. The equipments for space probe require electronic components of very high reliability at increasingly high operating temperatures. Recent introduction of 24 carat deposits from acid electrolytes with non-discharging addition agents for brightness, levelling as well as hardening through preferred orientation, satisfies the exacting demands of the missile research and printed circuitry plating. Acid gold baths have at present answered almost all the demands of the electronic industries on the gold plater, and these baths require refinement before new properties are discovered of gold.

With the rapid growth of industry and especially electronic and electrical industry the use of precious metals in our country is already on the increase. Development work in precious metal plating is a necessity, and it is hoped that sufficient attention will be paid to this aspect of electroplating.

—S.K.