Preparation and Corrosion Behavior of Bronze -40%w Composite.

Abstract

Bronze -40%w Composites are successfully prepared by compacted mixtures powder into pellets. The green compacts of (bronz– 40wt%W) were sintered for (60- 120 min) at 750, 850, 950°C. Scanning Electron Microscopy (SEM) technique was used for microstructure test of the raw powders, and composites. The results obtained reveal that the densities increased with increasing compaction load, sintering time and temperature. The average of Vickers hardness for composites 60wt% bronze -40wt%W was 91.5. Tin electroplating improves corrosion resistance of the bronze/w, by electroplating with tin solution electrolyte and applying suitable current (0.01A) for 4 hour, coating layers of 45- 60 µm were obtained. Corrosion rate measurements were done for different samples with different conditions (non-coating, coating and scratched coating). The corrosion current of scratched coating sample is higher than unscratched samples, due to cathodic protection of exposed area of composite substrate. Consequently, the corrosion rate of scratched coating sample is higher than unscratched.

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