# Effect of Zinc Flash on the Brass Plating Electroless in Steel AISI 1008.

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The brass plating of steel usually is made for the electrolytic method, this method is used to for decorative and functional applications. Nevertheless, electroless plating process is taken the place of electrolytic processes in some applications, since electroless process presents advantages from the point of view of deposit homogeneity, the facility to apply alloys and the facility to apply the coatings in pieces of complex geometries (1,2 ).

Electroless brass plating was developed at our lab for the plating of zamak alloy pieces (3) and recently we focused on the electroless brass plating of steel AISI 1008 like an alternative to the conventional electrolytic process. The main difference among zamak alloy and steel was that for steel plating a zinc flash is required to obtain homogeneous surface covering. The objective of this work is to present the effect of time, temperature and current density on zinc plating pre-treatment and its effect on brass plating.

For the optimization study of zinc flash, current densities were 1, 2, 3, 5, 7, 9 and 10 A/dm$^2$, four temperature were studied, ambient temperature, 30 °C and 40 °C, the immersion time in the zinc flash was from 5 to 45 seconds with increments of 5 s. The preparation of steel surface for the application of the zinc flash was made according to the procedures of the international standard ASTM B 252-92 (4). The figure 1 shows the image of the samples prepared at several conditions of current density and immersion time during zinc flash, all these samples were treated at same conditions for the electroless brass plating. As can be seen from this figure, best results were obtained when the zinc treatment conditions are at current densities from 7 to 10 A/dm$^2$ and immersion times from 30 to 45 seconds.

Figure 2 shows the effect of temperature, immersion time and current density in the gain of brass weight. As can be see, the best results on zinc flash treatment were obtained at 40 °C and from 7 to 10 A/dm$^2$ and from 30 to 45 seconds.

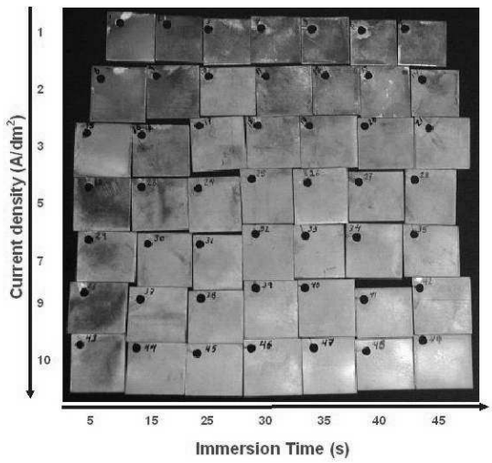


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**Figure 1**

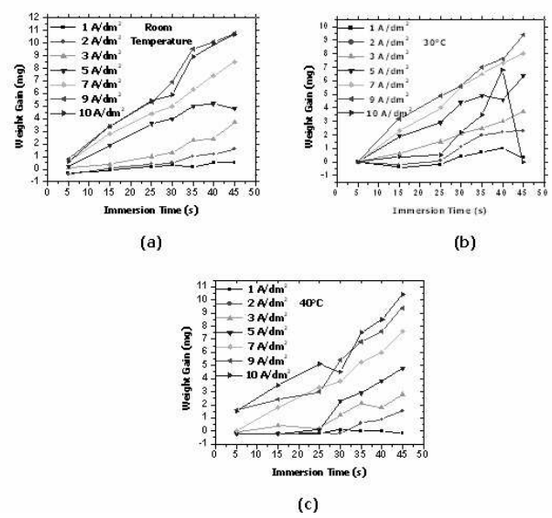


**Figure 2**

## Conclusions

A process for electroless brass plating of steel with lower cost than electrolytic process and homogeneous covering surface was developed. The critic step for success is a zinc flash treatment, and optimum conditions were found for this process.

## References

1. Kowalski A. J., Plating and Surface Finishing, August (1997), 43-44.
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3. Patente en trámite en México ante el Instituto Mexicano de la Propiedad Industrial (IMPI) con número 720/8/A.1.1./10.4/99/2395. y en USA con numero 03006615.3.
4. ASTM B 252-92