A Study on the Hopeite Crystal Deposited on Galvanized Steel

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Abstract

Zinc phosphate coatings (hopeite crystal) are widely used as a pretreatment before painting on galvanized steel sheet. They are typically composite coatings containing nickel and manganese. Coatings containing nickel and manganese improve the adhesion and corrosion resistance after painting. However, if the manganese content exceeds a certain level, the problem of a corrosion resistance decrease during the warm salt water soak test arises. In this study, to determine the effect of additive metals on the resistance of the phosphate coating to solubility in an alkali, synthetic hopeites were prepared with various additive metals and these coatings were examined for solubility in the alkali. From X-ray diffraction, thermal analysis, etc., of the hopeites containing various additive metals, properties such as strain and dehydration behavior of the crystals were induced. The effects of the additive metals were determined from the correlation between such properties and the alkali solubility.

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