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환경일반-P10 Comparison with Polarization Characteristic of Polymers

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1. Introduction

In response to the increasing concern over environmental issues, the European Commission (EC), the administrative arm of the European Union (EU), will soon launch a consultation program examining the environmental issues related to poly(vinylchloride) (PVC). The EC has already adopted a green paper evaluating environmental aspects of PVC with the specific provisos that the consultation be based on science and include aspects related to human health. The paper is set out details of the recent studies the EC has conducted in this area. However, no previous reports exists on the corrosion of polymers. Accordingly, this paper is the first attempt to correlate corrosion tests performed using an electrochemical method. Also, this study investigates the detailed influence of various conditions, such as temperature, pH, salt and enzyme.

2. Effect of Corrosion Sensitivity Relative to Current Density

Figure 1 presents the variation in the current density ratios with a reverse current (I_r) versus a forward current (I_f) from an anodic polarization curve, as Figure 2 This was obtained by the polarization curves when measuring with added factors (temperature and pH). The susceptibility was obtained by calculating the ratio of the current density with a reverse current (I_r) to that with a forward current (I_f) from the polarization curves. As shown in Figure 8, the corrosion susceptibility was found to be in the following order to PVC > PP > PC > PET of temperature and to PVC > PC > PP > PET of the pH. Since these results can not be explained as an effect of oxidation, they would appear to result from an increase in the current density owing to another factor. For this reason, it was clearly not owing to the reactivity with oxygen.

3. Conclusions

We was known that two well defined reduction processes are seen clearly distinct from cyclic voltammograms of the bis-phenol A in TEAP supporting electrolyte. In the case of the 1st couple curve shows a distinctly chemical reversibility with redox

peak, but the 2nd curve are seen as the irreversibility. The result of concentration are not dependent, implying the presence of both surface and bulk solution processes. The reduction efficiency of the temperature is decreased the gradual with temperature increasing. The effect of temperature for added NaCl, we have found that it was a complexly by the magnesium ion between NaCl and bis-phenol A in aqueous solution. In addition, it have been successful immobilizing an electro-active for added salt. From effect of pH, these were based on the fact that at pH are actively H^+ and OH ions in aqueous solution. Reversibility of cathodic peak current with scan rate are mixed reaction current controlled..

4. Abstract

We carried out to measure the variations of potential with current density polymers. The results were particularly examined to identify the influences on corrosion potential and corrosion rate of various factors including temperature and pH. The Tafel slope for anodic dissolution was determined by the polarization effect depending on these conditions. The optimum conditions were established for each case. The second anodic current density peak and maximum passive current density were designated as the relative corrosion sensitivity(I_r/I_f). The mass transfer coefficient value (α) was determined with the Tafel slope for anodic dissolution based on the polarization effect with optimum conditions.

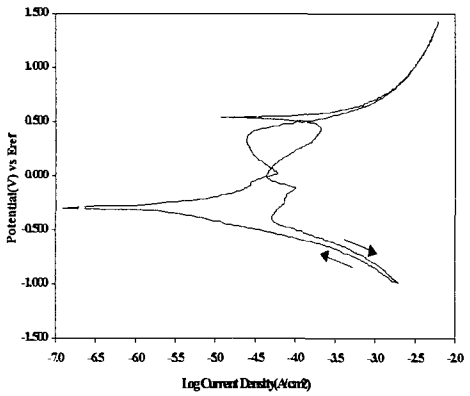

Fig 14. Current density curve poly(carbonate) obtained by cyclic polarization curve (forward and reward scan rate : 10mV/s).

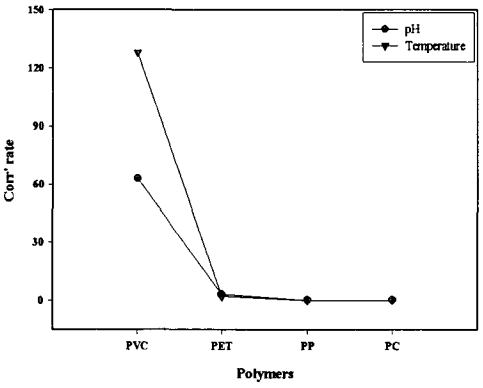

Fig 2. Variation of corrosion rate for polymers adjusted with optimum temperatures and pH.

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