

A study on the structure and corrosion characteristics of polyethylene terephthalate and polyvinylchloride.

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The corrosion rate of polymer polyethylene terephthalate and polyvinylchloride was characterized at various condition by potentiostate / galvanostate method.

The cell and working electrode used for this study was specially preparation.

The potential was scanned at foward scan -2V to 3V and reward scan 3V to -2V, at 50mV/s (IR: auto - compensation).

Typical cyclic polarization scan and Tafel curve are given by potentiostatic / galvanostatic, respectively.

The transfer coefficient(α) was obtained from an equation,

$$\text{Tafel slope} = \frac{2.3RT}{\alpha nT} \quad (25^\circ\text{C})$$

The Tafel form can be expected to hold whenever the back reaction (i.e. , the anodic process when a net reduction is considered ;

$$\text{slope} = \frac{(1-\alpha)nF}{2.3RT} \quad)$$

Tafel plot of this work indicate a reversible at the interface.

Transfer coefficient(α) value were higher than 0.9 of all conditions (date, temperature, pH, added salt), respectively.

All potentials were measured against a saturated calomel electrode (SCE), and a Tafel extrapolation was used to determine the corrosion current density.