

4. Synergistic effect:

Some anions are found to enhance the inhibitive effect of several nitrogen containing organic compounds in acid solutions.¹⁵⁸⁻¹⁶¹ In the present study the influence of thiocyanide ions on the inhibitive performance of arylazo curcumin compounds has been studied using weight loss technique.

Figures (39-43) represent the weight loss-time curves for α -brass dissolution in 2M nitric acid for various concentrations of arylazo curcumin compounds and at specific concentration (1×10^{-2} M) of this salt. The values of inhibition efficiency (%In) for various concentrations of inhibitors in the presence of specific concentration of potassium thio cyanide are given in Table (2.4).

The synergistic inhibition effect was evaluated using a parameter, S_θ , obtained from the surface coverage values (θ) of the anion, cation and both. Aramaki and Hackerman,¹⁶² calculated the synergism parameter S_θ using the following equation:

$$S_\theta = 1 - \theta_{1+2} / 1 - \theta'_{1+2} \quad (2.7)$$

where: $\theta_{1+2} = (\theta_1 + \theta_2) - (\theta_1\theta_2)$;

θ_1 = surface coverage by anion;

θ_2 = surface coverage by cation;

θ'_{1+2} = measured surface coverage by both the anion and cation.

We calculate synergism parameters from the above equation. The plot of the synergism parameter (S_θ) against various concentrations of arylazo curcumin compounds is given in Fig.(44) and the corresponding values are shown in Table (2.5). As can be seen from this Table, values nearly equal to unity were obtained, which suggests that the enhanced