

A New Dose Response Function Based on ISO 9223 to Estimate Corrosion Rate Suited to the Asian Monsoon Region

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Abstract:

Exposure tests with carbon steels and galvanized steel sheets were conducted in three counties, Japan, Vietnam and Thailand, in “Asian Monsoon Region” under “e-Asia Project”. Corrosion rates of carbon steel and zinc of galvanized steels increased with increasing airborne salinity. For the effect of temperature, T , the corrosion rates increased with increasing T when $T < 20^{\circ}\text{C}$ and they decreased with increasing T when $T > 20^{\circ}\text{C}$. ISO 9223 states that the corrosion rates increase with increasing T when $T < 10^{\circ}\text{C}$, but they decrease with increasing T when $T > 10^{\circ}\text{C}$. Those behaviors were not observed in Asian Monsoon Region. Moreover, the measured corrosion rates were higher than the estimated values with the advocated formula by ISO. These results show that in the Asian region there is a risk that the corrosion rate will be underestimated if the ISO-formula is used. Thus, a new Dose Response Function based on ISO 9223 suited to the Asian Monsoon Region was studied.