Short Communication

Effect of soil moisture content on corrosion behavior of X70 steel

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The effects of moisture content on corrosion of X70 steel in soils from different regions containing Muse, Tungtha, Made Kyun and Made Kyun beach in Myanmar were studied by polarization curves, electrochemical impedance spectroscopy and SEM. It was found that the corrosion rate law of X70 steel in each studied soil tends to be different with the change of moisture content due to the combined effects between soil moisture content and chloride ion content. The values of the corrosion rate were maxima with soil moisture content of 20% except that for the Muse soil where the corrosion rate was minimal with moisture content of 20%. The values of E_{corr} were shifted to more negative values with increasing soil moisture content of up to 60%, and then there was an appreciable increase in the value of E_{corr} . However, the value of E_{corr} was shifted to more negative value with increasing Made Kyun soil moisture content of up to 80%. A good uniformity between the data obtained from polarization curves and EIS measurements results. X70 steel was serious corroded in Made Kyun beach and Made Kyun regions via the data of EIS, polarization curves and SEM result from the different content of chloride in different areas.

Keywords: X70 steel; soil corrosion; moisture content; EIS; polarization curve

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