

## **Corrosion study on X70-carbon steel material influenced by soil engineering properties**

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### **ABSTRACT**

Soil as a corrosive medium is probably of greater complexity than other environment. This paper studies the influence of soil engineering properties towards metal loss of buried X70 carbon steel coupons. The study focuses on soil engineering properties which are soil moisture content, clay content and plasticity index. A total of 160 pieces of X70 carbon steel coupon were buried in 5 different locations in Peninsular Malaysia for a period of 12 months to study the effect of the abovementioned parameters towards metal loss caused by soil-corrosion. The samples were retrieved periodically for every 3 months to determine its weight loss and consequently the corrosion rate. It was found that the rapid growth of corrosion is relatively correlated with the high moisture content of soil. Yet, corrosion initiated at a slow pace for high plasticity soil and clayey soil. The highest and the lowest corrosion growth rate were calculated at 0.218mm/year and 0.051mm/year respectively. No strong indication can be found to relate the dominant influence of soil engineering properties towards measured corrosion rate of buried steel coupons.

### **KEYWORDS:**

Corrosion, Pipeline, Soil, Steel

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