

The Behavior of Steel, Copper, and Aluminum vis-à-vis the Corrosion in an Aqueous Medium

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Abstract : The present work consists of studying the behavior of steel, copper, and aluminum vis-à-vis the corrosion in an aqueous medium in the presence of the antifreeze COOLELF MDX -26°C. For this, we have studied the influence of the temperature and the different concentrations of the antifreeze on the corrosion of these three metals, this will last for two months by the polarization method and weight loss. In the end, we investigated the samples with the optic microscope to know their surface state. The aim of this work is the protection of contraptions. The use of antifreeze in ordinary water has a high efficiency against steel corrosion, as demonstrated by electrochemical tests (potential monitoring as a function of time and tracing polarization curves). The inhibition rate is greater than 99% for different volume concentrations, ranging from 40% to 60%. The speeds are in turn low in the order of 10⁻⁴ mm/year. On the other hand, the addition of antifreeze to ordinary water increases the corrosion potential of steel by more than 400 mV.

Keywords : corrosion and prevention, steel, copper, aluminum, corrosion inhibitor, anti-cooling

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