EFFECT OF NaCl CONCENTRATION ON THE CORROSION RESISTANCE OF THE HOT DIP GALVANIZING LAYER ON COLD ROLLED STEEL AISI 1020

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Abstract
Various areas of life cannot be separated from the use of metals, particularly steel. A lot of steel has experienced metal forming processes associated with changes in dimension and size. Formation process can be done by cold working. Plastic deformation occurred leaving residual stress. Placement of steel components must be considered, especially in the environment with chloride ions (Cl\textsuperscript{−}) in this case is salt (NaCl). Effect of Cl\textsuperscript{−} ions with the environment will cause corrosion of steel. Losses resulting from corrosion can be reduced with a metal plating process with a more anodic metal. One is Hot Dip galvanizing. Hot Dip Galvanizing using zinc as a metal upholstery.

The purpose of this research is to study the effect of NaCl concentration on the corrosion resistance of the Hot Dip galvanizing layer on cold rolled steel AISI 1020. This study used different degrees of deformation of 0% and 40% and the variation of NaCl concentration from 0.2 M, 0.35 M, and 0.5 M. Calculation of corrosion rate was obtained through potentiodynamic polarization method.

The results show that increasing concentrations of NaCl higher the corrosion rate at each layer. The highest corrosion rate in the layer of Zn, FeZn and Fe are 60.8237 mpy, 5.4666 mpy and 25.7589 mpy. FeZn alloy layers have a lower corrosion rate than the layers of Zn and Fe.

Keywords: Concentration of NaCl, a Dip Hot Galvanizing, Corrosion, Cold Rolled Steel