

CORROSION INHIBITION OF STEEL IN COOLING WATER SYSTEM BY 2 - PHOSPHONOBUTANE - 1,2,4-TRICARBOXYLIC ACID AND POLYVINYLPIRROLIDONE

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Arabian Journal for Science and Engineering, Section A: Sciences (2008), 33(1A), 29-33.

Abstract

The corrosion properties of steel have been studied in acidic solution containing polymeric inhibitors. 2-Phosphonobutane-1,2,4 tricarboxylic acid (PBTCA) was used as a corrosion inhibitor for carbon steel in cooling water either alone or in combination with polyvinylpyrrolidone (PVP). The inhibiting properties of those compounds were investigated with the aid of the weight loss method, open circuit potential measurements and potentiodynamic techniques. The inhibition efficiency at various inhibitor concentrations was found to increase with increasing PBTCA concentration. A considerable improvement in the protection efficiency was achieved by adding polyvinylpyrrolidone to the PBTCA solution. A mixture PBTCA and PVP acts as a synergic inhibitor and found to increase the inhibition efficiency to 96.7%.