



**Influence of (E)-1-(2,4-dinitrophenyl)-2-[1-(2-nitrophenyl) ethylidene] hydrazine (DNPH) on the Hydrogen Evolution and Corrosion Inhibition of 18% Ni M 250 Grade weld aged Maraging steel in 0.5 M Sulfuric acid Medium at Different Temperatures**

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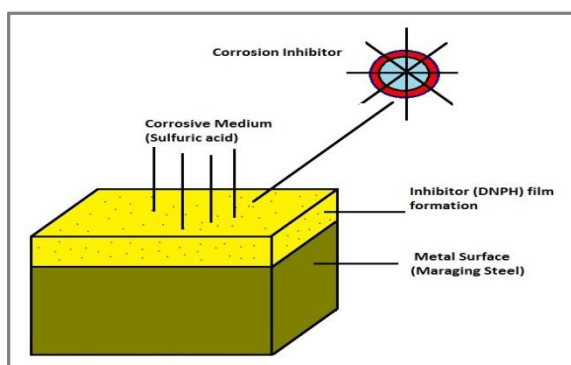
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Accepted on 3<sup>rd</sup> February, 2019

**ABSTRACT**

The influence of (E)-1-(2,4-dinitrophenyl)-2-[1-(2-nitrophenyl) ethylidene] hydrazine (DNPH) on the corrosion of weld aged maraging steel in 0.5 M sulfuric acid medium was investigated by Tafel polarization curve and Electrochemical impedance spectroscopy (EIS) at different temperatures by varying the inhibitor concentrations. The results showed that the presence of DNPH hinders the rate of corrosion without altering the mechanism of anodic and cathodic reactions. The impedance parameters, such as charge transfer resistance ( $R_{ct}$ ), double layer capacitance ( $C_{dl}$ ), film capacitance ( $C_f$ ) and film resistance ( $R_f$ ) were extracted from Nyquist plot, they ensure the formation of protective film on the metal surface. DNPH act as a mixed type inhibitor without altering the mechanism of the hydrogen evolution reaction or metal dissolution. Scanning electron microscopy (SEM) and Energy dispersive X-ray spectroscopy (EDS) also confirms the formation of an adsorbed protective film on the metal surface.

**Graphical Abstract**



Schematic representation of the inhibition process.

**Keywords:** Maraging steel, DNPH, EIS, SEM, EDS.