

CONTENTS

	Page
Acknowledgement	i
List of Figures	ii
List of Tables	viii

1-INTRODCUTION

1.1- Forms of corrosion.....	1
1.1. 1- General and local electrochemical corrosion.....	1
1.1.2- Galvanic corrosion or dissimilar metal corrosion.....	1
1.1.3- Crevice corrosion.....	3
1.1.4- Filiform corrosion.....	4
1.1.5- Intergranular corrosion.....	4
1.1.6- Pitting corrosion.....	4
1.1.7- Exfoliation.....	4
1.1.8- Stress corrosion cracking.....	4
1.1.9- Corrosion fatigue cracking.....	4
1.1.10- Fretting corrosion.....	5
1.1.11- Erosion corrosion	5
1.1.12- Cavitation corrosion.....	5
1.2- Theories of corrosion.....	5
1.2.1- Electrochemical theory of corrosion.....	5
1.3- Mechanism of corrosion processes.....	7

1.4- Expression for corrosion rate.....	7
1.5-Corrosion Prevention.....	8
1.5.1- Prevention Based on the Environment	8
1.5.2- Prevention Based on the Metal.....	8
1.5.3- Prevention Based on Protective Coating.....	9
1.5.4- Prevention Based on Electrochemistry.....	9
1.6-The Limitations and Uses of Inhibitors	9
1.7-Correlation Between Inhibition and Stability of Organic Compounds.....	10
1.7.1- Inhibition by chemically stable surface active organic compounds.....	10
1.7.2-Inhibition by surface active chemically unstable organic compounds.....	11
1.7.2.1-The types of chemical transformation	11
1.7.3-Effect of molecular structure on corrosion inhibition.....	12
1.7.4 Adsorption isotherms.....	14
1.5- Literature Survey on Corrosion Inhibition of Carbon Steel in Aqueous Solutions.....	15
1.6- Aim and Scope of the Present Work	35
2 – EXPERIMENTAL	
2.1-Materials.....	36
2.1.1-Chemical Composition of Material Samples.....	36

2.2- Chemical and Solutions.....	36
2.2.1- Organic additives.....	36
2.2.2 - Inhibitor Solutions.....	38
2.2.3 – Sulfuric Acid	38
2.3- Experimental Techniques.....	38
2.3.1- Chemical technique (weight loss method).....	38
2.3.2- Electrochemical technique (galvanostatic polarization method).....	39

3-RESULTS AND DISCUSSION

Section (A)

Studying the Corrosion Inhibition of Carbon Steel in Sulfuric Acid by Some N-3-Hydroxyl-2-Naphthoyl Hydrazone Derivatives Using Chemical Technique

3.1- Effect of Inhibitor Concentrations.....	44
3.2-Adsorption isotherms.....	51
3.3- Synergistic effect.....	54
3.4- Effect of temperatures.....	77
3.5- Activation parameters of inhibition process.....	98

Section (B)

Studying the Corrosion Inhibition of Carbon Steel in Sulfuric Acid by Some N-3-Hydroxyl-2-Naphthoyl Hydrazone Derivatives Using Electrochemical Technique

3.6- Galvanostatic Polarization Measurements.....	112
---	-----

Section (C)

Studying the Correlation Between Inhibition Action and Chemical Structure of the Inhibitors.....	126
---	-----

APPENDIX.....	128
---------------	-----

REFERENCES.....	130
-----------------	-----

SUMMERY.....	138
--------------	-----

ARABIC SUMMERY.....	
---------------------	--