بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

A Thesis Entitled

Study of Some Factors Affecting the Production of Ferrosilicon Magnesium Alloy

Submitted By

Saeed Nabil Saeed Ghali

(B.Sc. 1995)

Central Metallurgical Research and Development Institute (CMRDI)

For Partial Fulfillment of
the Degree of M.Sc. in Chemistry

Faculty of Science
Cairo University

B 9.27

2001

Approval Sheet for Submission

Title of Thesis: Study of Some Factors Affecting the Production of Ferrosilicon Magnesium Alloy

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TO WHOM IT MAY CONCERN

This is to certify that : Saeed Nabil Saeed Ghali has attended and passed successfully the following postgraduate courses as a partial fulfillment of the requirements of the degree of master of science.

1. Surface Chemistry
2. Electrochemistry of Molten Salts
3. Molecular Spectroscopy
4. Voltammetry
5. Nuclear Chemistry
6. Mathematical Modelling
7. Advanced Analytical Chemistry
8. Molecular Structure
9. Quantum Chemistry
10. Electrokinetic Phenomena
11. Mechanism of Inorganic Reactions
12. Electrochemistry
13. Double Layer
14. Catalysis
15. Thermal Analysis
16. Statistcal Thermodynamics
17. Physical Metallurgy
18. X-ray Analysis
19. Mathematics
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ABSTRACT

Name : **Saeed Nabil Saeed Ghali**

Title of Thesis: **Study of Some Factors Affecting the Production of Ferrosilicon Magnesium Alloy**

Degree: **M.Sc. unpublished Master of Science Thesis, Faculty of Science – Cairo University, 2001.**

Abstract:

In this study, two techniques have been investigated to produce ferrosilicon magnesium alloy. In the first, local calcinated dolomite ore was reduced either by the silicothermic or the aluminosilicothermic processes; the reducing agents used were either ferrosilicon or a mixture of ferrosilicon and aluminium respectively, the magnesium produced reacts with excess ferrosilicon to form Mg_2Si. Some of the factors that affect the reduction process, such as, the amount of the reducing agent, the composition of the magnesium ores and the type of the added fluxing materials, i.e. lime, fluorspar, bauxite and quartzite, have been investigated. It is aimed, then, to determine the optimum conditions for obtaining the highest magnesium recovery.

In the second technique, magnesium metal was immersed in molten ferrosilicon. The highest magnesium recovery using the reduction technique was found to be about 13.8%, whereas in the immersion technique, a higher magnesium recovery up to 77% was achieved.

Furthermore, study of the production cost of both techniques revealed that the immersion technique is more economic compared to the reduction one, in producing the ferrosilicon magnesium alloy.

The magnesium metal immersion in molten ferrosilicon has been successfully tested on an industrial scale, in the Egyptian Company for Ferroalloys to produce the ferrosilicon magnesium alloy containing 5% Mg with high magnesium recovery of 89%.

Key words : Ferrosilicon Magnesium, Ferrosilicon, Magnesium, alloy

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Acknowledgement

The author wishes to express his deepest gratitude to Prof. Dr. Amin Baraka and Prof. Dr. Magdi Naoum, Professors of Physical Chemistry, Faculty of Science, Cairo University, for their kind supervision of this thesis.

I would like also to express my deepest gratitude to Prof. Dr. Kamal El-Fawakhry, Prof. of Steelmaking and Ferroalloys, Vice Dean Extractive Metallurgy Sector, the Central Metallurgical Research and Development Institute (CMRDI), for suggesting the point of research, his valuable discussions, guidance and encouragement during this study.

Thanks are also due to Prof. Dr. Mamdouh Eissa and Assistant Prof. Dr. Hoda El-Faramawy, in the same Department, (CMRDI) for their kind assistance and valuable help during the course of this work.

This is my deep thanks to Prof. Dr. M.L. Mishreky, Head of Steelmaking and Ferroalloys Department, for his continuous encouragement during the work.

Thanks for Dr. Taha Mattar and all staff members and technicians of Steelmaking and Ferroalloys Laboratory for their help during the course of this work.

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