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A Thesis Entitled

**Study of Some Factors Affecting
the Production of Ferrosilicon
Magnesium Alloy**

Submitted By

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(B.Sc. 1995)

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

**Faculty of Science
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Approval Sheet for Submission

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Magnesium Alloy

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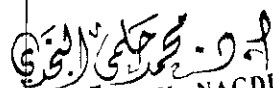
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ABSTRACT

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 unpublished Master of Science Thesis, Faculty of Science – Cairo University, 2001.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.

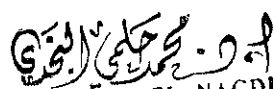
Furthermore, study of the production cost of both techniques revealed that the immersion technique is more economic compared to the reduction one, in producing the ferrosilicon magnesium alloy.

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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Contents

	Page No.
Introduction	1
Chapter 1: Literature Survey	3
1.1. Sources of magnesium, calcium and rare earth metals	3
1.1.1. Magnesium ores	3
1.1.2. Rare earth metals source	4
1.1.3. Calcium source	4
1.2. Production of ferrosilicon magnesium	5
1.2.1. Carbothermic process	5
1.2.2. Metallothermic processes	7
1.2.2.1. Aluminothermic process	9
1.2.2.2. Silicothermic processes	9
1.2.3. Thermodynamic analysis of metallothermic reaction	11
1.2.4. Factors affecting the silicothermic process	13
1.2.4.1. Effect of lime	13
1.2.4.2. Effect of catalyst	17
1.2.4.2.1. Effect of fluorspar	17
1.2.4.2.2. Effect of alumina	17
1.2.4.3. Effect of grade of ferrosilicon	19
1.3. Production technologies of ferrosilicon magnesium	19
1.3.1. Smelting of ferrosilicon magnesium	19
1.3.1.1. Smelting of ferrosilicon magnesium in electric arc furnace	19
1.3.1.2. Smelting of ferrosilicon magnesium in induction furnace	21
1.3.2. Smelting of ferrosilicon magnesium by reduction of dolomite ore	21
1.3.3. Immersion of magnesium in ferrosilicon melt	23
1.3.3.1. Thermodynamic analysis of immersion process	23

Chapter 2: Experimental	29
2.1. Raw materials	29
2.2. Equipment	32
2.2.1. Submerged electric arc-furnace	32
2.2.2. The built-up shaft	33
2.3. Smelting technique of ferrosilicon magnesium	33
2.3.1. Smelting technique for reduction process	33
2.3.2. Magnesium immersion technique	33
Chapter 3: Results and Discussion	34
3.1. Grade of ferrosilicon magnesium alloys	34
3.2. Material balance calculations	37
3.2.1. Calculation of the components in the blend	37
3.2.2. Calculation of reductant amount	40
3.3. Factors affecting the element yield of ferrosilicon magnesium produced by silicothermic process	45
3.3.1. Effect of limestone	46
3.3.2. Effect of fluorspar, quartzite and bauxite	51
3.3.3. Effect of reducer amount	63
3.3.3.1. Effect of ferrosilicon	63
3.3.3.2. Effect of aluminium as a replacement of ferrosilicon	71
3.3.3.2.1. Material balance calculations	71
3.3.3.2.2. Calculation of aluminium amount	72
3.3.3.2.3. Mechanism of dolomite reduction process in presence of Al and Si mixture	80
3.3.3.2.3.1. Reduction by silicon	80
3.3.3.2.3.2. Reduction by aluminium metal	80
3.3.3.2.3.3. Reduction by aluminium and silicon mixture	81
3.3.3.3. Effect of ferrosilicon amount in presence of constant amount of aluminium	82
3.3.4. Effect of magnesite addition	87
3.3.5. Pilot plant heats for production of ferrosilicon magnesium alloy by reduction process	93

	Page No.
3.4. Production of ferrosilicon magnesium by magnesium immersion in molten ferrosilicon	95
3.4.1. Material balance calculations	95
3.4.2. Pilot plant heats for the production of ferrosilicon magnesium alloy by magnesium immersion technique	97
3.4.3. Industrial heats for the production of ferrosilicon magnesium alloy by magnesium immersion technique	98
3.5. Economic comparison between reduction and immersion techniques for the production of ferrosilicon magnesium alloy	101
Summary and Conclusion	103
References	106
Arabic Summary	

List of Tables

	Page No.
Table 1: Effect of molar MgO/CaO ratio on magnesium recovery	16
Table 2: Effect of grade of ferrosilicon on magnesium recovery	21
Table 3: Chemical analysis of calcinated dolomite	29
Table 4: Chemical analysis of dolomite	29
Table 5: Chemical analysis of 75% ferrosilicon	30
Table 6: Chemical analysis of 65% ferrosilicon	30
Table 7: Chemical analysis of fluorspar	30
Table 8: Chemical analysis of rare earth metal chloride	30
Table 9: Chemical analysis of limestone	31
Table 10: Chemical analysis of quartzite	31
Table 11: Chemical analysis of magnesite	31
Table 12: Chemical analysis of bauxite	32
Table 13: Chemical analysis of CaSi alloy	32
Table 14: Grade of ferrosilicon magnesium according to German standard	34
Table 15: Grade of ferrosilicon magnesium according to British standard	35
Table 16: Grade of ferrosilicon magnesium according to Brazilian standard	36
Table 17: Grade of ferrosilicon magnesium according to American standard	36
Table 18: Effect of limestone amount on the recoveries of Mg, Ca and Si	47
Table 19: Effect of quartzite amount on recoveries of Mg, Ca and Si	52
Table 20: Effect of fluorspar amount on recoveries of Mg, Ca, and Si	53
Table 21: Effect of bauxite amount on recoveries of Mg, Ca, and Si	54
Table 22: Effect of ferrosilicon amount on recoveries of Mg, Ca, and Si	67
Table 23: Thoeretical and practical Al_2O_3 produced as a function of Al portion in the charge at FeSi/dolomite ratio of 40%	75
Table 24: Effect of aluminium amount at constant amount of FeSi on the recoveries of Mg, Ca and Si	76
Table 25: Effect of FeSi in presence of aluminium on the recoveries of Mg, Ca, and Si	83
Table 26: Effect of magnesite amount on the recoveries of Mg, Ca and Si	88

Table 27: Pilot plant heats of ferrosilicon magnesium production by reduction technique	94
Table 28: Pilot plant heats for producing ferrosilicon magnesium by immersion of magnesium metal in ferrosilicon melt	99
Table 29: Industrial heats for production of ferrosilicon magnesium alloy by immersion of magnesium metal in molten ferrosilicon	100
Table 30: Prices of raw materials used in the production of ferrosilicon magnesium alloy by the reduction and immersion techniques	102
Table 31: Comparison between the cost of the reduction and immersion techniques used for the production of ferrosilicon magnesium alloy	102