

The Complete Book on Ferroalloys (Ferro Manganese, Ferro Molybdenum, Ferro Niobium, Ferro Boron, Ferro Titanium, Ferro Tungsten, Ferro Silicon, Ferro Nickel, Ferro Chrome)

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The Complete Book on Ferroalloys

(Ferro Manganese, Ferro Molybdenum, Ferro Niobium, Ferro Boron, Ferro Titanium, Ferro Tungsten, Ferro Silicon, Ferro Nickel, Ferro Chrome)

An alloy is a mixture or solid solution composed of metals. Similarly, Ferroalloys are the mixture of Iron with high proportion of other elements like manganese, aluminium or silicon. Alloying improves the physical properties like density, reactivity, Young's modulus, electrical and thermal conductivity etc. Ferroalloys thus show different properties as mixture of different metals in different proportion exhibit a wide range of properties. Also, Alloying is done to alter the mechanical properties of the base metal, to induce hardness, toughness, ductility etc.

The main demand of ferroalloys, nowadays is continuously increasing as the major use of such products are in the field of civil construction; decorative items; automobile; steel industry; electronic appliances. The book provides a wide idea to readers about the usage of appropriate raw material and the treatment involved in the processing of raw material to final produce, safety, uses and properties of raw material involved in the processes.

This book concisely presents the core principles and varied details involved in processing of ferroalloys. The work includes detailed coverage of the major products like ferroaluminium, ferrosilicon, ferronickel, ferromolybdenum, ferrotungsten, ferrovanadium, ferromanganese and lesser known minor ferroalloys.

Progress in thermodynamics and physico-chemical factors in ferroalloy production has developed rapidly during the past twenty-five years or so. The book presents the principles and current knowledge of processes in the production of various ferroalloys.

The production of a particular ferroalloy involves a number of processes to be followed in order to give the alloy desired physical and mechanical properties. The slight difference in the temperature or heating or composition can lead to entirely different alloy with different properties. This book is not only confined to the different processes followed in the production of ferroalloys but also describes the processes used and other information related to product, which are necessary for the manufacturer's knowledge. Also, the book gives the reader appropriate knowledge regarding the selection the best of available raw materials.

1. INTRODUCTION

Theory

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Interstitial Alloy

Classification of Alloys

2. FERROALLOYS

Ferroalloys

Ferro Aluminium

Ferro Boron

Ferro Chromium

Ferro Manganese

Ferro Molybdenum/Molybdic Oxide

Ferro Molybdenum

Molybdic Oxide

Ferro Niobium

Ferro Phosphorus

Ferro Selenium

Ferro Silicon

Ferro Silico Manganese

Ferro Silicon Magnesium

Ferro Silicon Zirconium

Ferrous Sulphide

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Ferro Vanadium

Calcium Silicon Manganese

Calcium Silicon

Ferro Tungsten

Iron

3. PRODUCTION OF FERROALLOYS

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Raw Materials

Pre-treatment Techniques

Production of Ferro-chrome and Silico-chromium

High-carbon Ferro-chrome

4. PRODUCTION OF FERRO MANGANESE

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Pre-treatment Techniques

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To Produce a Saleable, Dust-free Brittle Product

To Produce a Small-sized Ductile Product

To Produce a Reactive Intermediate Product

To Produce a "Rapidly Solidified" Product

To Produce Special Powder Products

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