

Minerals & Mineral Processing

Extractive Metallurgy, Ore Dressing, Minerals Engineering

(Mining, Non – Ferrous Metals, Iron Ore Slimes, Limes, Limestone, Asbestos, Coal Beneficiation, Coal and Ore Fines, Ordinary Superphosphate, Ammonium Salts, Fertilizers)

Introduction

Mineral is defined as a naturally occurring solid chemical substance formed through biogeochemical processes, having characteristic chemical composition, highly ordered atomic structure, and specific physical properties. By comparison, a rock is an aggregate of minerals and/or mineraloids and does not have a specific chemical composition. Mineral resources of India are sufficiently rich and varied to provide the country with strong industrial base.

The country is particularly rich in metallic minerals of the ferrous group such as iron ores, manganese etc. It has the world largest reserves in mica and bauxite. In the field of extractive metallurgy, mineral processing, also known as mineral dressing or ore dressing, is the process of separating commercially valuable minerals from their ores. Mining is the extraction of valuable minerals or other geological materials from the earth, from an ore body; the term also includes the removal of soil.

Materials recovered by mining include base metals, precious metals, iron, uranium, limestone, etc. There are three methods of mining; conventional or manual mining, semi mechanised mining and mechanised mining. Geopolymerisation is the processes which can transfer large scale alumina silicate wastes into value added geopolymeric products with sound mechanical strength and high acid, fire and bacterial resistance.

One of many useful applications of geopolymerisation is the immobilization of heavy metals and radioactive elements. The production of non ferrous metals from natural mineral ores is, in general, highly energy intensive. Some of the non ferrous mineral sources are bauxite, granite, magnesite, limonite etc. Limestone is a sedimentary rock composed largely of the minerals calcite and aragonite, which are different crystal forms of calcium carbonate (CaCO_3).

Limestone processing includes several steps; primary crushing (jaw crusher, gyratory crusher, impact breaker), secondary crushing (cone crusher), fine grinding and pulverization, conveying, screening, washing, heavy media separation, optical mineral sorters, drying and storage. The non metallic mineral mining and quarrying industry segment covers a wide range of mineral extraction. Most of these minerals are found in abundance close to the surface, so underground mining is uncommon in this industry segment.

Mineral resources of India are sufficiently rich and varied to provide the country with strong industrial base. The country is particularly rich in metallic minerals of the ferrous group such as iron ores, manganese etc. It has the world largest reserves in mica and bauxite.

This book basically deals with methods of mining, mining machineries, geopolymerisation of mineral products and waste, industrial and scientific aspects of non ferrous metals production,

processing of alumina rich Indian iron ore slimes, limestone processing, limestone exploration and extraction, the mineralogy of asbestos, the use of asbestos and asbestos free substitutes in buildings, flotation column ;a novel technique in mineral processing, applications of thermal plasma in the synthesis of covalent carbides, nitrogenous fertilizers, manufacture of ammonium bicarbonate etc.

This book is designed to describe the details of mining and processing of different minerals like alumina rich iron ore slimes, conversion of waste to a high valued product, lime stone, asbestos, coal beneficiation, gravity concentration processes to recover values from coal and ore fines and many more. The book is meant for everyone who wants to study about the subject or wants to venture into the field of mineral processing.

Table of Contents

1. MINING

General Consideration

Mining Machineries

Methods of Mining

1. Conventional or Manual Method

2. Semi-mechanised Method

3. Mechanised Method

Mining of Other Decorative Stones

Conservation and Safety

Problems of Granite Mining

Geological Problems

Operational Problems

Environmental Problems

Status of Granite Mining in India

2. PROCESSING

General Consideration

Manual Methods

Mechanical Methods

1. Sawing

2. Polishing

3. Cutting and Polishing of Edges

4. Status of Granite Processing Industries in India

3. GEOPOLYMERISATION OF MINERAL PRODUCTS AND WASTE

Principles of Geopolymerisation

Reaction Mechanisms and Material Properties

Immobilisation of Heavy Metals and Radioactive Elements

Encapsulation of Organic Residue

Stabilisation of Mine Tailings

Concluding Remarks

4. INDUSTRIAL AND SCIENTIFIC ASPECTS OF NON - FERROUS METALS PRODUCTION

Introduction

Resources in India

The Developed Metals Industry

Environmental Aspects: Life Cycle Assessment (LCA)

Metals for Secondary Sources : The Energy Aspect

Extraction as a Separation Process

Application of Thermodynamics and Kinetics - Some Examples

R & D for the Future

**Nonferrous Metallurgy at Regional Research Laboratory,
Bhubaneswar**

Processing of Ocean Nodules

Processing of Chromite Overburden

Concluding Remarks

5. THE IMPORTANCE OF USING A MULTIDISCIPLINARY APPROACH IN THE EVALUATION OF AMMONIA LEACHING BEHAVIOUR OF MULTIMINERAL SULPHIDES

Introduction

Research Practice/Methodology

- 1. Overall Aim of Leaching Studies**
- 2. Raw Materials**
- 3. Analysis of Feed Material, Leach Solution and Residues**
- 4. Leaching as a process involving Parallel Reactions**
- 5. Experimental Options and Limitations during Laboratory Studies**
- 6. Analysis of Kinetic Data in Terms of Models**
- 7. Selection of Experimental Conditions for Oxidative Ammonia**

Leaching of Multimetal Sulphides

Use of Multi-disciplinary Approach

- 1. Microscopic Studies**
- 2. X-ray Diffraction (XRD) Studies**
- 3. Thermal Analysis (TA)**
- 4. Chemical Phase Analysis**
- 5. Surface Area Measurements**
- 6. Galvanic Interactions**

Concluding Remarks

6. PROCESSING OF ALUMINA-RICH INDIAN IRON ORE SLIMES

Introduction

Motivation for the Beneficiation of Indian Iron Ores

Beneficiation Strategies for Indian Iron Ore Slimes

Selective Dispersion-flocculation Studies on Iron Ore Slimes

Concluding Remarks

7. CONVERSION OF A WASTE TO A HIGH VALUED PRODUCT

Introduction

Experimental

Results and Discussions

Concluding Remarks

8. DEFINITIONS AND PROPERTIES OF LIMES

Nomenclature

Physical Properties of Quicklimes

Physical Properties of Hydrated Limes

Chemical Properties of Quick and Hydrated Lime

9. ANALYTICAL TESTING OF LIMESTONE AND LIME

Physical Testing of Limestone

Limestone: Use Specifications

Limestone: Chemical Analyses

Physical Tests of Lime

Lime Materials Specifications

Lime: Chemical Analysis

10. LIMESTONE PROCESSING

Primary Crushing

Secondary Crushing

Fine Grinding and Pulverization

Conveying

Screening

Washing

Heavy-Media Separation

Optical Mineral Sorters

Drying

Storage

Portable Plants

Environmental Controls

Model of Ultramodern, High-Capacity Limestone Producer

Costs

Safety Record

11. LIME MANUFACTURE

Development of Kilns

Vertical Kilns

Rotary Kilns

Coolers

Internals

Miscellaneous Kilns

Chemical Analysis

Refractory Linings

Flexibility

Fuels and Combustion

Rotary Kilns

Vertical Kilns

Heat Balance

Instrumentation

Temperature

Air

Fuel

Equipment

Classification of Quicklime

Control of Kiln Particulate Emissions

Dead-Burned Dolomite Production

Oystershell Lime

Precipitated Calcium Carbonate

Hydraulic Lime

Selective Calcination

Manufacturing Costs

Lime Plant Safety

12. LIMESTONE EXPLORATION AND EXTRACTION

Exploration Criteria

Land Use

Zoning

Coring

Extraction of Limestone

Stripping

Disposal of Overburden

Quarry Layout

Mining Layout

Drilling

Blasting

Loading

Haulage

Pumping

Extraction without Blasting

Environmental Controls

13. THE MINERALOGY OF ASBESTOS

Introduction

Definitions

Chemical Composition

Crystal Structures

Serpentine Minerals

Amphibole Minerals

Occurrences

Synthesis

Optical Properties

X-ray Diffraction Data

Electron Optical Characteristics

Non-asbestiform Amphibole and Serpentine Minerals

14. CHEMISTRY AND PHYSICS OF ASBESTOS

Asbestos : The Raw Material

Occurrence and Formation

World Production

Applications

Structure

Composition

Chemical Reactions

Synthesis of the Asbestos Minerals

Physical Properties of Asbestos Fibres

Tensile Strength

Surface Area

Other Physical Properties

Optical Properties

Thermal Decomposition of Asbestos

Amphibole Asbestos

Chrysotile Asbestos

Surface Properties of Asbestos

Infrared Spectroscopic Data for Asbestos

15. THE IDENTIFICATION OF ASBESTOS IN SOLID MATERIALS

Synopsis

Introduction

Sampling and Pre-treatment of Samples

Analysis of Samples for Asbestos

(1) Observation by Stereo-bionocular Microscope

(2) The Action of Heat on Fibres

(3) Optical Microscope Methods

(4) Infrared Spectrophotometry

(5) X-ray Diffraction Analysis

(6) Electron-optical Methods

(7) Miscellaneous Methods of Analysis

16. THE USE OF ASBESTOS AND ASBESTOS-FREE SUBSTITUTES IN BUILDINGS

Synopsis

Introduction

Asbestos in Buildings

(1) Higher Density Hard-surfaced Materials

(2) Lower Density Soft-surfaced Materials

(3) Sprayed Asbestos

(4) Other Asbestos-based Building Materials and Components

The Risks to Health in the Use of Asbestos in Buildings

Sampling of Installed Building Materials

General Considerations of Health and Safety

Labelling Schemes for Asbestos-based Building Materials
Other Safety Precautions for Building Operatives and Users
Remedial Construction and Maintenance Work
The Substitution of Asbestos in Buildings
(1) Higher Density Hard-surfaced Materials
(2) Lower Density Soft-surfaced Materials
(3) Sprayed or Floated Materials
(4) Other Building Materials and Components
The Asbestos Hazard in Perspective
The Future for Asbestos in Building

17. PROCESS MODELLING AND SIMULATION OF COAL BENEFICIATION FLOWSHEET

Introduction

Software Components

- 1. Coaldata.com**
- 2. Flowdata.com**
- 3. Coalben.com**

Case Study

Discussion

- 1. Effect of Media Density**

Concluding Remarks

Appendix : Specifications and Parameters of Different Units of Sudamdih Washery

18. ENHANCED GRAVITY CONCENTRATION PROCESSES TO RECOVER VALUES FROM COAL AND ORE FINES

Introduction

Why Fines are a Problem?

Enhanced Gravity Separation Process

Treating Chromite Ore Fines Rejects

1. Multi-Gravity Separator

Results and Discussion

Concluding Remarks

19. MAGNETIC SEPARATION OF HEAVY MINERALS FROM BEACH SAND PLACER DEPOSITS

Introduction

Magnetic Separation Principle

Types of Magnetic Separators

- 1. Dry Type Magnetic Separators**
- 2. Wet Type Magnetic Separators**

Separation of Heavy Minerals

- 1. Factors of Layout Study**

Test Work on Various Options

- 1. WHIMS in the Up-Front of Feed**
- 2. RED in the Up-Front**
- 3. HTS and RED Combination**
- 4. Use of HTS and IRMS Combination**

Concluding Remarks

20. FLOTATION COLUMN " A NOVEL TECHNIQUE IN MINERAL PROCESSING

Introduction

Column Parameters and their Effect on Metallurgical Performance

- 1. Effect of Various Column Operating Parameters**
- 2. Effect of Various Column Design Parameters on Metallurgical Performance**

Mixing Effect in the Flotation Column

- 1. Reduction of Mixing Effect in Column**

Flotation Studies at Regional Research Laboratory, Bhubaneswar

Concluding Remarks

21. PREPARATION OF OXIDES AND HYDROXIDES OF ALUMINIUM THROUGH AQUEOUS ROUTES

Introduction

Preparation of Alumina and Alumina Precursors through Aqueous Route

The Aqueous Species of Al^{3+}

The Sol-Gel Synthesis Route

Homogenous Precipitation Route

Hydrothermal Precipitation Route

Boehmite Synthesis

Concluding Remarks

22. DISSOLUTION BEHAVIOUR OF CARBONACEOUS MATERIALS INTO IRON MELTS DURING DIRECT IRON SMELTING

Introduction

Characterisation of Various Carbonaceous Materials

Experimental

Experimental Results

Discussion

Concluding Remarks

23. APPLICATIONS OF THERMAL PLASMA IN THE SYNTHESIS OF COVALENT CARBIDES

Introduction

Experimental

Results and Discussion

Concluding Remarks

24. LIQUID FERTILIZERS

Liquid Nitrogenous Fertilizers

Compound Liquid Fertilizers

25. MANUFACTURE OF ORDINARY SUPERPHOSPHATE

Production Technology of Simple Superphosphate

**Sulphuric Acid as a Raw Material in the Manufacture of
Superphosphate**

Reactions Occurring in Superphosphate Manufacture

Stoichiometric Amount of Sulphuric Acid and Peculiarities of the Decomposition Reaction

Main Technical-analytical Indices of Superphosphate Manufacture

Manufacturing Indices of Ordinary Superphosphate from Vietnam Phosphorite

Fast Curing of Superphosphate

Apparatus Used in Superphosphate Manufacture

Storage and Conditioning of Superphosphate

26. NITROGENOUS FERTILIZERS

Nitrogenous Fertilizers and the Cyclic Process of Plant Nutrition

Significance of Inorganic Nitrogenous Fertilizers

World Production of Nitrogenous Inorganic Fertilizers

27. CHEMISTRY OF NITROGEN AND ITS INORGANIC COMPOUNDS

28. AMMONIUM SALTS

Physicochemical and Agrochemical Properties

Manufacturing Processes

Ammonium Chloride

Physicochemical and Agrochemical Properties

Manufacturing Processes

Ammonium Bicarbonate

Physicochemical and Agrochemical Properties

Manufacture of Ammonium Bicarbonate

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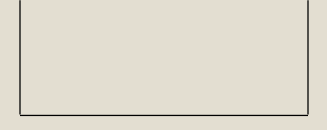


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NIIR PROJECT CONSULTANCY SERVICES

AN ISO 9001:2008 COMPANY

Who are we?

- *One of the leading reliable names in industrial world for providing the most comprehensive technical consulting services*
- *We adopt a systematic approach to provide the strong fundamental support needed for the effective delivery of services to our Clients' in India & abroad*



What do we offer?

- *Project Identification*
- *Detailed Project Reports/Pre-feasibility Reports*
- *Business Plan*
- *Industry Trends*
- *Market Research Reports*
- *Technology Books and Directory*
- *Databases on CD-ROM*
- *Laboratory Testing Services*
- *Turnkey Project Consultancy/Solutions*
- *Entrepreneur India (An Industrial Monthly Journal)*

How are we different ?

- *We have two decades long experience in project consultancy and market research field*
- *We empower our customers with the prerequisite know-how to take sound business decisions*
- *We help catalyze business growth by providing distinctive and profound market analysis*
- *We serve a wide array of customers , from individual entrepreneurs to Corporations and Foreign Investors*
- *We use authentic & reliable sources to ensure business precision*

Our Approach

Requirement collection



Thorough analysis of the project



Economic feasibility study of the Project



Market potential survey/research



Report Compilation

Who do we serve?

- *Public-sector Companies*
- *Corporates*
- *Government Undertakings*
- *Individual Entrepreneurs*
- *NRI's*
- *Foreign Investors*
- *Non-profit Organizations, NBFC's*
- *Educational Institutions*
- *Embassies & Consulates*
- *Consultancies*
- *Industry / trade associations*

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- *Ayurvedic And Herbal Medicines, Herbal Cosmetics*
- *Alcoholic And Non Alcoholic Beverages, Drinks*
- *Adhesives, Industrial Adhesive, Sealants, Glues, Gum & Resin*
- *Activated Carbon & Activated Charcoal*
- *Aluminium And Aluminium Extrusion Profiles & Sections,*
- *Bio-fertilizers And Biotechnology*
- *Breakfast Snacks And Cereal Food*
- *Bicycle Tyres & Tubes, Bicycle Parts, Bicycle Assembling*

Sectors We Cover Cont...

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- *Building Materials And Construction Projects*
- *Biodegradable & Bioplastic Based Projects*
- *Chemicals (Organic And Inorganic)*
- *Confectionery, Bakery/Baking And Other Food*
- *Cereal Processing*
- *Coconut And Coconut Based Products*
- *Cold Storage For Fruits & Vegetables*
- *Coal & Coal Byproduct*

Sectors We Cover Cont...

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- *Dairy/Milk Processing*
- *Disinfectants, Pesticides, Insecticides, Mosquito Repellents,*
- *Electrical, Electronic And Computer based Projects*
- *Essential Oils, Oils & Fats And Allied*
- *Engineering Goods*
- *Fibre Glass & Float Glass*
- *Fast Moving Consumer Goods*
- *Food, Bakery, Agro Processing*

Sectors We Cover Cont...

- *Fruits & Vegetables Processing*
- *Ferro Alloys Based Projects*
- *Fertilizers & Biofertilizers*
- *Ginger & Ginger Based Projects*
- *Herbs And Medicinal Cultivation And Jatropha (Biofuel)*
- *Hotel & Hospitality Projects*
- *Hospital Based Projects*
- *Herbal Based Projects*
- *Inks, Stationery And Export Industries*

Sectors We Cover Cont...

- *Infrastructure Projects*
- *Jute & Jute Based Products*
- *Leather And Leather Based Projects*
- *Leisure & Entertainment Based Projects*
- *Livestock Farming Of Birds & Animals*
- *Minerals And Minerals*
- *Maize Processing(Wet Milling) & Maize Based Projects*
- *Medical Plastics, Disposables Plastic Syringe, Blood Bags*
- *Organic Farming, Neem Products Etc.*

Sectors We Cover Cont...

- *Paints, Pigments, Varnish & Lacquer*
- *Paper And Paper Board, Paper Recycling Projects*
- *Printing Inks*
- *Packaging Based Projects*
- *Perfumes, Cosmetics And Flavours*
- *Power Generation Based Projects & Renewable Energy Based Projects*
- *Pharmaceuticals And Drugs*
- *Plantations, Farming And Cultivations*
- *Plastic Film, Plastic Waste And Plastic Compounds*
- *Plastic, PVC, PET, HDPE, LDPE Etc.*

Sectors We Cover Cont...

- *Potato And Potato Based Projects*
- *Printing And Packaging*
- *Real Estate, Leisure And Hospitality*
- *Rubber And Rubber Products*
- *Soaps And Detergents*
- *Stationary Products*
- *Spices And Snacks Food*
- *Steel & Steel Products*
- *Textile Auxiliary And Chemicals*

Sectors We Cover Cont...

- *Township & Residential Complex*
- *Textiles And Readymade Garments*
- *Waste Management & Recycling*
- *Wood & Wood Products*
- *Water Industry(Packaged Drinking Water & Mineral Water)*
- *Wire & Cable*

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