

# The Complete Technology Book on Bricks, Cement and Asbestos

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## About the Book

Bricks, cement and asbestos have major role in building and road construction. Construction industry is the largest consumer of material resources, of both the natural ones (like stone, bricks, cement, lime) and the processed and synthetic ones. Each material which is used in the construction, in one form or the other is known as construction material (engineering material). No material, existing in the universe is useless; every material has its own field of application. A brick is a block of ceramic material used in masonry construction, usually laid using various kinds of mortar. It has been regarded as one of the longest lasting and strongest building materials used throughout history. Brick is the most commonly used building material which is light, easily available, and uniform in shape and size and relatively cheaper except in hilly areas. Bricks are easily moulded from plastic clays, also known as brick clays or brick earth. Bricks can be moulded by any of the three methods; soft mud process, stiff mud process and semi dry process. There are various kinds of bricks; silica bricks, carbon bricks, magnesite bricks, dolomite bricks, alumino silicate bricks, refractory bricks, etc. Cement is a binder, a substance that sets and hardens independently, and can bind other materials together. The most important use of cement is the production of mortar and concrete the bonding of natural or artificial aggregates to form a strong building material that is durable in the face of normal environmental effects. Cement is made by heating limestone (calcium carbonate) with small quantities of other materials (such as clay) to 1450 °C in a kiln, in a process known as calcination, whereby a molecule of carbon dioxide is liberated from the calcium carbonate to form calcium oxide, or quicklime, which is then blended with the other materials that have been included in the mix. The resulting hard substance, called clinker, is then ground with a small amount of gypsum into a powder to make Ordinary Portland Cement, the most commonly used type of cement (often referred to as OPC). Asbestos is a set of six naturally occurring silicate minerals used commercially for their desirable physical properties. Asbestos mineral have an almost unique combination of physical and chemical properties. The most widespread modern uses of asbestos are in fireproof textiles, papers and boards and in brake and clutch linings for many kinds of vehicle and machinery. The three main kinds of asbestos which have had wide commercial exploitation are chrysolite, amosite and crocidolite. Some of the major contents of the book are moulded and ornamental bricks and blocks, including copings and lintels, cutters and rubbers, fireplace bricks, fire bricks and other refractory bricks mixing, tempering mills or wet pans, the addition of water, souring, de airing, shaping the bricks, bricks made of calcined clay or grog, silica bricks, transition temperatures of silica on cooling, alumino silicate bricks, magnesium silicate bricks (forsterite bricks), high alumina bricks, spinel bricks, developments in refractory brick, production of cement clinker, introduction, preparation of kiln feed, wet and semi wet processes, dry and semi dry processes, pyroprocessing: principal manufacturing processes, wet and semi wet processes, dry processes, semi dry (lepol) process, clinker cooling, refractories, electric power consumption , plastic moulding by machinery the machine moulding process, moulding machines, the wire cut or extrusion process, selection of machinery, power, individual machines, shredding machines , grids, feeders, proportioning, proportioning feeders, crushing rolls, high speed rolls, dressing the rolls, edge runner mills, tempering mills etc. The present book contains processes of different types of bricks making, cement manufacturing and production of asbestos. The book is very resourceful for new entrepreneur, existing units, professionals,

institutions related to building construction, research scholars etc.

## Contents

1. Moulded and Ornamental Bricks and Blocks, Including Copings and Lintels, Cutters and Rubbers, Fireplace Bricks, Etc.

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Mixing, Tempering Mills or Wet Pans, The Addition of Water, Souring, De-airing, Shaping the Bricks, Bricks Made of Calcined Clay or Grog, Silica Bricks, Transition Temperatures of Silica on Cooling, Alumino-silicate Bricks, Magnesium Silicate Bricks (Forsterite Bricks), High Alumina Bricks, Spinel Bricks, Refractory Heat-insulating Bricks, Developments in Refractory Brick

3.The Stiff-plastic Process of Brickmaking

The Simple Stiff-plastic Process, Preliminary Processes, Feeding the Mills, Crushing, Grinding Mills, Precautions With Edge-runner Mills, Selecting a Mill, Storage of Raw Clay, Elevating Ground Material, Screens, Sieves and Riddles, Tailings, Storage of Ground Clay, Mixers, Adding the Water, Stiff-plastic Process Brickmaking Machines, Precautions, Re-pressing, Transport, Drying, Kilns

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5. Glazed Bricks

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6. Production of Cement Clinker

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7. Grinding and Fineness of Cement

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Admixtures, Accelerators, Retarders, Water-reducing (Plasticising) Admixtures, Air Entrainment, Oilwell Cements, Calcium Aluminate Cement (Cac), Alkali-activated Slag and Aluminosilicate Cements, Calcium Sulfoaluminate Cements, Expansive and Shrinkage Compensated Cements, Sulfoaluminate-belite Cements, Practical Considerations

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11. The Mineralogy of Asbestos



Introduction, Definitions, Chemical Composition, Crystal Structures, Occurrences, Synthesis, Optical Properties, X-ray Diffraction Data, Electron Optical Characteristics, Non-asbestiform Amphibole and Serpentine Minerals

#### 12. Monitoring and Identification of Airborne Asbestos (Synopsis)

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#### 15. Plastic Moulding by Machinery

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