



CEMENT

## LAFARGE LICHTENBURG CEMENT WORKS

*where quality and sustainability are everyday priorities*

Lichtenburg Works is our flagship cement production site and is one of the largest and most technically advanced cement facilities in southern Africa.

It is strategically located close to Tswana Lime Quarry, a source of quality limestone, the primary raw material for cement.

The Works processes the cement clinker from which our plants have the capacity to produce over 3 million tons of cement per year.



bringing materials to *life*™

## PART OF THE LOCAL COMMUNITY

Lafarge is a major employer in the Lichtenburg area and, as such, we recognise our responsibility to respect the local community and to contribute to its economic growth and general well-being. We invest extensively in promoting the sustainable long-term development of cement production at Lichtenburg. This embraces a wide range of programmes such as:

- Capacity increase projects
- Maintenance of world-class operational standards
- Quarry rehabilitation programme in cooperation with the local Bodibe tribal authority
- Environmental management in compliance with the Lafarge Group's international best practices
- Provision of educational and training support for employees and the local community

## COMMITTED TO LICHTENBURG

Lafarge is one of the leading building materials suppliers in South Africa. In 2009, the company demonstrated its confidence in the country and the future of Lichtenburg by commissioning a R1,2 billion project to increase Lafarge's cement capacity by one million tons per year. The project was the largest investment the South African cement industry had seen for over two decades.

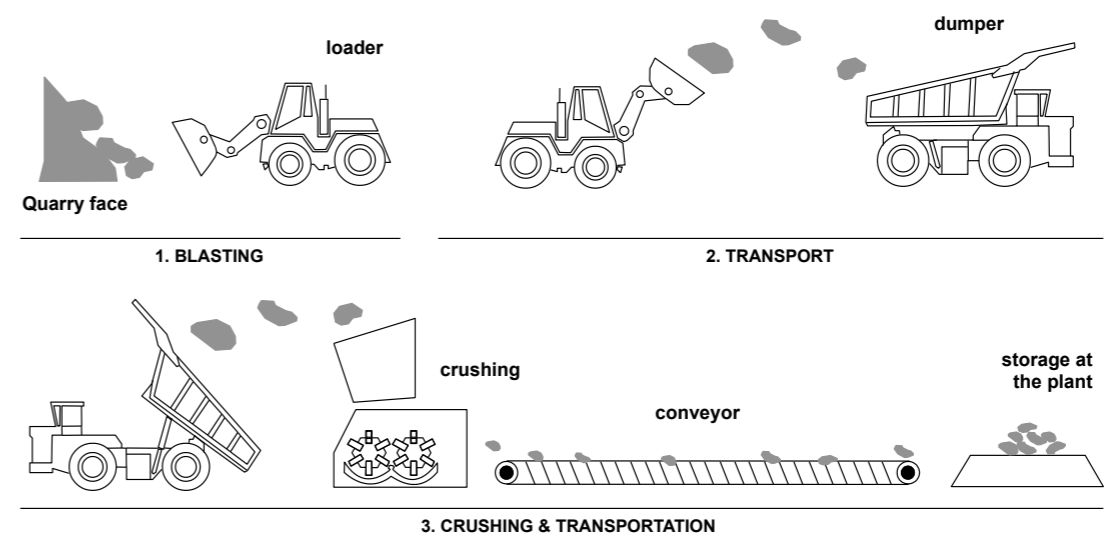
The investment had two components: a R750 million investment in a new kiln and clinker line at Lichtenburg, designed to supply high quality clinker to a one million tons of cement per year grinding station on a greenfield site at Randfontein, on the west side of Johannesburg.

*Lafarge's investment in South Africa is a long term strategic one and lays a platform for building lasting relationships with our customers.*



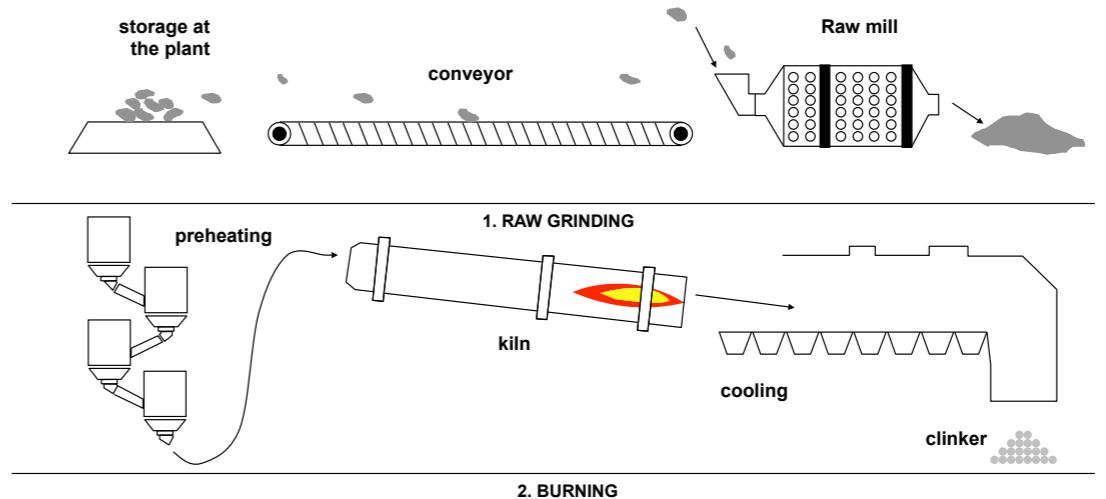
## THE CEMENT MANUFACTURING PROCESS

### QUARRY



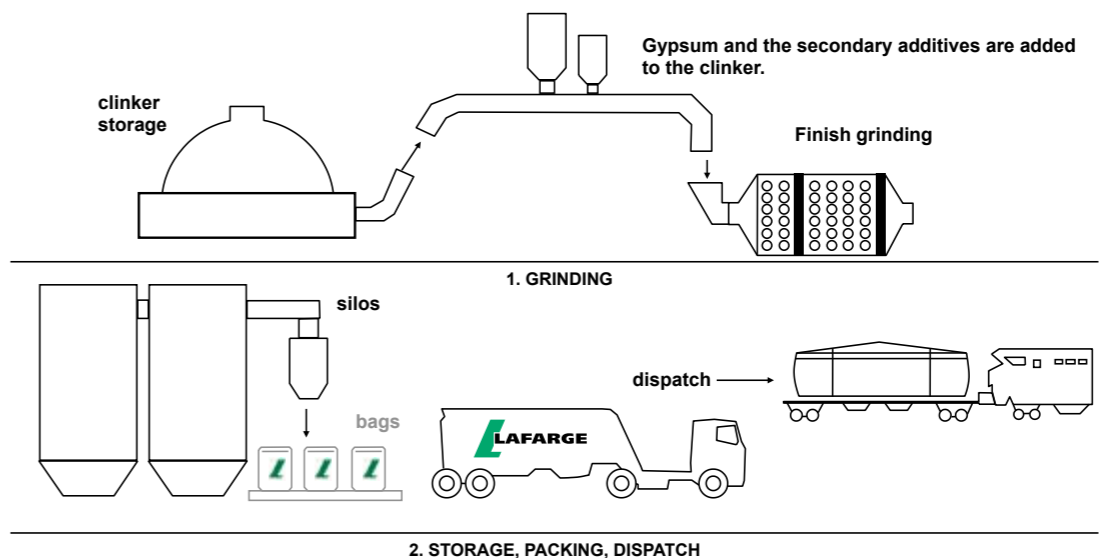
- 1. BLASTING:** The raw materials that are used to manufacture cement (mainly limestone and clay) are blasted from the quarry.
- 2. TRANSPORT:** The raw materials are loaded into a dumper.
- 3. CRUSHING AND TRANSPORTATION:** The raw materials, after crushing, are transported to the plant. The plant stores the materials before they are homogenized.

### RAW GRINDING AND BURNING



- 1. RAW GRINDING:** The raw materials are very finely ground in order to produce the raw mix.
- 2. BURNING:** The raw mix is preheated before it goes into the kiln, which is heated by a flame that can be as hot as 2000 °C. The raw mix burns at 1500 °C producing clinker which, when it leaves the kiln, is rapidly cooled with air fans. So, the raw mix is burnt to produce clinker : the basic material needed to make cement.

### GRINDING, STORAGE, PACKING, DISPATCH



- 1. GRINDING:** The clinker and the gypsum are very finely ground giving a "pure cement". Other secondary additives and cementitious materials can also be added to make a blended cement.
- 2. STORAGE, PACKING, DISPATCH:** The cement is stored in silos before being dispatched either in bulk or in bags to its final destination.

## INNOVATIVE PRODUCT RANGE

Lichtenburg has a proud track record for producing pioneering new cements. Innovation is the key driver that differentiates us from our competitors. Our aim is always to provide customers with innovative products and services offering better value than can be obtained elsewhere.

*We believe we have a responsibility in South Africa to use resources wisely and in the most environmentally-friendly manner possible in order to operate sustainably.*

Lafarge Cement was the first manufacturer in South Africa to offer a complete range of cements with lower CO<sub>2</sub> footprints, in a market that is increasingly aware of environmental issues.

### WHAT IS 'ENVIRONMENTALLY-FRIENDLY' CEMENT?

Lafarge Cement's innovative products have formulations that replace a proportion of the traditional cement content with a cementitious (behaves like cement) extender such as siliceous fly ash and/or slag. These are processed by-products of the power and steel industries. Using them in our cement:

- Uses less non-renewable materials
- Creates less greenhouse gas in the manufacture of cement
- Reduces landfill sites
- Enhances many properties of concrete



## A PROUD DAY

Lafarge Lichtenburg's new kiln line produced its first cement in July 2009 and has consistently operated at above design output. It was the most successful start up of any of the Group's projects throughout the world. The commissioning team's excellent achievement was recognised with the presentation of the Lafarge Group's Best Project Award.

### LOOKING BACK

Lafarge South Africa Holdings has its origins in a pioneering cement company, White's South African Cement Company, incorporated in England in 1913. The company established a cement works at Hennenman in the then Orange Free State and was in production the following year.

Shortly after the end of World War 2, White's decided to build a second works in response to the upsurge in demand for cement caused by the enormous increase in industrial activity in South Africa. A site for the new works was chosen at Lichtenburg and construction began in 1948. A year later two wet kilns were in full operation with a total annual clinker output of 300 000 tons. As demand continued to grow, more energy efficient processes were introduced and by 1985, the size of the works had grown seven-fold to over 2,4 million tons of finished product cement per annum.

Since then, Lichtenburg Works has pioneered the use of more environmentally-friendly cements to increase output capability by incorporating fly ash, the cementitious by-product of coal-fired power stations.



## GREEN BUILDING COUNCIL

Lafarge Cement was the first member of the building materials industry to join the Green Building Council of South Africa (GBCSA). It is a commitment to assist the Council in leading the transformation of the South African property industry to ensure that all buildings are designed, built and operated in an environmentally sustainable way. The aim is to allow all people in our country to work and live in healthy, efficient and productive environments.

## CURRENTLY LICHTENBURG PRODUCES:



### LE CLASSIC

A versatile 32,5MPa cement that provides the effective performance solution for a wide range of concrete and mortar applications. Designed to meet the needs of DIY and homeowner customers, Le Classic is packed in a convenient 25kg bag with the advantages of:

- No wastage - the smaller bag allows users to make a variety of mix quantities without leaving part-used 50kg bags of cement to go to waste
- Easier handling
- Safer to carry – less risk of back injury
- Easy mix calculations: exactly half the size of the traditional 50kg cement pocket

### FASTCAST

The benefits of a 52,5MPa high strength, rapid early strength cement, as used by the precast industry and construction contractors, are now available from local building materials stores. Packed in a 50kg bag, Fastcast features:

- Economy: less Fastcast is required per cubic metre of concrete than with lower strength class cements
- High rate of early strength development that gets any concrete job done quicker: saving time, saving money
- Increased output: allows quicker turnaround time of moulds and formwork
- Superior strength at all ages creates concrete for the most challenging applications
- An environmentally-friendly formulation

### BUILDCRETE

A product that gives customers extra value, Buildcrete CEM IV/B-V 32,5R is our versatile general purpose bagged cement developed to meet the needs of the reseller market. The product has a wide range of concrete and mortar applications, from domestic construction to large building projects. Our innovative formulation provides the early strength gain benefit of an 'R' classification.

Buildcrete is also the cost-effective solution for many soil stabilisation contracts as part of road construction projects.



### CIVILCRETE

To meet the needs of contractor customers involved in domestic construction or large building projects, Buildcrete is also supplied in bulk under the brand name, Civilcrete.

### POWERCRETE PLUS

Powercrete Plus is a Premium Technical cement for specialist applications, which combines excellent strength performance at all ages with versatility and enhanced durability benefits.

It is a CEM II/A-M (V-L) 42,5N premium composite cement, complying with the latest SABS and European standards. The extended CEM II formulation has a reduced carbon footprint, which contributes to meeting increasingly demanding environmental specifications in construction tenders.



### RAPIDCEM

Rapidcem CEM II 52,5N was the first cement in its strength class in South Africa to offer high early and ultimate strength, combined with the handling and environmental benefits from incorporating a quality fly ash in the formulation.



## CARING FOR OUR PEOPLE

**Health & Safety (H&S) is the No.1 priority at Lafarge. Our aim is to create the best work environment for the health and safety of our employees, while also helping to improve the well-being of the communities in which we operate.**

*We aim to live up to our responsibilities in the communities that we share. We work with our community stakeholders to be a better neighbour and partner.*

### HEALTH

**Healthy employees are considered to be the pillars on which the future prosperity of our company is founded.**

Over the last nine years, Lafarge has implemented a comprehensive health care programme for its employees, including a strategy and action plan for dealing with the HIV/AIDS pandemic. Highly regarded in the local industry, the programme is being used within the Lafarge Group to assist other developing countries.

### SAFETY

**The priority at Lafarge is the safety of the men and women who work with the Group. Already a leader in safety management in its industry, Lafarge aims to be recognised as a leading world-class industrial organisation for safety.**

**In line with the Group's position, Lafarge Cement in South Africa:**

- Continually strives to improve safety practices
- Aims to be among the best industrial companies for safety and caring for its people
- Enforces formal safety standards and encourages safe working behaviour
- Spares no expense or effort in its drive to eliminate fatalities and Lost-Time Injuries

### DEVELOPMENT

**Lafarge Cement views its employees as its most important asset and provides a range of support services to encourage each employee to develop their full potential.**

**Our development programmes include:**

- Africa Training Centre for accredited trades training
- GIBS leadership and management programmes
- Quality Department Southern Africa provides Chemical Engineering and Analytical Chemistry students with unparalleled opportunities for experiential training
- A range of bursary schemes for training and further education



## LICHTENBURG

## OUR FUTURE LIES WITH THE COMMUNITY

**We are a key part of the local community at Lichtenburg. We aim to be a good neighbour, helping to develop a stable viable society that will provide talented employees who will contribute to the sustainable success of our company. Some of the projects and ongoing partnership programmes with the community are:**

### SKILLS POOL FOR THE FUTURE

The Lafarge Africa Training Centre is based at Lichtenburg Works and has established an excellent reputation for artisan training. Courses are run for employees of Lafarge companies throughout sub-saharan Africa. In addition, an important role is offering Engineering Learnerships to historically disadvantaged members of the Bodibe community. The basis of the programme is:

- A three year contract to study one of the priority trades, which currently means studying to become a millwright or an electrician
- Spending six months of each year at the Africa Training Centre and six months gaining practical on the job experience in the Plant
- Provision of a monthly allowance together with personal protective equipment (PPE) and clothing, plus a tool box
- Bursaries for furthering studies at a tertiary education institution

### SCHOOLS GREEN TEAM INITIATIVE

Lafarge is sponsoring a recycling initiative with schools in the Lichtenburg area with prizes for the best achievements by pupils. The aim is to:

- Recycle glass, cans, paper and plastics
- Create environmental awareness
- Show pupils that they can make a difference
- Educate the community about greenhouse gases and carbon footprints

**By laying the foundation for the environmental programme, Lafarge aims to create a self-sustaining ongoing programme of environmental conservation activities within the community.**



## LAFARGE IN SOUTH AFRICA

Lafarge South Africa Holdings is a wholly owned subsidiary of Lafarge, the world leader in building materials and No 1 in cement. In South Africa, the company employs 2 740 people and operates through four main business units: Lafarge Cement, Lafarge Aggregates, Lafarge Concrete and Lafarge Gypsum.

The Cement Business Unit is one of the major cement producers in Southern Africa. The Business Unit's Lichtenburg Cement Works is the largest and one of the most technically advanced cement production facilities in the country. The company has an established cement clinker grinding station and cement distribution depot at Richards Bay on the north coast of KwaZulu-Natal. In addition, major cement distribution depots are located at Kaalfontein on the north-east side of Johannesburg and at Polokwane in the Limpopo Province.

With the commissioning in 2009 of the new kiln at Lichtenburg Works and Randfontein Grinding Station, the Cement Business Unit has a production capacity of over 3 million tons of cement per year.

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