

## Fact Sheet - Mineral Components

### Introduction

Producing cement centers on a chemical reaction in which mineral raw materials are converted to clinker at very high temperatures in a kiln. The clinker is then ground to a fine powder with around 5% of gypsum to make cement.

Clinker can be substituted by other materials, known as mineral components, to make different kinds of composite cement. Because strict quality standards are set for cement, the range of materials that can be used is limited, but includes both natural materials such as pozzolans (volcanic ashes) and limestone, and by-products of industrial processes. Commonly used by-products include fly ash from coal-fired power generation, blast furnace slag from iron production and silica fume from silicon production.

Use of mineral components in cement can confer improved properties on the final concrete product, such as improved long term strength, higher chemical resistance and lower heat of hydration. These benefits allow us to customize our products according to the specific needs of end users.

### Why the issue is important

The cement production process is both energy and resource-intensive and emits significant quantities of CO<sub>2</sub>, from fuel combustion as well as the chemical process.

Lowering the clinker content of cement reduces the amount of fuel required per tonne of cement produced, and replacing clinker with suitable substitute materials reduces the volume of virgin raw materials required. Use of mineral components in this way not only improves our resource efficiency, a cornerstone of our environmental policy, but can also reduce operational costs.

Replacing clinker with mineral components is also a significant driver of lower CO<sub>2</sub> emissions. It represents one of the best, technically proven approaches for reducing process emissions and is a key factor in our CO<sub>2</sub> reduction strategy.

## **Challenges for Holcim**

Increasing the use of mineral components is not without significant challenges. Sources of mineral components are often linked with other production processes remote from our production facilities. Thus, strategic sourcing and efficient logistics are required for long-term reliability of supply, and strict quality assurance systems are critical to ensure the consistent quality of our products.

Mineral components can also change the properties or application parameters of our final products and significant marketing efforts must often be undertaken to ensure their appropriate specification and use. Additionally, there are both technical and economic limits to the amount of mineral components that can be used in cement products. Therefore, the potential for clinker substitution will vary according to users' technical requirements, supply constraints and logistics.

## **Our commitment**

Mineral components are an integral part of the Holcim business and we are committed to increasing their use in cement production wherever possible. Compared to Ordinary Portland Cement (OPC), these composite cements are the 'green' alternative. By reducing the CO<sub>2</sub> intensity of cement manufacture and supporting our drive to improve the eco-efficiency of our production processes, the use of mineral components supports the Holcim commitment to sustainable development. At the same time, it provides our customers with the opportunity to purchase a more environmentally-friendly product. Around 60% of cement types produced by Holcim contain significant amounts of these materials.

Holcim has developed a range of tools addressing sourcing, logistics, manufacturing, marketing and product application to assist our Group companies to introduce and increase the use of mineral components in their markets. We are committed to working with our customers to develop product solutions for their needs.

Holcim also collaborates with mineral components suppliers to secure high quality, long-term supplies of these materials. In Germany, France, Canada, and the USA for example, Holcim Group companies have established partnerships with steel companies in which Holcim owns and operates part of the installation and monitors and optimizes the composition of the mineral component by-product.

## **Related publicly available information**

Holcim publishes Corporate Sustainable Development Reports (CSDRs) each second year, with performance information and data updated annually on our website. Together with additional fact sheets and other SD-related information, this can be found at:

[www.holcim.com/sustainable/](http://www.holcim.com/sustainable/)