bla members

Lhoist UK
Singleton Birch Limited
Tarmac

bla associate members

Specialty Minerals
Tata Steel
British Sugar

British Lime Association
Gillingham House
38 - 44 Gillingham Street
London SW1V 1HU
Tel +44 (0)20 7963 8000
Fax +44 (0)20 7963 8001
bla@mineralproducts.org
www.britishlime.org

Lime

the versatile mineral that supports our vital industries

An essential yet hidden mineral

Lime is a fundamental but often unseen ingredient for many key UK industries. Not only does it help the construction and manufacturing industries optimise their products but it also supports the drinking water, food and farming sectors with its versatile and unique characteristics. It is the only mineral product that can be used to produce steel and sugar in the same day!

In recent years, UK lime manufacture has been faced with many challenges. The economic downturn has caused a decline in UK construction and manufacturing, which has impacted on the demand for lime. At present, the industry is suffering under the burden of accumulating energy costs and environmental taxes, which overseas competitors do not face. The threat of lime manufacture being driven abroad is becoming more apparent, as the industry struggles to sustain UK lime production amongst growing cost pressures.

In spite of these challenges, the industry is strongly committed to enhancing its sustainability credentials and reducing its environmental impact. Lime plants reduce and recycle waste, create habitats for biodiversity and support local people by providing them with jobs. What the industry needs now is support and investment from Government to encourage and enable our industry to continue supplying UK lime in the long term to the wide ranging sectors that need it.

A traditional mineral for the modern world

Lime is a highly important and diverse substance, due to its alkalinity and ability to purify and neutralise. It has been used throughout history and lime mortar was even a key building material in the construction of the Roman Empire!

It has a diverse range of uses and is often an undetected ingredient in many important processes. When we turn on a tap, use our cars, add sugar to our tea or even write a shopping list, we do not consider the ingredients that have gone into these everyday items. Lime helps to provide us with all of them.

Even though it was discovered in ancient times, today it is manufactured using the latest industrial processes. Lime is essential to modern day society.

Importance to the UK economy

Lime is a strategically important product for the UK. There is a secure and long term supply of its raw material readily available, which can ensure UK supply and demand is self-sufficient.

Lime products are also exported internationally. In 2016, more than 250,000 tonnes of lime products were exported to areas as diverse as South East Asia and Africa, as well as within the EU. Since 2009, lime exports have grown by 82%, indicating UK lime's increased global importance. Furthermore, many materials that use lime in manufacture, such as steel, are also internationally traded and therefore lime has both direct and indirect value to the UK.

This illustrates how important lime is as both a local and global commodity.

You may not be aware of it, but lime is all around you

It purifies sugar

Is used in the production of toothpaste

It's an additive for engine oil

It controls water pH in fish farming

Is used in the production of chicken feed

It makes tap water safe to drink

It keeps fruit fresh

It cleans gases produced by Energy from Waste plants

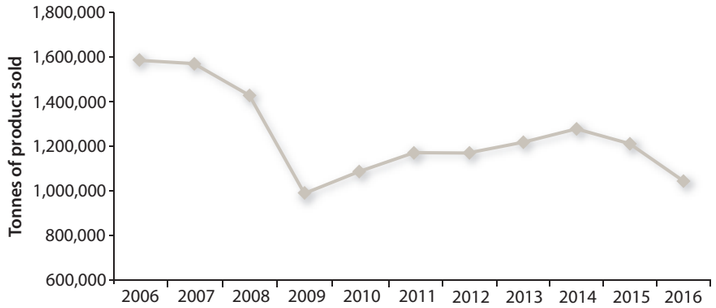
Challenges for UK lime production

THE ECONOMIC RECESSION

In the past, the UK lime industry has experienced a dramatic fall in production, as both the construction and manufacturing industries have been severely affected by the economic downturn. This has led to a large decline in market demand for lime products and the permanent loss of some of the industry's biggest customers. In 2006, total sales peaked at around 1.6 million tonnes. In 2009, total sales were below 1 million tonnes and at present, are showing no signs of recovery to pre-recession levels.

The challenge now is to reinvigorate the market and achieve higher sales once more. Although exports of UK lime are rising and this is encouraging, the industry is still in great need of economic growth.

BLA total lime sales (tonnes of product corrected for oxides) 2006 - 2016



INCREASING ENERGY COSTS AND SECURITY OF SUPPLY

As an energy intensive industry, the cumulative impact of ever-increasing environmental taxation has caused the cost of energy provision to become vast. Despite the industry's commitment to energy savings and the 25% reduction in electricity consumption achieved between 2006 and 2016, the cost of electricity has actually risen during the same period.

As a predominant gas consumer, it is essential that gas supplies remain consistent and secure for UK lime and available at a cost which maintains the competitiveness of UK manufacturing. Safely exploited 'unconventional gas' could provide a cost effective solution to maintaining supply for the UK, which is so crucial for the future of home-grown industry as a whole.

LOSS OF UK MANUFACTURE

The cumulative burden of growing financial pressures has the potential to impact upon the UK lime industry's global competitiveness. Furthermore, the industry is at risk of losing production permanently to other countries, where production costs are lower and not subject to the same regulatory cost burden as the UK.

Should this become more widespread, lime products would be imported from overseas sources in order to sustain supply to the UK industries. This would mark the loss of an historical, essential and local mineral product, which is of great importance to both society and the UK manufacturing industry.

Lime products in life

ENVIRONMENTAL PROTECTION

Lime is fundamental to promoting the healthy environment we live in. It is a diverse chemical that can make gases, solids and liquids less harmful to the natural environment.

Being an alkali, lime is able to neutralise both natural and industrial acids. It can create inert solid wastes, which can be either disposed of or recycled to allow other natural resources to be preserved. Lime treatment also ensures wastewater is clean enough to be returned to the natural environment. This means it can be used to treat both industrial effluent and sewage.

It is also used to clean waste gases from power stations and manufacturing processes; ensuring compliance with strict environmental regulations on air emissions. Its growing use in UK Energy from Waste plants is essential to cleaning the combustion gases generated from the process and has facilitated this technology in becoming a viable alternative to sending waste to landfill.

MANUFACTURING

Lime proves to be a highly diverse ingredient for the manufacturing industry. It is fundamental to steel manufacturing; an industry which forms the basis of buildings, transportation, infrastructure and electrical equipment across the globe. In a steelworks, lime is used to remove impurities to give steel the correct chemical composition. For each tonne of steel, up to 70 kg of lime is required. It is not possible to make steel without lime.

Lime is also used in plastic manufacture, to remove water from material such as PVC and rubber before setting. It can also be used to make fillers and coatings for paper.

Precipitated Calcium Carbonate is made from lime and is found in a range of pharmaceuticals, including dietary supplements and antacids. It is also used in everyday items including cleaning products, washing powder, cosmetics and toothpaste.

DRINKING WATER AND FOOD

Lime is an essential, although often unnoticed additive to the tap water we rely so heavily upon. It regulates the pH levels, controls water hardness and helps to remove impurities from the raw water. This ensures it is both safe to drink and has a pleasant taste when it reaches our taps.

The use of lime in chicken farming provides an important food supplement to strengthen egg shells and give them the perfect crack! It is also used in fish farming to control pH and create optimum water conditions.

Lime is a crucial ingredient for the sugar industry and is used to purify the sugar beet. It can also be used to keep fruit fresh once it has been picked, by absorbing local carbon dioxide and maintaining its freshness for longer.

CONSTRUCTION

Lime is one of the world's oldest building materials and lime mortar was used in Roman times. Today, it is a useful tool for restoration and can be applied to historical buildings as part of the renovation process, preserving their cultural heritage for many years to come. It is also utilised in modern day buildings such as houses and offices, due to its beneficial properties including breathability and flexibility.

Additionally, lime is an important additive to prepare land for construction and is used extensively to stabilise soils. Lime can dry out waterlogged or clay soils and treat contaminated soils in situ. This makes the land a suitable base for roads, housing, sports grounds and other construction development. Hence, it allows development on brownfield land, as well as eliminating the need to transport the existing soil off-site for treatment or bring in primary materials as a soil replacement.

Our contribution to sustainability

ENVIRONMENTAL IMPROVEMENTS

The lime industry has made significant progress in both sustainability and emissions reduction, and our successes are published in our annual sustainable development report (see www.britishlime.org/sustainability). This has been accomplished by upgrading manufacturing equipment, investing in emissions abatement, driving efficiency and researching alternative energy sources.

Looking ahead, the sector is committed to improving environmental performance even further and finding innovative ways to make lime production more sustainable. However, this can only be achieved through sector-wide investment. This is where support from Government is required, to help create the economic conditions and regulatory certainty needed for investment and competitiveness of the UK lime industry. This would enable this essential industry to thrive and maintain the high number of strategic and diverse industries it currently supplies.

HEALTH AND SAFETY INITIATIVES

The health and safety of employees and contractors is a top priority for UK lime producers. They work together and collaborate to share best practice and experience throughout the industry, to achieve the target of zero incidents.

The sector is also part of the Mineral Products Association (MPA), which was the first trade association to sign up to the Health and Safety Commission's Hard Target initiative.

ENGAGING WITH THE LOCAL COMMUNITY

Lime production facilities are located in rural areas, close to lime's raw material. The plants provide jobs for the local population both directly and indirectly through local supply chains. Lime producers also carry out community liaison initiatives and quarry restoration schemes to ensure they engage with and contribute to the local community.

NURTURING LOCAL BIODIVERSITY

Ongoing, large-scale restoration schemes ensure lime production provides a positive impact on the natural environment too. Examples of this include planting woodland, establishing wildflower meadows, undertaking grassland management projects, introducing wetland habitats and hedgerow cultivation. These habitats encourage biodiversity to flourish and will leave a lasting legacy on the landscape, which will remain for generations to come. This all contributes to the wider mineral industry's habitat creation work and its unique benefit to UK Biodiversity Action Plan targets.

From the ground

Lime is made from indigenous limestone or chalk rock, which is found in abundance in many regions of the UK, including the Peak District, Somerset and Lincolnshire.

Limestone and chalk are both sedimentary rocks and are chemically known as calcium carbonate. When crushed or ground, they are widely used as aggregates and building products.

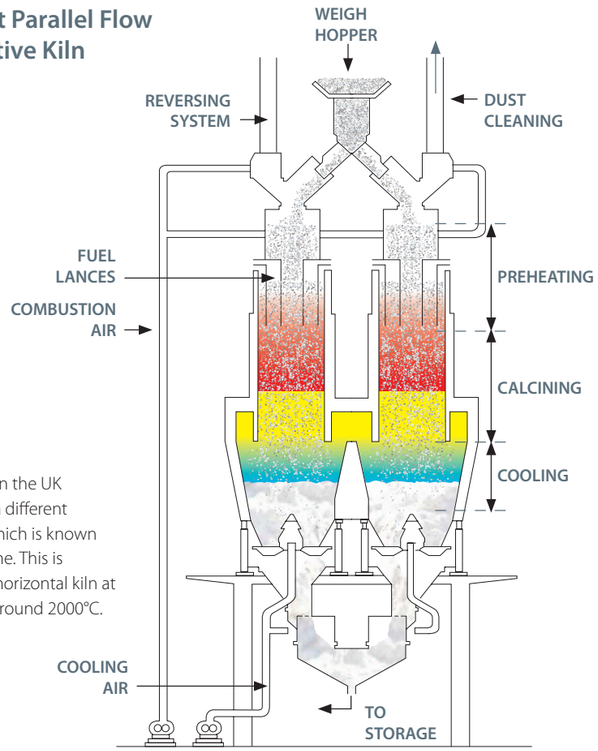
As a raw material, calcium carbonate can also be processed to form lime. When the rock is heated in a specially designed kiln to over 900°C, a chemical reaction occurs and creates calcium oxide, otherwise known as lime.

The kiln process

Lime is produced in either a horizontal or vertical kiln. One example of a vertical kiln is the Twin Shaft Parallel Flow Regenerative kiln shown opposite.

These kilns have two inter-connected vertical shafts, which are fired in sequence to temperatures between 900°C and 1400°C to calcine the rock. They are generally fuelled by natural gas and produce high reactivity, high purity lime.

Twin Shaft Parallel Flow Regenerative Kiln



One producer in the UK manufactures a different type of lime, which is known as dolomitic lime. This is produced in a horizontal kiln at temperatures around 2000°C.

Lime Plants

BLA members

Factory/Site Owner	Location	
Lhoist UK	Buxton	1
	Thrislington	2
	Whitwell	3
Singleton Birch	Melton Ross	4
	Batts Combe	5
TARMAC A CRH COMPANY	Hindlow	6
	Tunstead	7

Associate members

Factory/Site Owner	Location	
Specialty Minerals	Birmingham	8
TATA STEEL	Shapfell	9
BRITISH SUGAR	Cantley	10
	Wissington	11
	Newark	12
	Bury St Edmunds	13

The lime manufacturing process

1 Extraction

In the quarry, explosives are used to break up limestone or chalk rock. This can dislodge up to 30,000 tonnes of rock in one explosion.

The broken rock is picked up at the quarry face by mechanised excavators and loaded into dump trucks or on to conveyors for transportation to the primary crusher. The truck pictured has a payload of over 90 tonnes.

2 Crushing and screening

Primary crushing of the rock is followed by secondary crushing and screening to separate the rock into a variety of sizes.

3 The kiln process

To produce lime, the rock is heated in a kiln. This process is explained in more detail in the diagram above.

4 Storage and delivery

Finished lime products may be bagged or stored in silos for delivery to the customer by road, rail or sea.