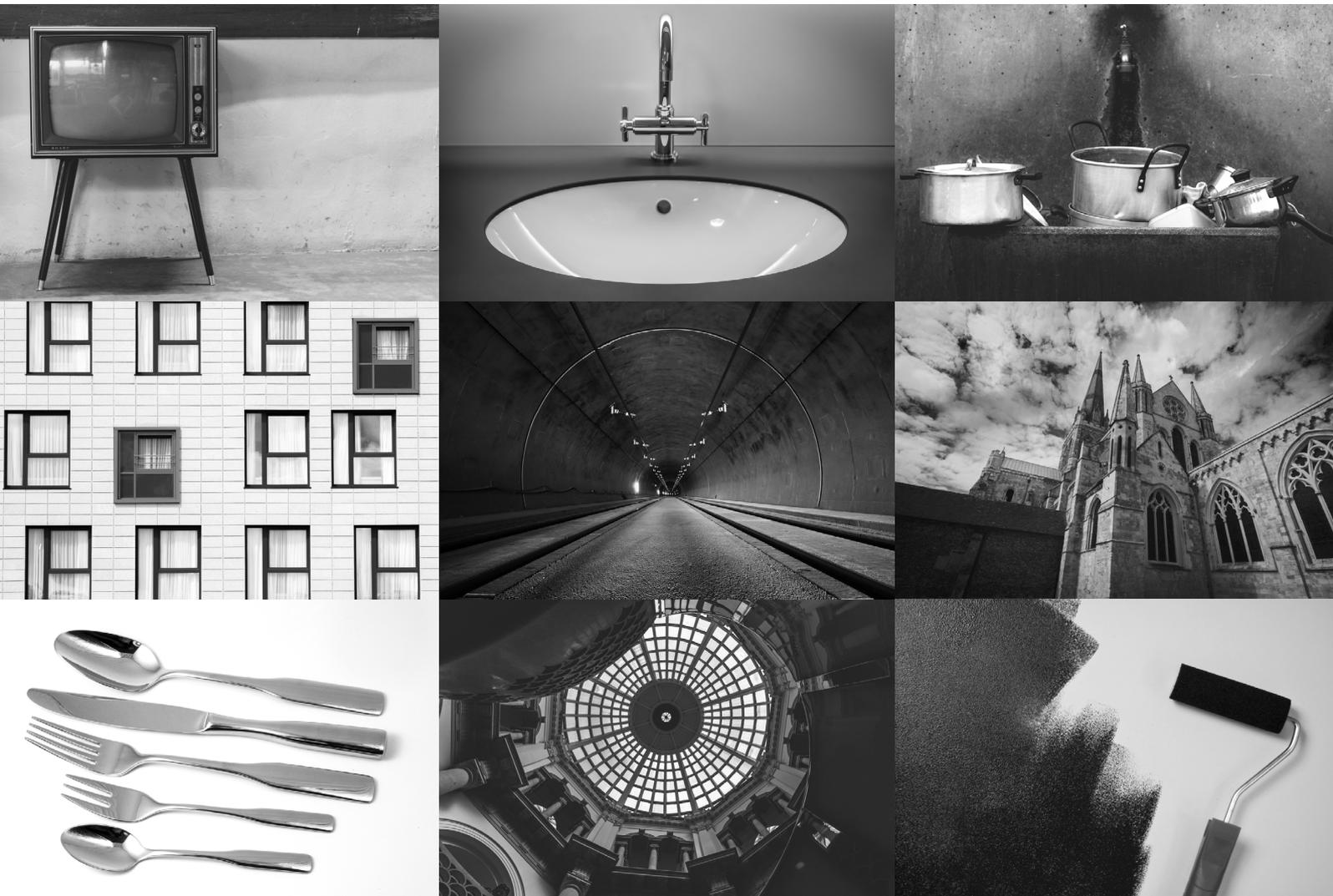




NATIONAL **MINERALS** WEEK 2016

How Minerals Keep Us Comfortable



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What's it all about?

Minerals have provided some of the oldest building materials known to man, many of which are still in use today. As well as providing shelter to protect us from the elements, minerals also make our lives more comfortable by contributing to the daily items we use, including furniture and decorative materials making our living environment more pleasant.

In helping to meet our basic human needs, minerals have enabled people to create family and social networks. Having buildings to meet and gather in means that our lives have been enriched through forging meaningful relationships with other people.

Used in the construction industry, **Calcite** is the principal constituent of chalk, limestone and marble, which have been used as blocks and mortar for centuries. It is still used in cement and concrete ensuring buildings are stable and solid. It's also used in paints and as an abrasive, helping to keep our homes clean.

Most notably used as a modern construction material, **gypsum** is perhaps best known as the basis for the production of plasterboard to create internal walls. However, its use as a building material can be traced back to ancient Egypt.

Similarly, **clays** have a long tradition of being used to produce bricks, cement and mortar as well as all sorts of earthenware and ceramics. **Kaolin** (or China Clay) is particularly valued for its whiteness and fine particle size for use in ceramics. From tableware to the bathroom sink, clays help to make our homes more convenient.

Mineral extraction in the UK has a £15 billion turnover and 16% of the whole economy can be directly attributable to minerals*. Whilst identifying the total value of minerals to the transport sector is a challenging task, we do know that:

- Cement, lime & plaster accounts for £0.1 billion in gross value add (GVA) to the economy
- Clay building materials generate £0.3 billion GVA
- Dimension stone generates £0.3 billion GVA
- Concrete products generate £1.7 billion GVA
- Ceramics generate £0.2 billion GVA
- Other construction activities generate £35.5 billion GVA

*Figures from CBI The UK Minerals Extraction Industry report February 2016, prepared by Minerals Products Association (MPA)
http://www.mineralproducts.org/documents/CBI_UK_Mineral_Extraction_Industry_2016_2.pdf

The use of **silica** (or silicon) for glass production goes beyond windows to include special glass fibres used in fibreglass and glass wool for insulation as well as the optical fibres required for high speed communication services, providing our homes with broadband and satellite TV services.

Glass and ceramics require **feldspar** as part of the production process. The chemical composition of feldspar helps reduce the melting point of glass, allowing viscosity to be better controlled and in ceramics allows the materials to better work together, improving appearance, strength and durability of the material.

Other minerals we encounter in our homes include **Manganese**, essential to steel production and a key component of low-cost stainless steel. It is also used as an alloy with aluminium to resist corrosion. This makes manganese common in the home through domestic appliances (such as washing machines), kitchen utensils and containers for food and drink.

Antimony helps keep us safe from fire, it's used to make a flame retardant in fabrics and plastics, particularly children's clothes and toys. One of its more unusual applications is to help remove microscopic bubbles in glass used for TV screens.

Key Mineral Facts

Antimony



A hard, brittle metal, silvery in appearance. As a poor conductor of heat and electricity, it is alloyed with other metals to improve strength and hardness. When alloyed with lead it is used in batteries. China is responsible for over 80% of the world's supply.

Calcite\Calcium



Exists as a mineral and as calcium carbonate in chemical form. It has a diverse range of applications from construction to medicinal. Calcite is the second most abundant mineral on earth and is found in most geological settings. Limestone and chalk are amongst the most quarried materials in the UK.

Clays



Finely grained natural rock or soil material and one of the oldest building materials on earth, also used to produce earthenware and ceramics. Clays typically form over long periods, resulting from chemical weathering of rocks. Colours range from white to deep orange-red dependant on mineral & water content.

Feldspar



Used for glass making and is second only to clays in the manufacture of ceramics. Key country producers are Turkey, China and Thailand.

Gypsum



Occurs naturally in sedimentary rock formations and found in over 80 countries. Leading country producers are China, Iran and Thailand.

Kaolin (China Clay)



Valued for its whiteness and fine particle size, its main uses are in the production of paper and ceramics. World producers are USA, Germany and Bangladesh.

Manganese



Essential to iron and steel production and alloys with aluminium for improved resistance to corrosion. China, South Africa, Australia and Gabon are dominant country suppliers.

Silica\Silicon



Most commonly found in quartz and is the major constituent of sand. Leading country producers include China, Russia, USA and Norway.