

Industrial Applications of Minerals

- What we do not grow or hunt for, we must take from the Earth (Earth's Treasury)

- Acknowledgements

<http://www.bgs.ac.uk/>

<http://www.platinum.matthey.com/>

Food and drink

Agriculture

- Phosphate rock, potash and lime are used in agricultural fertilisers and many other products derived from natural minerals are used to improve soil.

Food

- Salt is added to food during preparation, and other mineral products may also be included. Calcium carbonate, for example, is used in bread, cakes, soups and cereal, and some food additives are manufactured using natural minerals. Sand is used to filter water, as is diatomite, a silica mineral formed from fossilised algae. Diatomite and bentonite clay are both used to clarify drinks, such as beer, fruit juices and wine.

Packaging

- Food and drink packaged in cans made from aluminium or steel, or in glass made from silica sand.

Utensils

- Plates may be ceramic and made from clay, glasses are made from silica sand, and cutlery from metals — usually aluminium or steel. Cookers are partly made from metals and pans are generally made from aluminium, steel or copper.

Construction

- About 60 tonnes of aggregate are used to build an average house in the UK.

Rocks and minerals are used in almost all buildings for example:

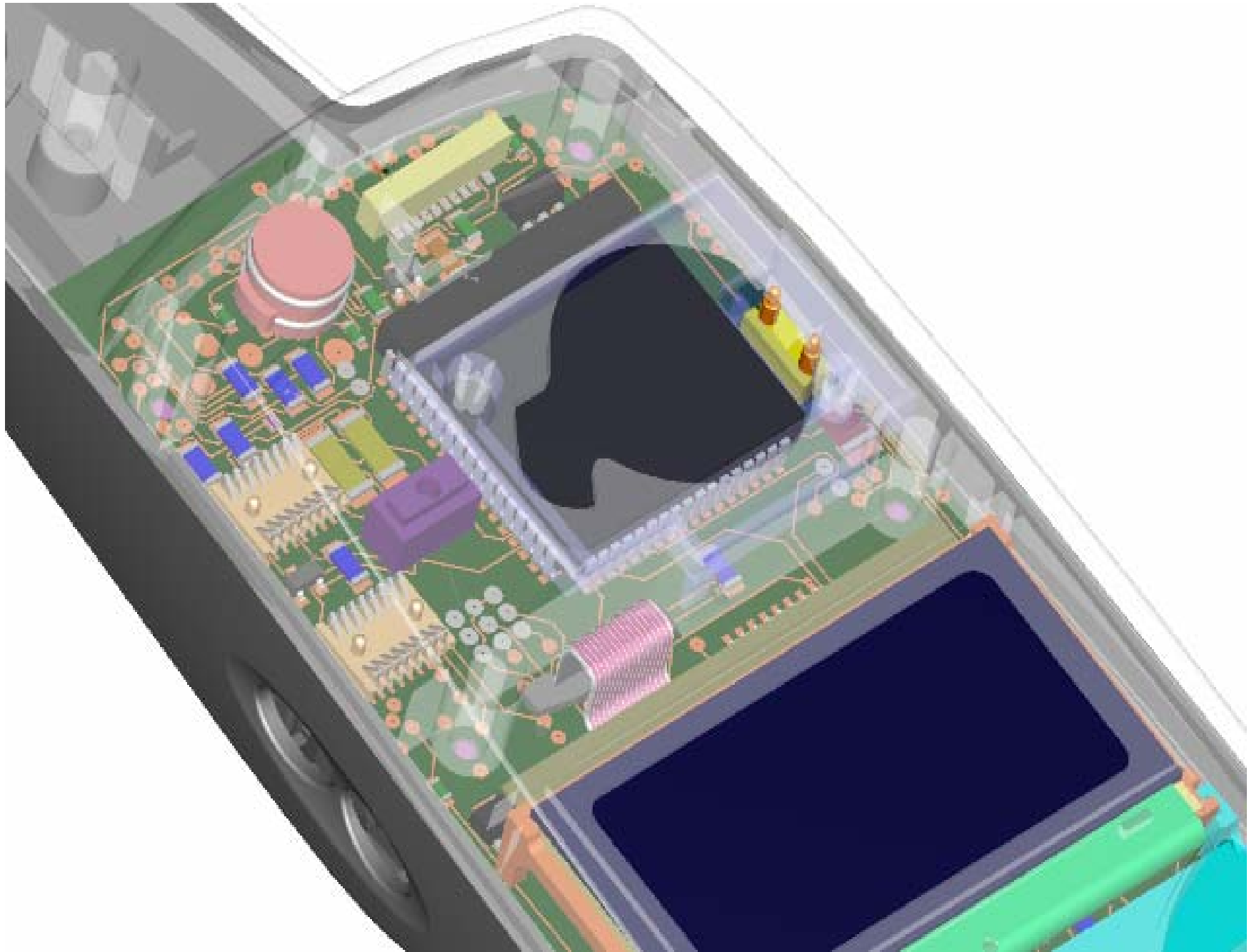
- iron (as steel) in the framework of large buildings,
- clay in bricks and roofing tiles,
- slate for roofing tiles,
- limestone, clay, shale and gypsum in cement,
- gypsum in plaster,
- silica sand in window glass,
- sand and gravel and crushed rock as aggregates for fill and in concrete,
- copper for plumbing and wiring,
- clays for bathroom fixtures and fittings and tiles,
- paint may include pigments, extenders and fillers from mineral sources.
- dimension stone for external cladding and decoration

Energy and Transport

- **Energy** e.g. uranium
- **Transport**

Every journey made depends on minerals, whether by car, train, plane, boat or foot. Aggregates (crushed rock and sand and gravel) are used for road and footpaths, while railway tracks made from steel are laid on aggregate. Airports, railway stations and shipping ports all use large amounts of construction minerals to build them.

Cars, trains, planes, boats and bicycles are all made using metals such as steel and aluminium. Aircraft engines depend on mixtures of metals called alloys which are made from metals including nickel, cobalt, chromium, aluminium and titanium. In every car there are over 15 000 components made from minerals.



Technology and communications

- Computer and mobile phone technologies require a wide range of minerals and metals.
- To take a mobile phone as an example, roughly 50% is plastic, 15% glass and ceramics, 15% copper and 20% a cocktail of the following: C, Au, Ag, Ni, Cd, As, Pb, Hg, Mn, Li, Zn, Sb, Be, Bi, In, Nb, Ta, Sn, Co, Pt, Ir, Re, Pd, Rh, Ru, Cr.
- Pd is used in multi-layer ceramic capacitors
- Coltan (columbite-tantalite ore) Nb, Ta, widely used in mobile phones
- Future uses of minerals in nanotechnology etc etc ad inf.