ROCK FILES

Silver

Silver jewellery

Like gold, silver is an attractive and valuable metal. Silver has been used for thousands of years to make coins, ornaments and jewellery. It has provided riches for many a civilization, including the ancient Greeks, the Romans, the Tang Dynasty in China, the mediaeval Saxons, and the Spanish and Portugese in the 16th century.

Today we tend to think of silver only as a source of objects such as cutlery, teapots and jewellery, but it actually has many other uses. In 1813 the first photographic image was made using silver nitrate, and today the main use for silver is in developing film – for photographs, movies, x-rays and television. Imagine life without silver!

PROPERTIES

- Silver is the best conductor of heat and electricity.
- Silver is strong.
- Silver is malleable and ductile (can be beaten and drawn into a wire).
- Silver can endure extreme temperature ranges.
- Silver is a very good reflector of light.
- Silver has the symbol Ag (from the Roman word Argentum).
- Silver is harder than gold but softer than copper.
- Silver tarnishes easily, as you will see if you look at some neglected silverware!
- Silver is shiny.

USES

USE	DESCRIPTION
Film	About 1/3rd of all silver produced is used in photographic film and paper (mostly as silver bromide), including print, TV, X-ray and video film. About 5000 colour photos can be taken using only one ounce of silver!
Electrical	As silver conducts electricity so well (and it also won't corrode and therefore overheat and cause fires) it is used for switches, contacts and fuses in almost all electrical appliances, from microwaves to dishwashers, TVs to PCs. A typical washing machine contains 16 silver contacts!
Soldering	Soldering (often with an alloy of silver, brass and zinc) and welding account for large quantities of silver usage, due to its strength and relatively high melting point.
Defrosting	As silver conducts heat so well, it's used in car rear-window de-misting lines, transferring heat onto the window glass to clear it of frost.
Jewellery and silverware	Being malleable, ductile and attractive, silver has been used for jewellery and other ornamental pieces since before Roman times. Often it is mixed with copper (7.5%) to make a tougher alloy called 'sterling silver'.
Mirrors	Because silver is the most reflective material known, it is used in mirrors.
Health	Silver is used in some tooth fillings, to make a substance that treats burns, as a wire to keep broken bones firm while they heal, in thin plates for bone replacement, for surgical drainage tubes, and to purify water from bacteria.
Money	Silver was one of the earliest metals used to make coins, although today only Mexico has any silver in its coins. In Australia, the last coin to contain silver was the 1966 fifty-cent piece, made from 80% silver and 20% copper. 'Silver' coins are generally now made from nickel and copper.
Batteries	Silver batteries are more powerful, smaller and longer-lasting than normal batteries and are therefore especially useful in hearing aids, space satellites and portable TV cameras.

Some of the special uses of silver

SOURCE

Silver plays an important part in Australia's history, as the first mine developed here was a silver-lead mine near Adelaide. Two early and famous discoveries of silver in Australia were at the Broken Hill deposit in NSW (1883) and the Mt Isa deposit in Queensland (1923). Within three years BHP was producing a third of the world's silver, along with lead and zinc, and today the Mt Isa region (including the new Cannington mine) is the largest silver producer. Australia ranks in the top six silver producers in the world.

Almost all of Australia's silver-producing mines are underground. Silver-bearing rock (ore) is blasted, scooped up by front-end loaders, taken in large trucks to underground crushers, then hoisted to the surface up one of the shafts or taken by truck up a spiral road. At the surface, the ore is crushed further, mixed with water and other special chemicals to remove the waste rock and float the silver ore, so it can be skimmed off, then heated and treated in other ways to purify the silver and separate it from the lead.

Major silver-lead-zinc mines in Australia

AMAZING FACTS

- The ancient Greeks mined silver at Laurium from the 6th to the 2nd century BC, enabling them to prosper enormously and to build such magnificent structures as the Parthenon and Temple of Poseidon.
- Silver daggers (alloyed with copper) were found on Crete and date back to the early Minoan period at least 2000 BC.
- The Rio Tinto mine in Spain produced so much silver that the Phoenicians are said to have thrown away their ships' iron anchors and made new ones out of silver, just so they could load more silver on board!
- In the 16th and 17th centuries, Spain colonised Central and South America, and eventually there was so much silver being mined there that its value went down, and gold overtook it as a basis for coinage.
- In the early 1900s, a silver mine in Canada contained a lump of ore 100 feet long and 60 feet deep, yielding 658,000 oz of silver – they called it 'the silver sidewalk'.
- Silver is being recycled more and more these days, using scrap photographic materials, electrical equipment, jewellery, chemicals and silverware.

FOR FURTHER INFORMATION

- Fact Sheet: Silver, Minerals Council of Australia and Australian Geological Survey Organization, 1999
- www.agso.gav.au/education/factsheet/