



Photo courtesy of www.costellos.com.au.

When the word 'gemstone' is heard, most people think first of diamonds, famous for their ability to sparkle so beautifully in light. The ancient Greeks believed that diamonds were splinters of stars fallen to the Earth.

The first recorded history of diamonds dates back 3,000 years to India, where they were used in two ways - for decoration, and as a talisman to ward off evil or provide protection in battle.



Until the 15th century only kings wore diamonds but in 1477 that changed when the diamond took on a new role. The Archduke Maximilian of Austria had a diamond set in a ring which he presented to Mary of Burgundy, thus beginning the tradition of giving a diamond as a promise for marriage.

PROPERTIES

- Diamonds are made of pure carbon in a crystallized form.
- Diamonds are an excellent refractor of light.
- Diamonds are usually clear, although some are pink, golden or blue.
- Diamonds are the hardest mineral (rated 10 on Moh's scale of hardness from 1 - 10).
- Diamonds have a very high melting point of 4000⁰C (2.5 times that of steel).

USES

Diamonds of good quality are used in jewellery (rings, earrings, necklaces, brooches and bracelets).

Very small and poor quality stones are called 'industrial diamonds' and are used as the abrasive material on cutting wheels and drill bits, machine bearings, glass cutting implements, and grinding and polishing powders.



Diamonds in jewellery - Photo courtesy of www.costellos.com.au.



Industrial diamonds

SOURCE

Billions of years ago, forces of heat and pressure transformed (crystallized) carbon into diamond deep below the surface of the Earth. When certain types of magma thrust upwards and broke through the Earth's surface (as lava) they cooled to form volcanic pipes of kimberlite or lamproite rocks where diamonds can be found today.

For hundreds of years India was the world's source of diamonds. However, as that supply started to dwindle, there were smaller finds in Borneo and Brazil. The discovery of a large diamond deposit in South Africa in the mid-1800s helped to meet the world's increasing appetite for these gems.

Although diamonds were discovered in eastern Australia at the same time, it was not until the late 1970's that geologists found the Argyle pipe in the remote Kimberley area of Western Australia: the richest diamond deposit in the world. Argyle is the world's largest volume producer of diamonds (supplying a third of the world's diamonds every year, including the rare pink diamond). Some diamonds are also mined in the NT and overseas in South Africa, Botswana, Zaire and Russia.



The Argyle Mine on the Kimberley Plateau of WA

Approximately 250 tonnes of ore must be dug from the ground to produce a one carat (200 mg) polished diamond of gem quality. Diamond mines are open-cut or underground. The ore is blasted with explosives then loaded onto trucks for transport to a processing plant where it is cleaned and sorted. X-rays are used to identify the diamonds, as these fluoresce (glow) but the surrounding minerals do not.



Diamonds are then sorted by hand. A rough diamond looks like a pebble, but through careful and skilled cutting and polishing, it becomes a sparkling gem that reflects light brilliantly.

AMAZING FACTS: THE BIGGEST DIAMOND

- The biggest and most precious diamond ever found was discovered in 1905 by Frederick Wells, Manager of the Premier Diamond Mine in South Africa. As he walked along the edge of the open pit mine he saw something glinting in the sun so he dug it out using his pocket knife.

- What he found was a diamond crystal as big as his fist, more than three times larger than the biggest diamond ever seen! It weighed 3,106 metric carats, or about 620 grams and was perfect - colourless, transparent and flawless.
- Called the Cullinan Diamond, after Thomas Cullinan (founder of the Premier Diamond Mining Co.) it was bought by the Transvaal government and presented to King Edward VII on his 66th birthday.
- Then in 1908 it was entrusted to the famed House of Asscher in Amsterdam for cutting. Asscher spent many anxious weeks planning how to cleave the gem. If his calculations were not correct, the priceless diamond could shatter into a million pieces! But the gem was cleaved perfectly, into 105 faceted diamonds.
- The largest of these is the Cullinan I, which is set in the British Royal Scepter. The Cullinan II is set in the base of Britain's Imperial State Crown. Both pieces are housed in the Tower of London, along with Britain's other Crown Jewels.

FOR FURTHER INFORMATION

- Contact your State/Territory Chamber of Mines or Minerals Council.
- Fact Sheet: Diamond, Minerals Council of Australia and AGSO, 1999
- Diamonds, Minerals of Western Australia Series #5, The Chamber of Minerals and Energy of WA Inc.
- www.diamondaires.com
- www.amnh.org/exhibitions/diamonds
- www.costellos.com.au/diamonds/history.html