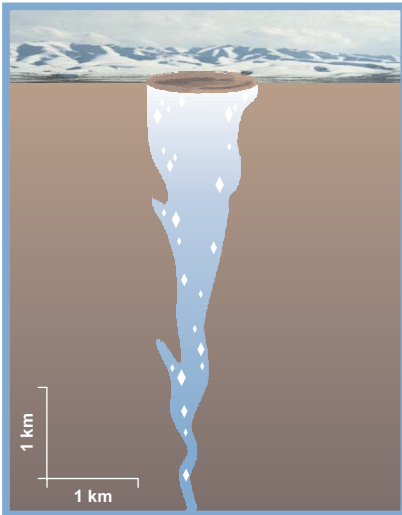




DIAMONDS

1



E. Macey, NRCCan

Kimberlite pipe

How Diamonds are Formed

Diamonds are made of plain old carbon, the same material found in pencils or in the graphite powder used to lubricate locks. The difference between black powder and brilliant gemstone lies in the way the carbon atoms are joined together. In a diamond, each carbon atom is bonded to four other carbon atoms in a structure like a pyramid. It is this tightly bonded structure that gives diamond its characteristic hardness. In fact, diamond is the hardest natural substance known! To make diamonds, tremendous heat and pressure are required, and natural diamonds can only be formed deep in the Earth. They are brought to the surface by volcanic activity and are found in 'pipes' of kimberlite. Kimberlite is a type of rock named after Kimberley in South Africa, where it was first found. Sadly, only a small percentage of kimberlites contain diamonds.



Provided by BHP Billiton © BHP

Panda Pit, Ekati Diamond Mine, NWT

Did You Know?

Diamonds are the hardest known natural substance, four times harder than the next hardest, corundum (rubies, sapphires).

The name diamond comes from the Greek word *adamas*, which means unconquerable.

At 1400°C, the pressure needed to change graphite into diamond is equal to 450 snowmobiles (or 250 walrus) resting on a penny.

The largest uncut diamond was the Cullinan - 3106 carats (0.62 kg). The largest cut diamond is the Cullinan I - 530.20 carats, and is on the British royal sceptre.

It is rare to find a diamond in drill core, but a 4 carat diamond was found in kimberlite drill core from Quebec.



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DIAMONDS



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Canada is a Great Place to Find Diamonds !

Although Canada's vast territory has always held potential for diamond discovery, surprisingly little exploration has been done until recently. In 1991, the discovery of diamonds in kimberlites in the Lac de Gras region of the Northwest Territories sparked new interest. Today, there are diamond mines in Canada—Canada is one of the world's leading producers of diamonds. A direct result of the mines has been the growth of cutting and polishing facilities, providing employment and income to northerners. A jewellery-making industry is also being encouraged. Elsewhere in Canada, diamond exploration is going on in Nunavut, Alberta, Saskatchewan, Ontario, and Quebec.



Diamond exploration in Canada



Ekati Mine Panda Pit

Provided by NWT Centre for Geomatics © Space Imaging

“What, this old thing?”



Provided by BHP Billiton © BHP

Most diamonds are more than a billion years old!

Even the youngest were formed more than 70 million years ago.

And as far as we know, no diamonds have come to the surface within the last 40 million years.