



STATE DIAMOND TRADER

Tel: +27 11 334 2691 Fax: +27 11 334 1540

Email: infosdt@statediamondtrader.gov.za

225 Main Street, Johannesburg 2001

Diamond Industry ABC Guide

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Origin of Diamonds

- The First diamond was recognized in India – 3000 years ago
- In the year 1725 important sources were discovered in Brazil
- In 1870s major finds were in South Africa
- This resulted in dramatic increase in supply of rough diamonds

First discovery in South Africa:

- The story of diamonds in South Africa begins between December 1866 and February 1867 when 15-year-old Erasmus Jacobs found a transparent rock on his father's farm, on the south bank of the Orange River.
- Over the next few years, South Africa yielded more diamonds than India had in over 2,000 years.
- Today South Africa maintains its position as a major diamond producer.
- The first diamond discoveries in South Africa were alluvial. First in yellow earth and below in hard rock called blue ground, later called kimberlite, **named** after the mining town of Kimberley.

Board members

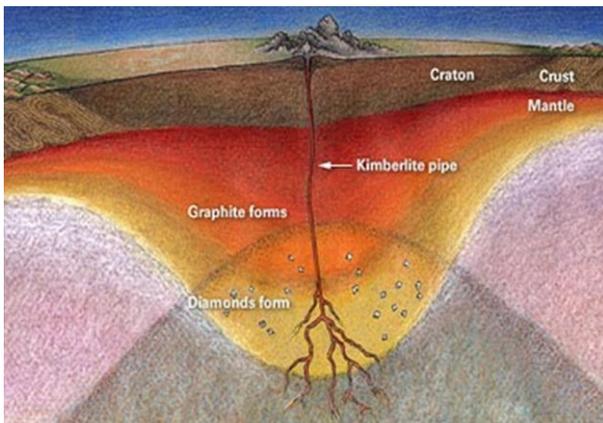
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Interesting Fact

- The Eureka Diamond was the first diamond discovered in South Africa. It weighed 21.25 carats (4.250 g), and was found near Hopetown on the **Orange** River in 1867. The diamond **was** cut to a 10.73-carat (2.146 g) cushion-shaped brilliant, is currently on display at the Mine Museum in Kimberley.



Diamond Formation



- Diamonds were formed over 3 billion years ago deep within the Earth's crust under conditions of intense heat and pressure that cause carbon atoms to crystallise forming diamonds.
- Diamonds are found at a depth of approx. 150-200km below the surface of the Earth. Here, temperatures average 900 to 1,300 degrees Celsius and at a pressure of 45 to 60 kilobars.
- Under these conditions, molten lamproite and kimberlite (commonly known as magma) are also formed within the Earth's upper mantle and expand at a rapid rate.
- This expansion causes the magma to erupt, forcing it to the Earth's surface and taking along with it diamond bearing rocks.

- As it cools the magma hardens to form Kimberlite and settles in vertical structures known as kimberlite pipes. These kimberlite pipes are the most significant source of diamonds, yet it is estimated that only 1 in every 200 kimberlite pipes contain gem-quality diamonds.
- The name 'Kimberlite' was derived from the South African town of Kimberley where the first diamonds were found in this type of rock.

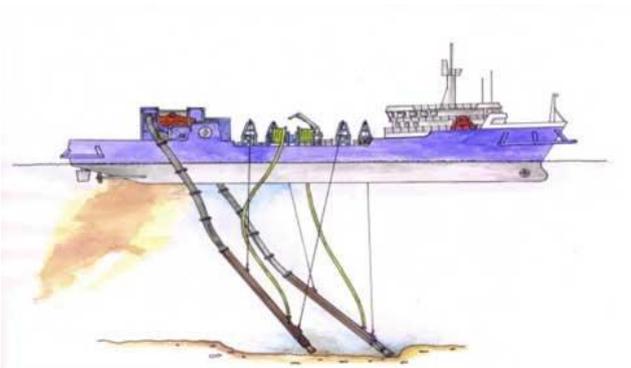
Types of Mining

There are 4 main methods:

- Underground Mining (Tunnelling)



- Marine Mining (On and Offshore)



Marine mining - involves extracting diamonds from the seabed, hundreds of meters under water.

- Open-pit Mining (Open hole)



Open-pit mining - involves removing the layers of sand and rock found just above the kimberlite.
 Underground mining – involves miners tunnelling through Earth’s crust to the kimberlite pipe.

- Alluvial Mining (Near shore)

Alluvial mining - involves building a large wall to collect the water in one area. Diamonds are often found in the gravel layer, which collects under layers of other material, such as mud, clay and underwater plant-life.

Types of Mining found in South Africa

South Africa has the most diverse range of diamond deposits in the world. Deposits include

- Open pit
- Underground kimberlite pipe
- Alluvial mining
- On and Offshore Marine mining.

Which Provinces does mining exist and the type of mining which takes place

- Northern Cape -Underground and Alluvial Mining
- Gauteng – It started as an open cast and now Underground mining
- Free State - Underground mining and Alluvial Mining
- Limpopo - Open pit mining
- North west – Alluvial mining

Production Statistics: Kimberley Process Stats

South Africa produced 7,430,955.94 carats at the value US\$1,224,311,494.27 (US\$164.76per carat) in 2014.

South Africa produces in the region of 5% of global production and is ranked 7th in the world in terms of rough diamond production.