

## Rough diamonds to retail

Accounting for 90 percent of the world's gem trade, diamonds are the rarest and most coveted of all stones.



Photo Researchers | Getty Images  
Raw diamonds

Considered as investments, symbols of wealth and unique works of art, few objects surpass their perfection and nothing has comparable longevity, as the diamond is passed from one generation to the next. *(Read More: [How to Invest in Diamonds](#))*

Diamonds are found throughout the world from Southern Africa to Russia, from Brazil to Australia. Approximately 100 miles below the surface of the Earth the requisite heat and pressure 1300°C and 50,000 times normal atmospheric pressure — for the formation of diamonds can be found. Carbon molecules, present in abundance at this level of the Earth's mantle, forge together as diamond crystals.

Magma, bearing the crystals, is then forced to the surface, and solidifies in formations known as 'pipes', some of which are miles wide. Only 100 in every 500 pipes will yield a profit: Just 25 carats of diamonds can be expected from 100 tonnes of mined earth and of this, 5 carats will be of gem quality.

Extracting the diamonds from the earth creates another problem and separation takes advantage of the physical properties of the stones — being significantly heavier than most other gem minerals and fluorescing under X-rays.

Once mined and processed, the next step is to sort, classify and value the diamonds according to size, shape, quality and color. Using more than 16,000 categories, the diamonds are sorted and then sold to a small group of the world's leading diamond cutters. *(Read More: [The Billion Dollar Business of Diamonds](#))*

Before any cutting takes place, the marker carefully examines the diamonds to decide how they should be shaped to yield the greatest value and beauty.



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### A Girl's Best Friend... and a Great Investment

Diamonds can be found in a handful of countries, but the most valuable diamond in the world is located in a small African country, reports CNBC's Bob Pisani.

The process of cutting a diamond is full of complex decisions and the shape of the rough determines the form of the polished stone.

In order to maximize the optical properties of diamonds, there must be a good understanding of the geometry of each stone and a decision is made whether to sacrifice weight for beauty. Retaining 50 percent of the carat weight of the original rough crystal is considered a good yield. (Read More: [Should Diamonds Be Traded Like Gold?](#))

Once the shape and size of the diamond are determined, the diamond is marked for cutting. Although diamonds are the hardest material known to man, this hardness is variable and a diamond crystal has planes of relative strength and weakness, allowing it to be cleaved or sawn effectively.

The next step is bruting, which involves grinding away the edges of the stone to provide a basic outline. The stone is then given its facets — for a round brilliant-cut diamond there are 58 facets — in two phases: An initial 16 facets (the main crown and pavilion facets and the culet) are the responsibility of a cross-cutter, while the brillianteer grinds the remaining facets and gives the overall polish to the stone.

When grinding the stone, the facet angles must be adjusted to ensure the maximum amount of light entering the stone is transmitted back out by its internal facets — known as total internal reflection. This quality is termed as 'brilliance'.

The 'fire' or rainbow-like effect also associated with a diamond is caused by the dispersion of light rays and again the correct balance must be achieved to have a stone that displays both fire and brilliance. Once cut, the stone is then graded for cut, color, clarity and carat weight – the so-called four C's – by a gemological laboratory. (*Read More:* [Tips to Finding the Perfect Diamond Ring](#))

This incredible journey shows the importance of the knowledge and care required by Sotheby's Diamonds in order to deliver stones of the necessary quality to form the basis of our diamond based jewelry collection.

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