How Are Diamonds Formed?

What do loose diamonds have in common with a pile of coal? More than you might think; in fact in geological terms, loose diamonds are nothing more than glorified lumps of coal. The differences are:

- the arrangement of the carbon atoms
- how each material is formed

Even when it comes to the formation of diamonds, the difference between processes is one of degree rather than mechanics. Here then is some interesting information for potential buyers of wholesale certified diamonds.

Carbon is Carbon

Some may remember an episode of the old "Superman" TV series from the 1950s in which Clark Kent created a diamond by compacting a lump of coal in his fist. While it is doubtful that even the "Man of Steel" could exert such preternatural geologic forces as take place deep in the earth, the concept illustrated was essentially correct - those loose diamonds that eventually wind up at diamond dealers who sell them to jewelers are made of carbon that has been subjected to extremely high pressures of 60 kilobars (for comparison, that's 60,000 times normal air pressure at sea level) and temperatures of over 2300 degrees Fahrenheit (structural steel melts at around 1520° F)!

The pressure and heat needed to create diamond is found only at the earth's lithosphere where the crust meets the upper mantle - about 90 - 240 miles beneath the surface. Diamonds can also form when a meteorite strikes the surface of the earth, creating similar conditions or are carried on within the meteorite (some diamonds do come from outer space!).

Coal on the other hand is formed from the decaying remains of ancient plant matter that has also been compressed by geologic forces, but much closer to the surface. In chemical terms, carbon atoms that make up carbon molecules are arranged in a flat, hexagonal pattern, making them much more brittle. In diamond however, they are arranged in a tetrahedral, or box-like structure. This is what accounts for the hardness of loose diamonds.

Can One Turn Into the Other?

Eventually, if a coal deposit sinks low enough into the earth and is subjected to high pressure and temperature, it can become diamond. Theoretically, diamond could also change into coal, if kept free of chemical reactions that color the gems and stabilize the surface, then subjected to a vacuum. This is unlikely outside of controlled laboratory conditions, however.

Loose Diamonds Are Made, Not Born

What we refer to as loose diamonds do not occur naturally. Once diamond is mined, it is categorized into "industrial grade" and "gem grade." The latter category is what is subject to diamond appraisal, and naturally is of primary interest to diamond dealers.

The raw diamond is cut into loose diamonds, then carefully carved and shaped by craftsmen into forms suitable for decorative jewelry. This stage can have a great impact on the value of loose diamonds as determined by a diamond appraisal, and must be done with painstaking care and uncommon skill.

Wholesale certified diamonds must also be analyzed and graded by a professional gemology lab. It is here that the stones are evaluated for carat, color and clarity. Along with the results of the diamond appraisal> which evaluates the cut, they provide the basis of valuation.

About the Author

Jonathon Blocker specializes in diamond appraisal, loose diamonds, and wholesale certified diamonds. He is known among diamond dealers as an expert in his field. He is a consultant for GemFind.net, a trusted name in the jewelry industry since 1999.

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