How Diamonds Are Formed

There are perhaps no two substances more different visually or symbolically than diamonds and lumps of coal. However, diamonds and coal are virtually identical from a chemical and geological standpoint. The important difference is that the former are not only pleasing to the eye and symbolic as jewelry, they are an excellent investment - and useful in industrial machinery as well.

Of course, gem grade stones are quite different - and far more valuable - than industrial grade. In fact, four fifths of all that are mined are deemed unsuitable for diamond jewelry, and thus are used for industrial applications - primarily in activities that require cutting, drilling, grinding and polishing.

Since the 1950s, scientists have actually been able to manufacture artificial diamonds in laboratories as well. This has to do with the similarity between these and coal, the difference between which is more of degree than process. Both are made of carbon that has been subjected to heat and pressure. What happens is that diamonds are subject to much greater amounts of both - as much as 60,000 times that of normal air pressure at sea level, and up to 2300 degrees Fahrenheit.

To put this into perspective, the pressure of the air we live in is about 14.7 pounds per square inch. At 1083 feet below the sea's surface (the current scuba diving record), the pressure is over 482 pounds per square inch. Carbon that is transformed into diamonds is subjected to pressures of up to 882,000 pounds per square inch - over 440 tons. Furthermore, the temperatures that cause this transformation into white and colored diamonds is over 800 hotter than the furnaces that are required in the melting and manufacture of steel.

Such temperatures and pressures only occur naturally deep under the earth's surface - so deep that even the deepest diamond mines can only reach these precious stones that have been brought close to the surface through tremendous geological activity. This is one reason that they are found primarily in the Great Rift Valley of Africa and in the Himalayan foothills where the Indian subcontinent plows into Asia.

These conditions have been replicable in the laboratory for over half a century; however, natural and artificial diamonds each have their own unique flaws, which are detectable by trained, professional gemologists.

One difference has to do with color as well; natural colored diamonds are not terribly uncommon, and come in a wide range of hues. Some of these color variations can add tremendous value to a gem. Loose diamonds made artificially are almost always of the white variety; colored stones make up only one in every ten thousand. When purchasing loose diamonds whether as an investment or for use in jewelry, make sure that such diamonds have been certified by an independent gemology professional.

About the Author

Jonathon Blocker specializes in diamond jewelry and loose diamonds. He is a consultant for GemFind.com, a trusted name in the jewelry industry since 1999.

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