

## 11405 Diamond Powder

Most valuable gemstone, consists of crystallized pure carbon. Diamond usually forms octahedrons. The most valuable diamonds are colorless, glass-like transparent, shiny and very strongly refractive crystals. In addition, there are also colored, transparent diamonds, which have, for example, brownish, yellow, grayish, greenish or black hues. Often the colors are so faint that they can only be perceived by the connoisseur. It is rarest to encounter rich blue or red colored diamonds; the jet black, Brazilian carbonados often contain 2-4% impurities.

Most diamonds are dull, duller, cloudy, and almost lead-gray. These pieces are referred to as bort and are used for technical purposes. About 5% of the diamonds found are transparent, water clear or colored and can be used as jewelry. The surface of these diamonds is cut in a special way (brilliant cut) so that as much as possible of the light falling on top is totally reflected (the surface where total reflection occurs shines like polished silver) and that the color dispersion reaches as high a value as possible. These cut diamonds are also called brilliants (from French brillant = shine).

Diamond cutting is said to have been invented in Antwerp in 1467; today it is based in Amsterdam, Hanau, Idar, Berlin, Paris, London, New York and South Africa. Diamonds are by far the most important gemstones. They account for about 90% of the sums spent annually on gemstones.

The unit of weight is the carat. The weights of the diamonds found so far vary between teilmilligrams and over 3000 carats, but diamonds of 20 carats already belong to the rarities. The largest diamond so far ("Cullinan", named after the diamond mine owner Thomas Cullinan) was found on 26 Jan. 1906 in the Premier Mine near Petroria (South Africa). It weighed 3106 carats (= 621.2 g).

Diamonds are mainly found in so called "soaps" (these are sifted rock debris transported by rivers) and in igneous olivine rocks (kimberlites in South Africa). The weathered diamond-bearing rocks are washed in centrifuges, and the heavy residue is put on grease-coated shaking screens, where the diamonds are wetted by grease and retained.

Even in the richest South African mines (Kimberley mines), an average of only 1 g of diamond is obtained from 2 t of processed rock.

Diamond usually has a conchoidal fracture, it can be pounded to powder in a steel mortar. It is cold to the touch (good conductor of heat) and becomes positively electric when rubbed like glass.

In 1955, the American General Electric succeeded in synthesizing diamonds. One obtained from C-containing aliphatic material under approx. 55000 at and high heat after 16 hours approx. millimeter-size pieces of tech. Diamond, which cost about twice as much as natural diamond.

The name diamond is derived from the Greek adamas = the invincible.