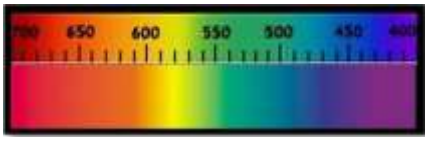
Warning: this version was completed with Google Translate, it certainly contains errors or inaccuracies.

Technical data sheet – general:

Chameleon diamond (Colour Change)

<table>
<tr><td>Gemma – names</td><td>(Italian – Diamante Camaleonte)
(English –Chameleon Diamond)
(French - Diamant caméléon)
(Spanish - Diamante camaleón)
(Portuguese - Diamante camaleão)
(Thai - เพชรก ameleon (Phet kamelon))
(German - Chamäleon-Diamant)</td><td>(Arabic - لماس الكاميليون Almas Alkameleon)
(Russian - амелеон-алмаз Khamelyon-almas)
(Mandarin -变色龙钻石 Biàn sè lóng zuànshí)
(Swahili - Almasi ya kameleon)
(Hindi - चेमिलियन हीरा Chameleon Heera)</td><td>photo
  </td></tr>
<tr><td>Colors (GIA)</td><td colspan="3">Chameleon diamonds : Chameleon diamonds are very peculiar due to their ability (as the name suggests) to change color (normally from yellow to green and under very special conditions).
Color-changing diamonds
Fancy blue-gray diamonds colored by hydrogen defects sometimes show a different color appearance under different light sources . Color gradation occurs in daylight conditions, while incandescent lighting produces a more purple color.
Two-tone diamonds : These potentially exist, but these stones are rarely cut to show more than one color.</td></tr>
<tr><td>Cause of Color</td><td colspan="3">“Chameleon” diamonds:
Cause of color : The reasons for these changes have not been fully revealed by science. It is known that when these stones are kept in the dark (and therefore show an effect called tenebrescence), or when they are heated to temperatures of 150 degrees , or in the light after a prolonged period of darkness. they become yellow, while when exposed to sunlight they return green.
Chameleons are type IaA diamonds (usually with moderate N-nitrogen content) that exhibit absorption bands at the broad 480 nm (structure unknown) and 700 nm (related to H-hydrogen or Ni-nickel) of the visible spectrum, which they often give rise to a greenish hue (usually brownish or greyish or sometimes defined as "salty"). These gems are all known to contain unusually high concentrations of hydrogen, as well as trace amounts of nickel and nitrogen , in their crystal structure. This nitrogen-hydrogen complex could be responsible for the chameleon effect. Experts believe that chameleon diamonds have luminescent and phosphorescent properties.
Some of them maintain this new shade for more than 15 minutes even after just 60 seconds of exposure to a UV lamp. Additionally, some can emit yellow light phosphorescence for up to an hour after turning off the light source.
There are two main varieties of chameleon diamonds:
“Classic” Chameleon Diamond: This type of diamond can range from light olive to dark yellow when heated or exposed to light. The color returns to its natural state when the diamond is exposed to cold or prolonged darkness.
“Reverse” Chameleon Diamond: This variety has a brighter yellow tint and turns slightly olive when exposed to prolonged darkness. It returns to its natural golden color when brought back to light. "Reverse" diamonds do not react to increases in temperature.
GIA Grading: When a colored diamond is submitted to the GIA for a grading report, the standard procedure is to record its visible absorption spectrum. To record the spectrum, the diamond is illuminated with light and as it passes through the diamond, some of it is absorbed and some of it is transmitted. The transmitted part is what we perceive to be the color of the diamond. Chameleon diamonds contain at least two harmonious colors. Hues always include some sort of color combination. Combinations always include at least two of the following colors: green, yellow, brown and gray.
Fancy chameleon diamonds are graded (not by GIA) using the following terms: Light Chameleon, Fancy Light Chameleon, Fancy Chameleon, Fancy Deep Chameleon, and Fancy Dark Chameleon
GRAY-TO-BLUE-TO-VIOLET HYDROGEN-RICH or HGBV diamonds from the now closed Argyle mine, Australia. HGBV diamonds, especially those with purple hues, exhibit slight color differences under different lighting conditions. Those with strong color saturation</td></tr>
</table>

<table>
<tr><td></td><td colspan="4">tend to appear slightly bluer under fluorescent lighting (strongest in the blue region) and slightly more purple under incandescent lighting (strongest in the red region). Purple-toned stones have transmission windows positioned further apart than blue-toned ones, so they are more sensitive to lighting conditions, especially those with different intensities in the blue and red wavelengths. However, the difference is not enough to consider them color-changing diamonds .
Allochromatic Gem</td></tr>
<tr><td>Classification</td><td colspan="2">Mineral class
Native non-metallic, mineral</td><td>Species – Group (mineral)
Diamond - //</td><td>Variety
Chameleon or others</td></tr>
<tr><td rowspan="2">Optical properties</td><td>Specific Gravity:
3,516–3,525
Municipality: 3.52</td><td colspan="2">RE: 2,417
Polariscope : SR
Birefringence: The birefringence of polarized light is normally present in diamonds</td><td>Character optical
Isotropic</td><td>Pleochroism
NO</td></tr>
<tr><td colspan="3">Luster (luster) – luster of the fracture
Diamantine - adamantine</td><td>Dispersion (fire)
0.044</td></tr>
<tr><td>Light</td><td colspan="3">Fluorescence
SWUV (254 nm) : inert
LWUV (365nm) :</td><td>Phosphorescence
Red</td></tr>
<tr><td>Form</td><td>Crystalline dress
Octahedral, dodecahedral, cubo-octahedral, spherical or cubic
Melting point: 4,027°C, Burns above 700°C in air.</td><td colspan="2">Phenomenal optical effects
/</td><td>Crystalline system
Cubic
Monometric
Crystal class</td></tr>
<tr><td>Chemical formula</td><td colspan="3">Carbon (typically 99.95%)
Traces of other elements (nitrogen, boron, hydrogen etc.)

C</td><td>Spectrometer image
 
Not indicative</td></tr>
<tr><td>Fracture</td><td>Flaking
Distinct – octahedral (4 directions)</td><td colspan="2">Breakup- Parting
Gemination law of the common spinel (which produces "macle")</td><td>Fracture
Complex, irregular</td></tr>
<tr><td>Durability</td><td>Hardness (Mohs) - Absolute
10; 1600
(with directional hardness variations)</td><td colspan="2">Toughness
Fair-good</td><td>Stability (heat, light, chemicals)
Excellent</td></tr>
<tr><td rowspan="2">Clarity - characteristics</td><td colspan="4">Typical inclusions: The inclusions correspond to those that appear in natural diamonds (for chameleon ones) or synthetic diamonds. Regarding the clarity of colored diamonds, the GIA has a different point of view. The position of the GIA, the highest authority in the evaluation of diamonds, underlines that color is the dominant factor for value; even diamonds with many inclusions that would lead to a low clarity rating can have significant value if they show good color visible from the front. Of course, there is an exception to this rule: when inclusions pose a threat to the gemstone's durability, this inevitably decreases the value of the gemstone. Until recently, enthusiasts of rare chameleon diamonds had considerable difficulty finding them. Only a few sellers offered these jewels and set the prices as they pleased , accepting or rejecting the offers. Today, these stones can be found on some online retailer sites. It must be said that when it comes to niche items such as chameleon diamonds, it is advisable to turn to reputable dealers who have a solid reputation.</td></tr>
<tr><td colspan="2">Guy:
NA</td><td colspan="2">Transparency (commercial) - diaphanity
Transparent</td></tr>
<tr><td>Deposits - types of rocks</td><td colspan="4">They are recovered in kimberlites typical of type I diamonds (about 98% of all natural rough stones), however they are extremely rare and generally appear only in a few deposits.
Geological age : Millions to billions of years. Uncertain.</td></tr>
<tr><td>Characteristics of rough stones</td><td colspan="4">Although they can have various shapes, they are generally recovered in the most typical shape of diamond: an octahedron .</td></tr>
<tr><td>Main depots</td><td colspan="4">Chameleon diamonds are mostly found in South African mines . Furthermore, the Australian Argyle mine was also known (now closed) as a source of these stones.</td></tr>
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	Although the exact origins remain unknown, it is believed that in the past approximately 40% of chameleon diamonds were purchased in India, 30% in Tel Aviv and the last 30% is said to be in Antwerp. Today (2023) most of them appear on specialized online sites.
Year of discovery	**1866:** The first known discovery of a chameleon diamond dates back to 1866,
History	**Chameleon diamonds** **1866** : The oldest known chameleon diamond is said to date from this year, discovered by Georges Halphen, a diamond merchant in Paris. **1943** : The term "chameleon diamond" was first used to describe these color-changing diamonds in the jewelry industry. It was Peter Kaplan who first recorded a diamond chameleon. By pure chance, he noticed that a diamond placed on a hot polishing wheel slowly began to change its hue. **Very early 1970s** : One story from this period tells of a customer who purchased a light yellowish green diamond. Once he took it out of his jewelry box, he noticed that the diamond had turned dark green. **2005** : A unique set of 39 chameleon diamonds, with weights ranging from 0.29 to 1.93 carats, were reported to show temporary color changes when heated to around 150°C and, for some of them, after a long period dark storage (i.e. thermochromic and photochromic color changes, respectively). **Color-changing synthetic diamonds** Among the best-known producers of this rare type of stone are some Russian companies, already famous for the creation of other synthetic gems. The Russian Colored Stone (RCS) Company, established in 1993. RCS has set out to promote a number of very attractive natural gemstones, including chromium diopside and demantoid from Russia, two-color topaz and heliodor beryl from Ukraine, and spinel and scapolite from Tajikistan. In **1994 , in parallel with these programs , diamond cultivation** programs also began under the "Ultimate Created Diamonds " brand. The **Ultimate Created Diamond Co. (UCD)** has focused on producing various colors of **fancy diamonds in synthetic form** , resulting in spectacular yellow, blue, orange, pink **and alexandrite-like color changing effect diamonds through irradiation and/or or heat and pressurized treatment** . **Name** : The name diamond comes from the Ancient Greek ἀ δάμας (adámas), "unchangeable", "indestructible", "indomitable", from ἀ - (a-), "un-" + δαμdam (damáō), "I overcome", or I "tame". In India and surrounding areas: Etymology: Vai = Mouth, Ra = Light, Vaira = Portal of Light. In Sanskrit it also took on the meaning of diamond club or scepter. The term vajra indicated 2 distinct things: the "diamond" or the "lightning". It also referred to a sort of battle weapon used by the God Indra. In Tibetan Buddhism this same stone-weapon object is referred to as Dorje . **Chameleon:** The word "chameleon" comes from the Ancient Greek χαμαιλέων (khámailéon), meaning " **creeping lion** ". The term is composed of two words: χαμαι (khámai), meaning "on the ground", and λέων (léōn), meaning "lion". The word "chameleon" was first used **in Italian in the 1300s** . Initially, the word referred to **any animal that changed color** , but over time it became associated specifically with the chameleon, a reptile that has the ability to change the appearance of its skin to blend in with its surroundings. **Synthetic thermochromic diamond:** In 2022, synthetic diamond company Element Six announced that it had developed a new synthetic thermochromic diamond that can change color from yellow to red. The diamond was created using a laser beam growth process and contains a small amount of boron. (poorly documented news) **Other trade names:** Chameleon (diamonds), **Variety** : / Chameleon: classic (changes its shade from olive green to dark yellow when heated or removed from sunlight) or reverso/inverse (changes color in reverse, going from yellow to green),
Attributed properties	These stones have not yet found their place in the esoteric sphere of gems. Little known and still extremely rare, they have not yet been analyzed to understand what benefits they can bring for those who follow this approach. **Planet:** NA **Month:** NA **Zodiac sign:** NA

	Chakras: NA		
Treatments	chameleon diamonds **are more common and less expensive** . Natural or synthetic stones are subjected to an irradiation and heating process to obtain their characteristic color. Only specialized laboratories are able to reveal the non-natural origin of the color.		
Synthetic counterpart	IN general, there are 2 types of single crystal synthetic diamonds: **CVD** (chemical vapor deposition) diamond and **HPHT** (high pressure, high temperature) diamond. These can also provide the basis for the creation of chameleon diamonds whose color is determined by human intervention. These gems, known for their unusual temporary color change, are an exceptional rarity in nature. Their shade may change slightly when exposed to a slight change in temperature or if left in the dark for a prolonged period. This striking transformation from a dark green to a lighter tone of yellow, triggered by gentle heating, is the result of the unique thermochromic properties of these diamonds. In 2015, the **GIA laboratory in New York** conducted an in-depth examination of two specimens of chameleon diamonds: a refined 0.35-carat Fancy Deep yellow-green marquise and a 0.27-carat Fancy marquise with yellowish-green hues Deep. After being exposed to short-wave UV light, both diamonds exhibited notable phosphorescence that ranged from blue to yellow, a characteristic often found in natural chameleon diamonds. UV-Vis absorption spectra revealed a broad absorption band around 480 nm, an expected characteristic for these types of diamonds. However, unexpectedly, **a distinctive peak also emerged at 741 nm, known as GR1 (general radiation damage),** which may contribute to the green color. This **radiation-related characteristic is not found in untreated natural chameleon diamonds** , leading to the conclusion that both stones had been subjected to artificial irradiation. This result is surprising, since chameleon diamonds are not usually subjected to irradiation treatments to improve their color. It is plausible that this particular property was not previously understood or known prior to the irradiation process. However, it is crucial to keep in mind that, if exposed to prolonged heating, treated chameleon diamonds may experience a permanent color change.		
May be confused with	**Moissanite synthetic (separable through: doubling, dispersion, inclusions), Zircon colorless** (separable through: double regrative), **Cubic Zirconium/CZ** (separable through: optical character, spectrum, doubling), **Strontium Titanate** (separable through: dispersion, SG, inclusions), **YAG** . (separable through: SG, dispersion), **GGG** (separable through: SG, luster), **Synthetic Rutile** (separable through: optical character, dispersion, doubling), **Natural/Synthetic Sapphire/Spinel colorless** (separable through: optical character, brightness, dispersion), **Doublets/triplets** (separable through: inclusions, brightness).		
Indicative gemological tests	The visual effect alone is indicative for these stones (both natural and treated chameleons). The separation from imitations can be carried out using a modern tester (which is capable of detecting moissanite).		
Value (2021)	**High :** 1,000,000+$/ct **10 carats+**	**Medium:** $10,000/ct **1-2 carats**	**Low:** $2,000/ct **under the carat**
Typical cut	Like all rare stones, the shape of the rough and its characteristics determine the final shape of the diamond. Given the infrequency of chameleon diamonds in the jewelery market, it cannot be said that a typical cut exists.		
Famous stones	There was a famous diamond once owned by **Pedro II** , (nicknamed the Magnanimous, member of the Brazilian branch of the **House of Braganza** and last Emperor of Brazil, reigning for over 58 years) that **appeared yellow-brown in incandescent light but turned intensely green in sunlight** . It is also said of a pear-shaped diamond, perhaps belonging to the famous explorer Tavernier, of **over 50 carats** , it was known to have a color like alexandrite. It was light brown in incandescent light but light pink in sunlight. Both stones have not reached the present time.		
Record stones	**Chameleon Diamonds** : Famous Stones and Record Prices: In 2012, an unnamed, 8.04-carat radiant-cut Chameleon Diamond, classified by the GIA as "dark gray chameleon," sold for $2,100,000. Another famous gem is the Chopard Chameleon, 22.28 carats, valued at 10 million dollars in 2008.		