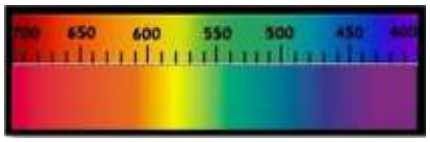
English version made by online translation; it may contain mistakes.

Technical data sheet – general: Purple and Purple Diamond

<table>
<tr><td>Gemma – names</td><td>(Italian - Diamante)
(English - Diamond)
(French - Diamant)
(Spanish -Diamante)
(Portuguese - Diamante)
(Thai - เพชร phechr)</td><td>(German - Diamant)
(Arabic - الماس almas)
(Russian - Алмаз Almaz)
(Mandarin -钻石 zuànshí)
(Swahili - Almasi)
(Hindi - हीरा heera)</td><td rowspan="2">Photo
  </td></tr>
<tr><td>Colors (GIA)</td><td colspan="2">GIA classification:
Plum/purple is another colour almost unobtainable in diamonds. Diamonds that receive the rank of Fancy Red Purple, are among the most desirable and valuable types. Fancy purple diamonds are classified using the following terms: Light Purple, Fancy Light Purple, Fancy Purple, Fancy Intense Purple, Fancy Vivid Purple, Fancy Deep Purple.
Pure violet without secondary shades is almost never found in nature, and when it does, it appears in diamonds of small size. Violet diamonds found in nature usually appear associated with secondary shades between gray and blue (while purple ones will appear red or pinkish).
Fancy purple diamonds are classified using the following terms: Fancy Violet, Fancy Intense Violet, Fancy Deep Violet and Fancy Dark Violet.
Usually violet/purple diamonds have secondary shades such as: pink, gray or brown.</td></tr>
<tr><td>Cause of Color</td><td colspan="3">Violet (violet in English -tending to blue-, not to be confused with purple - tending to red, or with equal concentrations of red and blue and not an "official" part of the colors of the visual spectrum) is another of the natural colors impossible to find. These buds have a much more intense color under incandescent light (old light bulbs) than fluorescent (sun).
 
Causes of color (purple): The H3 and N3 color centers (see above), which replace carbon atoms, are sufficient to alter their color. Purple diamonds and some pink diamonds modified from purple often show a chromatic concentration along the sliding planes of the displacements of carbon atoms. With the increase in nitrogen, there is a general decrease in purple-pink to pink-purple diamonds (pink-purple diamonds have a higher concentration of B aggregates). This is probably due to a greater absorption of the H3 and N3 centers which reduced the transmission of blue light. In addition, among type IaA < B with increased nitrogen there was a higher percentage of unmodified brown diamonds. The other shades showed fluctuations with the increase in nitrogen, but no clear trend. Again, orange pink diamonds are essentially only seen among diamonds with A <B aggregates.
Cause of colour (violet): The cause of this colour tone is not very clear, but it is known that these gems contain a lot of hydrogen that replaces the carbon in the crystal lattice of the diamond. The Argyle mine is the only known source of type IaB coloured diamonds from grey to blue to purple that are rich in hydrogen and nitrogen.
Allochromatic Gem</td></tr>
<tr><td>Classification</td><td>Mineral class
Native non-metallic, mineral</td><td>Species – Group (mineral)
Diamond</td><td>Variety
Colorless diamond</td></tr>
</table>

<table>
<tr><td rowspan="2">Optical properties</td><td>Specific Gravity:
3.516–3.525
Common: 3,52</td><td colspan="2">RI: 2,417
Polariscope: SR
Birefringence: The birefringence of polarized light is normally present in diamonds</td><td>Optical character
Isotropic</td><td>Pleochroism
NO</td></tr>
<tr><td colspan="3">Luster (shine)– luster of the fracture
Diamantina - adamantine</td><td colspan="2">Dispersion (fire)
0.044</td></tr>
<tr><td>Light</td><td colspan="3">Fluorescence
SWUV (254 nm): inert
LWUV (365nm):</td><td colspan="2">Phosphorescence
Red</td></tr>
<tr><td>Form</td><td>Crystal clear dress
Octahedral, dodecahedral, cube-octahedral, spherical or cubic
Melting point: 4.027°C, Burns above 700°C in air.</td><td colspan="2">Phenomenal optical effects
/</td><td colspan="2">Crystalline system
Cubic
Monometric
Crystal class</td></tr>
<tr><td>Chemical formula</td><td colspan="3">Carbon (typically 99.95%)
C</td><td colspan="2">Spectrometer image
 
Not indicative</td></tr>
<tr><td>Fracture</td><td>Cleavage
Distinta – octahedral (4 directions)</td><td colspan="2">Break-Parting
. Rare geminage</td><td colspan="2">Fracture
Complex, irregular</td></tr>
<tr><td>Durability</td><td>Hardness (Mohs) - Absolute
10; 1600s
(with variations in directional hardness)</td><td colspan="2">Toughness
Decent-good</td><td colspan="2">Stability (heat, light, chemicals)
Excellent</td></tr>
<tr><td>Clarity-characteristics</td><td colspan="5">Typical inclusions: Because violet and purple diamonds are so rare and precious, a gem with a vibrant color can have inclusions visible to the eyes and still be very expensive. Lighter violet/purple diamonds should be or have no inclusions visible to the naked eye. In general, purple and purple diamonds contained only a limited number of inclusions, compared to the wider range seen in diamonds in general. The most common features are inclusions due to internal erosion (including etch channels), tubes, acicular cavities and dimples. The incision channels occurred along the splitting directions and in some cases are quite deep. Long tubes similar to icicles, Cluster cavities with radiant acicular margins and small pointed dimples are sometimes also visible in some samples. Finally, some shallow cavities may appear that resembled grooves with radiant acicular margins that may be features of incision or remnants of inclusions removed during cutting. Color zoning typically occurs as thin areas with a higher saturation (darker gray or more blue or violet) than surrounding areas. Zones typically have straight or slightly wavy planar boundaries. Occasionally rectangular planar brownish zones or sectors have been observed. Some samples show grain lines of the surface that are often associated with color zoning. The obvious internal growth structures were generally absent, although turbidity along some of the growth structures was sometimes observed both in the transmitted light.
 
</td></tr>
<tr><td></td><td>Type:
NA</td><td colspan="4">Transparency (commercial) - diaphaneity
Transparent</td></tr>
<tr><td>Deposits-types of rocks</td><td colspan="5">Purple diamonds are occasionally found in all Siberian deposits, but are most often recovered from the kimberlitic chimneys of the Mir deposits, which include the Dachnaya, Internatsional'naya/Internationalaya and Sputnik mines.
Geological age: 1 billion years or more</td></tr>
</table>

Features of rough stones	Purple diamonds (Siberia, type IIb, containing boron and of super-deep origin) never show a regular octahedral shape, while violet ones are sometimes recovered even in euhedral forms (Australia, type IaB).
Main deposits	**Main deposits (violet)**: Argyle – Australia, **Main deposits (purple)**: **Russia** (Yakutia and Arkhangelsk (Siberia). In the Lomonosov field in northwestern Russia, only 0.04% of the production consists of patterned diamonds (purple, pink, purple, green, yellow and brown. Some packages of the Mir depot in Siberia contain 1 to 6% **pink to purple** diamonds, although no data on overall production were available). **Australia**. **Brazil, Canada** (Diavik mine).
Year of discovery	**Uncertain:** Russian and Australian diamonds are newly discovered. It is possible that there were violet or purple stones even in antiquity, but no historic records on them have been found yet. Only in the last 2-3 decades have these gems have gained some popularity.
History	The tones of **lavender, grapes, cornflower** are some of the most beautiful colors in the diamond color spectrum. Violet diamonds are extremely rare colors among collectors, designers and jewelry enthusiasts. Aside from red diamonds, a purple diamond may be the rarest color of all. Violet and purple diamonds have a recent history. Only in the last 20-30 diamonds called fantasy (with colors vivid enough to place them outside the D_Z scale of the GIA) A total of 20 violet diamonds, from **0.39 carats to 2.34 carats**, were offered during the Argyle tender period between **1993 and 2008**. Purple diamonds are rarely seen and in 32 years Argyle has produced only **12 carats of faceted violet diamonds** during iconic auctions. The largest violet diamond ever to come out of the mine is a 2.83-carat bluish-gray violet diamond nicknamed Argyle Violet and is the rarest purple in the world. According to the Gemological Institute of America, **0.1% of the 15,000 blue**, gray and gray-violet diamonds presented at the GIA **are violet diamonds.** **Name:** The name diamond comes from the ancient Greek ἀδάμας (adámas), "unalterable", "indestructible", "indomitable", from ἀ- (a-), "a-" + δαμdam (damáō), "I overwhelm", or I "tame". In india and surroundings: Etymology: Go = Mouth, Ra = Light, Vaira = Portal of Light. In Sanskrit it also took on the meaning of diamond mace or scepter. The term vajra indicated 2 distinct things: the "diamond" or the "lightning". It also referred to a kind of battle weapon used by the God Indra. In Tibetan Buddhism this same object-stone-weapon is referred to as Dorje. **The color violet has an interesting etymology:** from *Ἴον* (*ion*), violet. Genus of plants of the pentandria monogyny of Linnaeus, and type of the family of the same name, that is, of the *Violarie*, whose main species is the *Viola odorata* of Linnaeus, *I'lon melan* of Theophrastus, the e *lon porphyrún*, (violet purple) of Dioscorides, a well-known plant, which has enjoyed much repute in Medicine: now, however, it is almost abandoned. In general, plants of this genus enjoy releasing qualities, and their roots are emetic; depending on the emetic quality on a new salificable substance, called *Violina*. **Purple**: from the Latin purpŭra/purpureus, and this from gr. πορ φ ὐρα (*porphýra)*. the color of purple, bright red **tending to violet**, and, in a generic sense, any variety of intense red. In typography, codices in which the text was written in gold and silver on parchment made **purple** by a dye obtained by mixing **in equal parts carmine and blue** (the use of coloring purple the writing material of luxury manuscripts, already known in the 1st century of .C., spread from the 4th to the 6th century. both in the Territories of the Greek language and in those of the Latin language, and was resumed in the Carolingian era and in some cases also in the Renaissance era **Other trade names: /** **Variety**: /
Attributed properties	**Purple** Purple diamonds are associated with spirituality, enlightenment and pride. They are a good choice for philosophers, artists, sociologists and psychologists. The color purple has also long been associated with nobility, wealth and power. **Violet** Violet diamonds are also very rare and come mainly in two variants: violet with secondary hues and pure violet. Violet diamonds are associated with spirituality, enlightenment and pride, as well as wealth and nobility. They are a good choice for artists or psychologists. There are general lines related to color, violet and purple diamonds historically are little present given their rarity. **Planet:** NA

	Month: NA **Zodiac sign:** NA **Chakra:** NA
Treatments	irradiation is a safe process in which a diamond is bombarded, normally with **neutrons or electrons**, which alter its crystal lattice. This alteration creates new color centers, changing the original color of the gem. Irradiated diamonds are **normally annealed or heated** to achieve the desired color. This annealing process corrects some of the alterations due to irradiation, creating new dyes in the process. This process often uses **yellow diamonds** to create mainly pink, **violet, purple**, red and green colors. The post-growth treatment process is more successful with smaller, low-saturation yellow stones. The higher the saturation in the grown color (intense and vivid colors), the higher the saturation and the darker the tone in the post-surgery color will be. For example, deep yellows can give rise to vivid pink or deep pink diamonds or **patterned purple**. The treated colours are permanent and stable in everyday use.
Synthetic Counterpart	There are 2 types of single-crystal synthetic diamonds: **CVD** diamond (chemical vapor deposition) and **HPHT** diamond (high pressure and high temperature). Most CVD grown and gem quality diamonds are colorless, almost colorless or brown, with varying degrees of saturation. Other colors can be produced by introducing other color centers or defects during the growth process or with a post-growth treatment. Pink CVD synthetic diamonds were first reported in 2007 and appeared on the gemstone market around 2010. They make up a large percentage of sought-after colored CVD synthetic diamonds. Their shades include a variety of color descriptions, such as pinkish brown, brownish pink, pink, **purplish pink** and orange pink. Among these pink CVD synthetic diamonds, only a few samples are mainly colored by a wide absorption band at ~520 nm, while most are colored by nitrogen (NV) holiday centers after post-growth treatments. Both colors (pure or with secondary colors) can be created with the aforementioned methods, however purple artificial diamonds are normally "grown" with the **HPHT** system, they are type IIa and have silicon atoms with vacant atomic spaces (SiV-), while violet ones can be created with both systems: both with **the CVD** one (type Ib, irradiated and then heated) and with **HPHT** (type Ib, irradiated and then heated with low nitrogen content).
Can be confused with	Given their rarity, both violet and purple color can be considered an anomaly in the market, rather than a rule. Their color can also be represented by much more common stones such as **amethyst** or **sapphire** (violet or purple). Normally the distinction between these species is not problematic. Other imitations include: **Tanzanite** (hardness and pleochroism quickly separate the stones from the intense colors, for those with paler shades the Refractive Index and some other verification tests lead to the same purpose), **synthetic Moissanite** (separable through: doubling, dispersion, inclusions), **Colorless Zircon** (separable through: double regrative), **Cubic Zirconium / CZ** (separable through: optical character, spectrum, splitting), **Strontium titanate** (separable through: dispersion, S.G., inclusions), **Y.A.G.** (separable through: S.G., dispersion), **G.G.G.** (separable through: S.G., gloss), **Synthetic rutile** (separable through: optical character, dispersion, splitting), **Sapphire/Colored natural/synthetic spinel** (separable through: optical character, gloss, dispersion), **Doublets/triplets** (separable through: inclusions, gloss).
Indicative gemological tests	In view of the fact that there are few specimens of these colors on the market, their separation from synthetic stones should be left to a reliable specialized laboratory. To distinguish these diamonds from imitations, normally a tester and simple standard gemological examinations can help determine the difference.
Value (2021)	**High:** 1,000,000+ $/ct **10 carat+** | **Average:** 100,000+ $/ct **1-2 carat** | **Low:** 10,000+ $/ct **under the carat**
	The price of each carat depends on intensity (saturation) and purity of color. Diamonds with a pure green tint are generally more appreciated, each secondary color shade can drastically reduce the price per carat (even a tenth or less). Some shades are more sought after than others (for example blue compared to yellow or gray).
Typical cut	Unlike colorless diamonds, which are often cut into round, bright purple/violet diamonds are most often found in patterned cuts such as **oval, pillow, radiant cuts, teardrop shapes, and emerald cuts**. This is because the round bright cut tends to dilute the color of fancy diamonds. Lapidary masters do everything they can to improve color, sometimes making the belt thicker or the proportions deeper. This is because color is so important to the value of the diamond that it prevails over all other factors.

Famous stones	**Famous stones and record prices: Argyle Ocean Seer,** 1.12 carats, **Argyle Violet** (purple grey), 2.83 carats. **Famous stones and record prices: Royal Purple Heart** (Russian), 7.34 carat and heart-shaped. Another famous 8-carat purple gem, set in a ring worth **$4 million**, was given away in 2003 by the famous basketball player **Kobe Bryant** to his wife.
Record stones	One of those larger purple diamonds is the **Royal Purple Heart Diamond**. With its 7.34 carats and it is the largest vivid purple diamond in existence. It is believed to be native to **Russia**. The second famous purple diamond is even more of a mystery. Called **Supreme Purple Diamond Heart**, all that is known about the diamond is that it is a perfect round cut and its size is between **two and five carats**. It is said that the various shades of purple in this gem can be seen while a viewer looks at the stone from different angles, one of the reasons why this particular diamond is so popular, despite its small size. **The Argyle Violet**, a 2.83-carat patterned deep grey bluish violet diamond, with SI1 clarity, is the largest violet diamond ever found in Australia. (extracted in 2016).