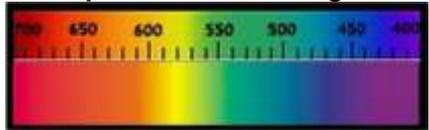


Warning: this version has been completed with Google Translate , it certainly contains errors or inaccuracies.

Technical sheet - general: Citrine

Gemma - names	(Italian - Citrino) (English - Citrine) (French - Citrine) (Spanish - Citrino) (Portuguese - Citrine) (Thai - ซึทรีน sithrin)	(German - Citrin) (Arabic - السترين alsatrin) (Russian - Цитрин Tsitrin) (Mandarin - 茶晶 ch ájī ng) (Swahili - Citrine) (Hindi - सिट्रीन sitreen)	photo 
Colors (GIA)	<p>Natural citrine, of a very pure and brilliant yellow, is actually a rather rare crystal, being for the most part strongly zoned and not very transparent or smoky quartz .</p> <p>On the market there are shades of this color which correspond to as many trade names, designed specifically for citrine: Pastel yellow , Tuscan yellow , dandelion flower , amber yellow , golden yellow , madeira yellow . In general, citrine ranges from almost colorless to yellow or orange very loaded.</p>		
Cause of Color	<p>Traces of iron (Fe³⁺) . Colors from yellow to orange are triggered by charge transfer</p> <p>O²⁻ → Fe³⁺ (oxygen to iron) which creates color centers related to Al³⁺ (aluminum) .</p>		
Classification	Mineral class Oxides - tectosilicates	Species - Group (mineral) Quartz - /	Variety Citrine
Optical properties	Specific Gravity: 2.60-2.70 <i>Municipality: 2.65</i>	RE: 1,544 to 1,553 Polariscope : DR (bulls eye in the polariscope) Birefringence: 0.009	Character optical Uniaxial positive Pleochroism Dichroic : Yellow / slightly lighter yellow
	Luster (luster) - luster of the fracture Vitreous - vitreous		Dispersion (fire) 0.013
Light	Fluorescence SWUV: Inert LWUV: Inert		Phosphorescence NO
Form	Crystalline dress Hexagonal prisms Melting point: 573 (transformation) -1470 ° C	Phenomenal optical effects Cat attitude (6 rays) Asterism and diasterism	Crystalline system Trigonal Crystal class
Chemical formula	Silicon dioxide SiO₂		Spectrometer image  Normally not indicative
Fracture	Flaking Weak along the dominant rhombohedral axis	Breaking- Parting Sl Gemination by penetration (read Brazilian and Dauphiné) and by contact (Japanese)	Fracture Conchoidal
Durability	Hardness (Mohs) - Absolute 7; 100	Toughness Fragile	Stability (heat, light, chemicals) Good, but sensitive to heat

<p>Clarity - characteristics</p>	<div style="display: flex; align-items: center;">      </div> <p>Typical inclusions: liquid and biphasic inclusions, bubbles, cavities and cracks, color zoning, negative crystals, zebra print (structural), crystalline inclusions, green fuchsite mica flakes / aventurine quartz platelets, rutile / tourmaline needles in sagenitic quartz . Actinolite quartz contains a green needle-like variety of actinolite known as bissolite . Chlorite quartz contains chlorite, which gives it a green color similar to moss. Forms of twinning (interconnected growth) are common in natural quartz crystals and therefore also in citrine. The twinning of the Dauphiné Law can be seen in intensely intertwined crystals, in which one of them seems to grow within another. Gemination of Brazilian law (left and right quartz structures are combined into one crystal) is common in natural quartz.</p> <p>Japanese law twinning , also known as Weiss law twinning, Gardette law twinning and crystal quartz law twinning, is an extremely rare variety of quartz. It is defined as having two crystals that meet at an angle of $84^{\circ} 33'$; in addition to having parallel prismatic faces (which results in a "V" formation).</p>	
	<p>Type II Normally included</p>	<p>Transparency (commercial) - diaphanousness Transparent, translucent, opaque</p>
<p>Deposits - types of rocks</p>	<p>Quartz is found in the epithermal veins; it is a mineral characteristic of granites and granite pegmatites and is found in sandstones and quartzites. It occurs in hydrothermal metal deposits and in carbonate rocks where it is common.</p> <p>Amethyst crystals grow inside geodes developed in basaltic rocks due to hydrothermal activity following, but often close to, the magmatic event itself. Geodes are cavities present within igneous rocks, which in fact represent gas bubbles variously modeled by the greater or lesser flow of the magmatic liquid. The lower the viscosity of the liquid, the more elongated can be the shape of the geode whose sharpest part coincides with the direction of flow. Groups of crystals (among the most common quartz, zeolites, carbonates and sulphates) can develop on the internal walls of these geodes "grown" thanks to the particular chemical composition and the relatively high temperature (from 850 to 950 °C) of the percolated hydrothermal fluids through the rock.</p> <p>Citrine is found in igneous (rocks produced under conditions of intense heat) and metamorphic rocks, particularly in granite and gneiss. It is also found in classical sediments (matter that settles on the bottom of a liquid). Most of the good crystals are found as gauge minerals in mineral veins. Citrine is often found in association with amethyst, but is much rarer than its purple cousin.</p> <p>California-Nevada border just north of Reno, amethyst, citrine, and green quartz (prasiolite) are found together in clusters of crystals in the debris. These crystals, found dissolved in rocky and sandy debris, appear to have been eroded by cavities and vesicles in the inaccessible cliffs above. The quartz was deposited in these spaces due to the slow mixing of migratory solutions of silica. Low-grade radiation over a large geological time span promoted the alteration of ferric and ferrous quartz to its amethystine color. Secondary, high-temperature volcanic bodies in extrusion are believed to be responsible for the subsequent color change to citrine or green quartz.</p> <p>Age : The quartz (in general, including citrine) found on the surface today is believed to have formed over 250 million years ago in the crevices of rocks that were a mile or more below the earth's surface.</p>	
<p>Characteristics of rough stones</p>	<p>Quartz, in general, comes in two main forms, the normal α -quartz (trigonal crystal system) and quartz - β (hexagonal crystal system) at high temperature. The transformation from α -quartz to β-quartz occurs abruptly at 573 ° C. Since the transformation is accompanied by a significant change in volume, it can easily induce internal microfractures.</p> <p>In nature, quartz crystals are often twinned, distorted, or so intertwined with adjacent crystals, whether of quartz or other minerals, that they show only part of their regular external structure, or lack obvious crystalline faces altogether. Well-formed crystals typically form as druse (layers of crystals lining a chalcedony base - micro or cryptocrystalline quartz), of which quartz geodes are particularly fine examples. The interior of the geodes is often lined with Druze quartz.</p>	

Main deposits	Bolivia (Santa Cruz), Sri Lanka (Sabaragamuwa Province), Uruguay (Artigas Department), Canada (Ontario), Madagascar (Alaotra-Mangoro Analamanga Diana Ihorombe), Myanmar (Mandalay Region Sagaing Region), Brazil (Minas Gerais, Paraíba), Namibia , Russia and Spain .
Year of discovery	Very ancient: Difficult to go back to the first mentions, also for the use of different names that sometimes indicated the stone and sometimes the color or some quality.
History	<p>A citrine pendant part of a necklace from Morocco , and 11-15,000 years old , which became part of a private Swiss collection was purchased in the early 1970s. the white, faintly yellowish crystal used in these pearls probably originated in the Atlas Mountains . The citrine could be the tenth stone of the twelve identified in Genesis as in the armor of the High Priest (not much is known about the existence and use of these gems at the time of the writing of the Holy Book). Part of the confusion derives from the fact that both in the ancient Greek version of the Old Testament, the <i>Septuagint</i> or <i>Book of the Seventy</i> , and in the Latin version, Vulgate, compiled by Jerome, the Greek term chrysolitus , which literally means " golden stone " , appears. This word could describe a number of stones, including golden topaz, sea green or yellow beryl and even peridot According to the most recent studies today chrysolitus is rendered with zircon .</p> <p>Like so many other stones in the ancient and medieval world, citrine was sometimes worn as a protective talisman and used for medicinal purposes: it was thought to protect against plague, aid in digestion, and cleanse toxins from the body.</p> <p>At various times in history, citrine has symbolized hope, youth, health and fidelity. Citrine was first considered a gemstone during the Hellenistic Age of Ancient Greece (323-146 BC).</p> <p>The Greek geographer and historian Dionysius Periegetes (literally Dionysius the Traveler) or Dionysius of Alexandria, an Alexandrian of the II-III century AD and author of a compendium <i>Description of the Inhabited Earth</i>, described the Indian gems, all those that came in his time from the Southern India: beryl, diamonds, amethyst, citrine and prase .</p> <p>Carved citrines from the Roman period are present in various museums and are sold at the; enchantment. For example, an Artemis -Moon themed one dating back to the 1st century AD . auctioned by Christie's).</p> <p>The name was used to refer to yellow gemstones as early as 1385 , when the word was first recorded in English, in Latin this usage must certainly be older. However, since the color of the gem closely resembled topaz, these two stones were often confused. Quartz and topaz are not actually related mineral species. But before these differences were clear, many cultures called citrine (the yellow variety of quartz) by other names, such as golden topaz, Madeira or Spanish topaz, contributing to the confusion between these yellow gemstones . In ancient times, people believed that citrine gemstones could calm tempers, soothe anger, and manifest wishes, especially prosperity. To harness these powers, the Egyptians used citrine gemstones as talismans, the ancient Greeks carved iconic images into them, and the Roman priests fashioned them into rings.</p> <p>A key discovery gave citrine a boost to popularity in the mid -18th century . Mineralogists realized that amethyst and smoky quartz could be heat treated to produce shades of lemon-colored citrine and golden honey, contributing to an abundance of affordable improved gemstones in the market. Once citrine distinguished itself from topaz, it quickly became popular in women's jewelry as well as men's cufflinks and rings. Today it remains one of the most affordable and frequently purchased yellow gems.</p> <p>Name: From the Latin <i>citrus / m</i> (lemon) some also suggest <i>citrules</i> (pickled), probably via Etruscan from the ancient Greek κέδρος (<i>kédros</i>); then passed to the French <i>citron</i> , for its lemon yellow color due to its iron content. "</p> <p>Variety: ametrine (Bolivianita / Bolivianite), part citrine and part amethyst (yellow-purple),</p> <p>Trade names: Golden Quartz, Golden Topaz (obsolete), Spanish Topaz (obsolete), Lemon Quartz, Citrine, Burnt Amethyst (misnomer, referring to cobalt 60 irradiation-treated crystals of aluminum-containing colorless quartz that produce known greenish-yellow citrines also traded as "lemon quartz" or "green gold".), "merchant's stone". Madeira topaz and Bahia topaz are actually misnomers because both refer to citrine not topaz. Lemon Yellow Citrine, Golden Citrine, Madeira Citrine (golden orange to reddish brown), Fire Citrine (deep orange), Palmeira Citrine (bright orange).</p>

<p>Attributed properties</p>	<p>Citrine is said to aid in urinary, kidney and digestive diseases, endocrine system function, and counteract the toxic effects of many pharmaceuticals . This gem stimulates digestion, spleen and pancreas, benefits eye diseases and increases blood circulation. Helps Citrine is believed to be a tonic for the circulatory system and aids in blood purification, as it is processed within the kidneys and other organs. It gives energy and invigoration to the physical body and is useful for people who are sensitive to the environment and other external influences. Also useful against constipation and cellulite. Soaking a citrine in pure water makes an elixir, which is said to release toxins from the body. It is believed to be beneficial for women as it helps menstrual problems, PMS and cramps , in menopause symptoms, by balancing hormones and relieving fatigue. As with other yellow gemstones, citrine is used to treat bladder diseases and imbalances in the thyroid gland .</p> <p>Citrine is believed to be beneficial in healing the spiritual self, as it is a powerful purifier and regenerator. Bringing the power of the sun, it is great for overcoming depressions , fears and phobias. At a higher level, it pushes to awaken both intellect and mental activity as well as the higher mind , expanding conscious awareness and improving clarity of thought. It helps digest information and analyze situations, guiding them in the right direction, thus helping to find solutions to problems and to remove stress and negativity from the body . It has the power to impart joy to all who wear it and instills a positive attitude.</p> <p>. As it resists atmospheric agents, it is also found in alluvial sands and gravels. The largest supplier of natural citrine is the state of Rio Grande do Sol in southern Brazil. Citrine mines in the United States are located in Colorado, North Carolina, and California. The gem is also found all over the world, in Spain, Brazil, Africa, South Africa, France, Great Britain, Madagascar and the Soviet Union.</p> <p>chakra -based interpretation sees citrine as uplifting, luminous, energizing and stimulating. Encourages the free flow of life energy, prahna activates and inspires intuition. Promote creativity by eliminating self-destructive behaviors.</p> <p>Citrine is the gem of choice for the thirteenth and seventeenth wedding anniversary.</p> <p>Piezoelectricity - develops an electrical charge when pressure is applied.</p> <p>Pyroelectricity - develops an electric charge when heated.</p> <p>Diasterism in the stellar variety (star visible in reflected and transmitted light).</p> <p>Planet: Saturn</p> <p>Month: November Zodiac sign: Leo, Pisces, Sagittarius, Scorpio</p> <p>Chakra: Third eye, solar plexus</p>
<p>Treatments</p>	<p>Natural citrine generally does not undergo any treatment to improve its color or transparency. However, it is quite rare. To get yellow at a lower cost, it is common for the amethyst to be heated to produce a strong yellow or orange hue similar to a natural citrine . Although it can be quite difficult to distinguish between a true citrine and a heat treated amethyst once the stone has been polished; it is usually much simpler by looking at the blank. A heat treated amethyst will have a white background with orange tips, while a true citrine is normally orange down to the base of the crystals . Furthermore, amethysts heat treated to make them yellow show no obvious pleochroism (visible only in stones of medium or higher hue / saturation) .</p> <p>Even smoky quartz can be subjected to this intervention. In this case it often gives rise to stones with a reddish tint , which may possibly also have reddish-brown hematite inclusions (surrounded by cracks). Also in this case the stones do not show dichroism unlike the natural ones.</p> <p>Another intervention to modify the appearance of quartz is irradiation.</p> <p>Irradiation with UV light destroys the color centers and as a result, prolonged exposure to sunlight slowly fades the stone. Prolonged exposure to the sun and intense light causes them to turn pale ; at a temperature between 400 °C and 500 °C, the crystals change their color radically (yellow-brown-orange) becoming artificially similar to citrine crystals and often fraudulently sold as such. Processed amethyst is produced by gamma-ray, X-ray, or electron beam irradiation of clear quartz (rock crystal), which is initially doped with ferric impurities . Exposure to heat partially cancels the effects of radiation and amethyst generally turns yellow or even green. Much of the citrine, <i>cairn gorm</i> (smoky) or yellow quartz in current jewelry is said to be simply "heated or burnt amethyst".</p> <p>Like smoky quartz, natural citrines pale when heated above 200-500°C and turn yellow again when irradiated , and also slowly fade under UV light. This indicates the presence of color centers. At least some citrine is colored by aluminum-based and irradiation-induced color centers related to those found in smoky quartz. As a result, there are</p>

	<p>transitions to smoky quartz ("smoky citrine") - a rather common phenomenon. There appear to be at least two types of yellow colored centers based on the presence of aluminum (Al) with different thermal stability. Because yellow color centers are often more stable than <i>smoky color centers</i>, some smoky quartz can be transformed into citrine by careful heating. Natural citrine, as well as citrine made by heating smoky quartz, is dichroic.</p> <p>coatings of iron oxides on colorless quartz, as well as inclusions of yellow iron oxides ("limonite"), can simulate citrine.</p>		
Synthetic counterpart	<p>Just like diamonds, lab grown citrine is atomically identical to 100% natural citrine. The cost difference between the two is not as significant as we would typically see with diamonds or gemstones, however, the color of these stones is particularly vivid. Synthetic citrine (as well as rock crystal and amethyst) is produced by a synthesis method called hydrothermal growth, which causes the crystals to grow inside a high pressure autoclave. The crystals are hydrothermally grown in concentrated alkaline solutions (K₂CO₃) at temperatures of 330 ° –370 ° C and pressures in the range from 1,200 to 1,500 atmospheres, in autoclaves ranging from 1,000 to 1,500 liters of volume. The crushed silica used to grow synthetic citrine is derived from both natural and synthetic quartz, which have a very low aluminum content (10–100 ppm). To facilitate the incorporation of Fe³⁺ into the growing crystal structure, manganese nitrate, Mn(NO₃)₂, is used as an oxidant.</p>		
It can be confused with	<p>Scapolite (separation by: figure / optical sign, UV fluorescence, inclusions, doubling), synthetic citrine (separation by: inclusions, infrared spectroscopy), beryl heliodor (separation by: optical figure / sign, inclusions, RI), topaz (separation by: optical figure, RI, SG)</p> <p>Large quantities of amethyst, usually of lower quality, are heat treated to turn yellow or orange and sold as "citrines". Since the color is caused by finely distributed iron ores (mainly hematite and goethite), the heated amethyst is not strictly citrine.</p>		
Indicative gemological tests	<p>A stone with which citrine is easily confused is scapolite. In some cases their gemological characteristics can almost overlap. For this reason it is good to pay attention to all the distinctive variables between the 2 gems. It must be said that in the market, both stones are not expensive, so confusion between the 2 gems is generally not a problem.</p>		
Value (2021)	High : 30 \$ / ct 3 carat +	Medium : \$10/ct 1-3 carats	Low : \$1/ct under the carat
	<p>When looking for citrine for everyday jewelry, typically below one carat, the color scale ranges from AAAA - A. The stones are labeled with these letters based on rarity. For example, an AAAA (heirloom quality) stone represents 1% better than all-natural gemstones, an AAA (fine quality) stone represents 10%, AA represents 25% and A for 50 - 75% (a stone most commercial-grade stone).</p>		
Typical cut	<p>Citrines can make beautiful stones for large engagement rings and are also excellent carving material and for small or large sculptures. If their color is vivid (yellow or orange) and of excellent transparency, they are often worked with faceted cuts, lesser quality stones lend themselves to cabochons and statuettes (but you can find sculptures with first choice material).</p>		
Famous stones	<p>Brooches and other Victorian-era jewels that date back to the second half of the nineteenth century. It was also very popular for jewelry in the 19th century, then in the Art Deco period, between the first and second world wars, large citrines were set in many fine pieces, including massive and elaborate jewels, made for big Hollywood stars like Greta Garbo and Joan Crawford.</p> <p>A particular piece is a citrine mouse sculpted by Fabergé, around 1900, which was formerly part of the Brooklyn Museum collection.</p>		
Record stones	<p>There are examples of citrine weighing several kg. Citrine is found in the same geological environments as smoky quartz and is often associated and intertwined with it. Contrary to amethyst, citrine crystals can show a <i>macromosaic structure</i> and become very large (good quality one meter sized crystals have been found in Minas Gerais, Brazil). <i>Macromosaic</i> quartz crystals composed of slightly inclined wedge-shaped sectors arranged in a radial pattern. They are recognized by the presence of points of union on the crystalline faces and by the discontinuous streak of the prismatic faces. These types of quartz were described as early as the 1950s and are known as "Friedlaender quartz". more than 3600 kg natural yellowish quartz (citrine) found in an Arkansas mine in 2016 is on display at the Smithsonian's National Museum of Natural History.</p>		

