


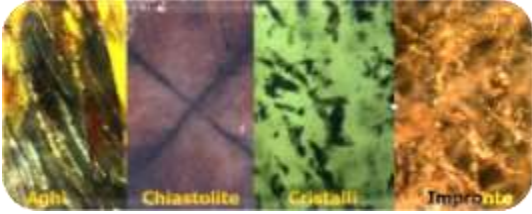


**Warning: this version has been completed with Google Translate , it certainly contains errors or inaccuracies.**

## Technical sheet - general: **Andalusite**

<b>Gemma - names</b>	( <b>Italian</b> -Andalusite) ( <b>English</b> - Andalusite) ( <b>French</b> - Andalousie ) ( <b>Spanish</b> - Andalusí ) ( <b>Portuguese</b> - Andaluz) ( <b>Thai</b> - อัญมณีชาลูลูซอइट x a n from lūs í t ' )	( <b>German</b> - Andalusit ) ( <b>Arabic</b> - اندلسي 'andalsi ) ( <b>Russian</b> - АНДАЛУЗИТ Andalusit ) ( <b>Mandarin</b> - 红柱石 hó ng zh ù sh í ) ( <b>Swahili</b> - Andalusite) ( <b>Hindi</b> - अंडालूसोइट andaaloosait )	<b>photo</b> 
<b>Colors (GIA)</b>	Andalusite ranges in color from <b>pale yellowish brown</b> to <b>dark bottle green</b> , dark <b>brown</b> or the more <b>popular greenish red</b> . It has a very strong and characteristic pleochroism, so much so that, once turned, the same stone can appear <b>yellow</b> , <b>green</b> and <b>red</b> . The <b>colorless</b> and <b>pink</b> varieties are slightly pleochroic. There are also <b>blue</b> stones .		
<b>Cause of Color</b>	Significant amounts of Mn <sup>3+</sup> and Fe <sup>3+</sup> can replace octahedral aluminum. Green Andalusite ( <b>viridin</b> ): manganese Brownish green andalusite: charge transfer. The Andalusites of Ottré , Belgium, have a <b>blue color</b> due to a Fe <sup>+2</sup> -Fe <sup>+3</sup> charge transfer mechanism .		
<b>Classification</b>	<b>Mineral class</b> Nesosilicates Polymorph with Kyanite and Sillimanite.	<b>Species - Group (mineral)</b> Andalusite	<b>Variety</b> -
<b>Optical properties</b>	<b>Specific Gravity:</b> 3.05-3.21 <b>Common:</b> 3.15	<b>RE:</b> 1,627–1,664, <b>typical</b> : 1,634–1,643 <b>Polariscope</b> : DR <b>Double refraction:</b> 0.008 - 0.013 (higher when the indices are lower) ( Viridin : 0.029)	<b>Character optical</b> Negative twixial
	<b>Luster (luster) - luster of the fracture</b> From vitreous to subvitrean - From vitreous - subvitrean-opaque		<b>Pleochroism</b> Strong tricroic. Generally light yellow green and dark brownish red and brownish green.
<b>Light</b>	<b>Fluorescence</b> <b>SWUV</b> : Inert to moderate green, yellowish green or brown <b>LWUV</b> :		<b>Dispersion (fire)</b> 0.016
<b>Form</b>	<b>Crystalline dress</b> Prismatic  <b>Melting point, decomposes between:</b> 1325 ° C and 1410 ° C	<b>Phenomenal optical effects</b> Attitude	<b>Crystalline system</b> Orthorhombic  <b>Crystal class</b>
<b>Chemical formula</b>	Aluminum silicate with iron or manganese trace elements.  <b>Al<sub>2</sub>SiO<sub>5</sub></b>		<b>Spectrometer image</b>  <b>Manganese spectrum</b> : seen at 553.5 nm and thin lines at 550.5 nm and 547.5 nm, band at 455 nm. <b>Rare earth spectrum</b> : 580 nm in some yellow and green Andalusites .
<b>Fracture</b>	<b>Flaking</b> Two good prismatic directions almost 90 degrees	<b>Breaking- Parting</b> Rare	<b>Fracture</b> Regular / uniform to Irregular, chipped or subconchoidal
<b>Durability</b>	<b>Hardness (Mohs) - Absolute</b> (6.5 less frequent) 7 - 7.5; 100-150	<b>Toughness</b> Fragile	<b>Stability</b> (heat, light, chemicals) Very good

<b>Clarity - characteristics</b>	<b>Typical inclusions:</b> Rutile needles, imprints, crystals. Chiastolite has a dark cross. 	
	<b>Type II</b> Normally included	<b>Transparency (commercial) - transparency</b> From transparent to opaque
<b>Deposits - types of rocks</b>	<p>Common in contact and regional metamorphism, associated with <b>cordierite, garnet, sillimanite, kyanite, staurolite, muscovite, biotite, chlorite and plagioclase</b> . Andalusite is often replaced by other minerals, notably micas, Pyrophyllite and Kyanite, which can form a complete or partial pseudomorph after Andalusite. It is found in various environments, especially in metamorphosed schists, gneisses and hornfels . Also in replacement hydrothermal deposits, granite pegmatites and in alluvial deposits. South Africa has by far the largest portion of the world's known andalusite deposits. The minerals <b>kyanite and sillimanite are polymorphs of andalusite</b> , each present in different temperature-pressure regimes and therefore rarely found together in the same rock. As such, the three minerals are a useful tool to help identify the pressure-temperature paths of the host rock in which they are found. A polymorph is a mineral that shares the same chemistry but a different crystal structure with another or other minerals. The transition from kyanite to andalusite is known as isograd andalusite, while the transition from andalusite to sillimanite is called isograd sillimanite.</p> <p><b>Age</b> : 80+ million years old</p>	
<b>Characteristic s of rough stones</b>	<p>Vertically striated prisms covered with pyramids; much of the gem material such as pebbles consumed by water. Large crystals may appear as vertically striated prisms with a square cross section and pyramidal ends, but they are rare. More common are opaque aggregates, similar to sticks of crystals or pebbles consumed by water. They are the pebbles that are usually cut like precious stones. It is frequently found in prismatic and block crystals and grouping of crystals, often with a square section. The shape of the crystal is usually rectangular and sometimes with beveled edges. The habits are more often massive, grainy, columnar, radiant, like contours of crystals embedded in the matrix and in rounded shapes consumed by the water.</p>	
<b>Main deposits</b>	<p>Andalusite is a fairly common mineral and is found in many states. Part of it is used for industrial uses (major producers are South Africa, France, China and Canada). As far as gem quality is concerned, deposits are less common. Here are the main ones:  <b>Australia</b> ( Olary / Kalabity -SA), <b>Austria</b> , <b>Brazil</b> (Diamantina-MG), <b>Belgium</b> ( Otré ), <b>Madagascar</b> ( Ilakaka ), <b>Myanmar</b> (Mogok Valley- Pyin-Oo-Lwin ), <b>Russia, Sri Lanka</b> (Ratnapura), <b>Spain, USA</b> (California, Gunnison -Colorado, Maine; Massachusetts; New Mexico; Pennsylvania; South Dakota (Black Hills), <b>Zimbabwe</b> .</p>	
<b>Year of discovery</b>	<p><b>1798:</b> It was <b>Jean-Claude Delam��therie</b> (1743-1817) , a French mineralogist, geologist and paleontologist, to give his name to Andalusite in 1798.</p>	
<b>History</b>	<p>The original form of Andalusite was found before the birth of Christ in El Cardoso, which is another Spanish region. It appears (but is not confirmed by official historical data) that the ancient Greeks used these extravagant crystals for healing and decorative purposes.</p> <p>In the past Andalusite was sometimes called "Alexandrite of the poor" because it offers play of color, similar to that of Alexandrite, but at a low price. Some andalusite crystals have inclusions arranged in such a way that in cross section they form <b>a dark cross</b> . This form of andalusite is called <i>chiastolite</i> , which is a name that comes from the Greek word for cross .</p> <p>Andalusite is also used as a refractory in furnaces, kilns and other industrial processes.</p> <p><b>Name</b> : Andalusite takes its name from the Spanish province of Andalusia. The origin of the name is misleading, as the type locality where this mineral was first described is not Andalusia, but rather El Cardoso de la Sierra, which is located well north of Andalusia in the province of Guadalajara. .</p> <p><b>Variety</b> : Chiastolite , Viridina</p> <p><b>Market names</b> : -</p>	

<b>Property attributed</b>	<p>To add to its various names, Andalusite is also considered the "Stone of sight / vision (introspection)" as it allows one to see <b>different facets of one's</b> character without judgment or prejudice while remaining grounded. Also useful in seeing other people, situations and problems rationally; then also a guide for what is the 'right' path. It is a stone of great energy that helps to carry out <b>large long-term projects</b> ; ensure success by helping to keep fully focused on the task at hand.</p> <p>It is said to have the ability not only to <b>ward off evil cravings and cravings</b> , but all the power to <b>dispel negative thoughts and feelings</b> by transmuting them into positive, non-conflictual harmony. It said it offers improved general memory and personal memory booster.</p> <p>It offers understanding of chivalry, restraint and balance in all things. Helps you recover when you lose your balance due to circumstances beyond your control. Physically, Andalusite is said to <b>reduce fever</b> , decrease unwanted blood flow, <b>relieve excessive acidification</b> and balance any oxygen deficiency. Through the balance of the nervous system and muscular influences, this stone was often used to treat uncontrollable movements.</p> <p>It was said to help eliminate destructive behaviors, recover from abusive habits; bringing a feeling of security, safety and security; as well as balancing emotions at the same time. Used by ancient healers to <b>counter many of the physical effects of aging by</b> balancing the immune system and regenerating many internal body functions to form a healthy and happy general well-being.</p> <p><b>Planet:</b> Venus  <b>Month:</b> NA <b>Zodiac sign:</b> Libra or Virgo  <b>Chakra:</b> Heart and Root</p>		
<b>Treatments</b>	<p>The heat treatment at 350 ° C and 550 ° C does not produce appreciable color variations; heating to 800 ° C, on the other hand, causes a slight lightening of the body color, although it has been previously reported that the "olive green" andalusite from Brazil changes to pink and brown, and then colorless, at 800 ° C . Treated specimens often develop stress fractures oriented in one direction along the prism faces, indicating expansion of the cleavage due to heat. At 1200 ° C, damage to the andalusite crystals occurs mainly during the first thermal shock with a displacement of the cleavages and the generation of cracks.</p>		
<b>Synthetic counterpart</b>	<p>Scientists synthesized andalusite crystals via the hydrothermal method for research purposes. However, the use of jewelry for this material is not known. If this gem becomes better known, perhaps it will change. Lacy (1951) reported the growth of andalusite in slates subjected to hydrothermal treatment at temperatures above 760 ° C, but the method for identifying andalusite was not mentioned.</p> <p>Some cleverly cut gems can mimic the strong pleochroism of Andalusite. For example, a piece of predominantly brown synthetic quartz with a shallow green layer near its periphery was cut to show both colors, as real Andalusites might. Again, closer observation will distinguish the real object from the simulant.</p>		
<b>It can be confused with</b>	<p><b>Tourmaline</b> (Separation by: optical figure, birefringence, pleochroism), <b>Epidote</b> (Separation by: RI, SG), <b>Alexandrite</b> (Separation by: RI, SG, pleochroism, inclusions), <b>Apatite</b> (Separation by: optical figure, pleochroism).</p>		
<b>Indicative gemological tests</b>	<p>Strong pleochroism is often mistaken for a change effect. A combination of the various tests (refractometer - RI and birefringence -, dichroscope and optical character, usually lead to a secure identification)</p>		
<b>Value (2021)</b>	<b>High :</b> 500-1000 \$ / ct <b>3 carat +</b>	<b>Medium:</b> 200-300 \$ / ct <b>1-3 carats</b>	<b>Low:</b> \$ 50 / ct <b>below the carat</b>
<b>Typical cut</b>	<p>The preferred shapes for Andalusite are those with a long axis, such as oval, marquise or emerald cuts, as they tend to show one color near the center and a second color, usually darker, near the ends. Square and round cuts usually blend colors into a mosaic. Generally in fancy cuts to enhance its marked pleochroic property. Transparent green andalusite is the most popular form of andalusite. Unlike other pleochroic gemstones, such as iolite and zoisite, where gem cutters try to reduce pleochroism and highlight the single best color, andalusite cutters <b>actually try to get a good mix of colors in the stone.</b> When cut with an emerald cut, andalusite can appear mostly green, with pieces of orange showing at the ends of the emerald shape. When cut into a round cut, the green body color is visible, as are simultaneous flashes of other colors. The rare and sometimes expensive emerald green variety can exhibit a bright yellow color at the same time or when viewed from different angles. On the contrary, the pink variety does not exhibit</p>		

	<p>this type of chromatic phenomenon. Due to its color and its durability, it is particularly suitable for <b>men's jewelry</b> .</p>
<b>Famous stones</b>	<p>There are no particularly famous gems. However, there are known examples housed in some museums, such as:  one of 28.3 carats (green / brown, Brazil), and one of 13.5 carats (brown, Brazil), in the Smithsonian Institution (Washington, DC),  one of 12.44 (Brazil), in the Royal Ontario Museum (Toronto, Canada).</p>
<b>Record stones</b>	<p>Gems from Brazil can reach 75-100 carats. However, the gems of most locations usually range from 1 to 5 carats. Andalusites in the 5 to 10 carat range cost several times more per carat than smaller stones. Stones over 10 carats are quite rare and those over 20 carats are even more difficult to find. During the fall of 1986, exceptionally large prismatic crystals of andalusite were discovered in association with milky quartz veins at a previously unknown site in Campbell County, Virginia, USA. These Andalusite crystals were of record size, with lengths of up to <b>31.8cm</b> and facial prism widths of up to <b>18cm</b> .</p>