
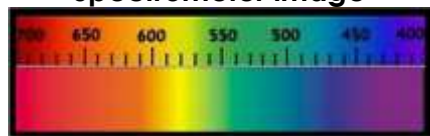
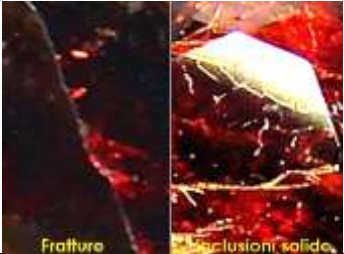


**Warning: this version was completed with Google Translate, it certainly contains errors or inaccuracies.**

## Technical data sheet – general: Painite

<b>Gemma – names</b>	( Italian - Painite) ( English - Painite) ( French - Painite) ( Spanish - Painita) ( Portuguese - Painita) ( Thai – ปวด Pwd)	( German - Painit) ( Arabic- مؤلم mulim ) ( Russian – Пейнит Peynit) ( Mandarin - 钙钛矿 Gài tài kuàng ) ( Swahili - Painite) ( Hindi – पेनाइट penait )	<b>photo</b> 
<b>Colors (GIA)</b>	Painite is an extremely rare gemstone with a wide range of colors, including <b>red</b> (the most common), <b>orange</b> , <b>brown</b> , and <b>yellow green</b> . Its coloration is mainly due to the presence of chromium (red), vanadium (orange and brown), and other elements such as zinc and magnesium can contribute to colors such as yellow and green. This stone is known for its strong pleochroism, meaning that its color can vary depending on the angle from which it is viewed. This highly valuable gemstone is often used in the creation of high-quality jewelry.		
<b>Cause of Color</b>	Traces of the trace elements chromium ( Cr <sup>3+</sup> ) and vanadium ( V <sup>3+</sup> ) are responsible for the typical orange-red to brownish-red color. Painite contains small amounts of <b>hafnium and titanium</b> . The majority of the stone is made up of aluminum oxide (about 70%) and zirconium oxide (about 17%). Common impurities include chromium, vanadium and iron, with the first two contributing to the color of painite. <b>Similar Minerals</b> : The closest mineral to painite is the rare aluminum borate jeremjevite. Other borate minerals you may recognize include howlite and londonite. <b>Crystal structure</b> : Usually, painite occurs as long, transparent crystals with a hexagonal crystal system, although the crystal system may appear orthorhombic. <b>Allochromatic Gem</b>		
<b>Classification</b>	<b>Mineral class</b> Borates	<b>Species – Group (mineral)</b> Painitis - /	<b>Variety</b> /
<b>Optical properties</b>	<b>Specific Gravity:</b> 4.00 - 4.03 Common: 4.01	<b>RI:</b> 1,787 to 1,816 <b>Polariscope :</b> <b>Birefringence:</b> 0.028 (0.027-0.030)	<b>Character optical</b> Negative uniaxial <b>Pleochroism</b> <b>Strong:</b> ruby red and pale orange/brownish yellow or pale orange-red
	<b>Luster (luster) – luster of the fracture</b> Vitreous - vitreous		<b>Dispersion (fire)</b>
<b>Light</b>	<b>Fluorescence</b> SWUV (254 nm) : Strong red or greenish LWUV (365nm) : Inert to weak red		<b>Phosphorescence</b> Absent
<b>Form</b>	<b>Crystalline dress</b>  Melting point: 2094 °C	<b>Phenomenal optical effects</b> NO	<b>Crystalline system</b> Hexagonal Dipyramidal <b>Crystal class</b>
<b>Chemical formula</b>	Calcium, zirconium and aluminum borosilicate  <b>CaZrAl<sub>9</sub>(BO<sub>3</sub>)O<sub>15</sub>o</b> <b>CaZrAl<sub>9</sub>O<sub>15</sub>(BO<sub>3</sub>)</b>		<b>Spectrometer image</b>  Not available
<b>Fracture</b>	<b>Flaking</b> None	<b>Breakup- Parting</b> Not known	<b>Fracture</b> Conchoidal
<b>Durability</b>	<b>Hardness (Mohs) - Absolute</b> 7.5-8; 150 - 200	<b>Toughness</b> Fragile	<b>Stability</b> (heat, light, chemicals) Good

<b>Clarity - characteristics</b>	<p>Even gem-quality rough is typically highly included and fractured. As a result, facets tend to cut into these small, shallow gems, which can compromise their brilliance.</p>		
	<p style="text-align: center;"><b>Type III</b> Typically included</p>	<p style="text-align: center;"><b>Transparency (commercial) - diaphanità</b> From transparent to translucent</p>	
<b>Deposits - types of rocks</b>	<p>In alluvial deposits, in gravels rich in gems (of various types). Phlogopite and corundum are closely associated with painite. The mineral most similar to painite is the rare aluminum borate <i>jeremjevite</i> .  <b>Geological age</b> : possibly over a billion years ago.</p>		
<b>Characteristics of rough stones</b>	<p>Elongated crystals pseudo-orthorhombic, often marked by frequent fractures. Painite has a hexagonal and pseudo-orthorhombic crystalline formation, with angles indicating unequal length axes.</p>		
<b>Main depots</b>	<p>Myanmar/Burma is the only known source of this gem. In addition to Ongaing, the main deposit, Kyauk-Pyat-Thetm (Mogok and Namyazeik), in Kachin State, have occasionally produced gem-quality material.  <b>Other deposits: none known</b></p>		
<b>Year of discovery</b>	<p><b>1951</b>: The first specimen of painite, a single crystal, was identified as a new species of gem in 1951. It was donated by Arthur Charles Davy Pain, its discoverer (who did not yet know he had encountered a new species), at the Natural History Museum in London in 1952, but was first described in an article by Dr. Gordon Frank Claringbull and others only in <b>1957</b> .</p>		
<b>History</b>	<p>At the beginning of the new millennium, this gem was listed as the rarest gem on the planet, however many other stones have been found since then. Many hundreds of stones have been faceted, but high-quality faceted rough material is still almost impossible to find.</p> <p>A 0.27 gram deep red crystal, now in the collection of the Gemological Institute of America, was found in 1979 in a package of rough gemstones. It was subsequently carefully studied by the GIA.</p> <p>Until <b>2001</b>, only 3 crystals were known. Since then, more specimens have been discovered. Today (2022) the number of gems recovered amounts to a few thousand crystals and fragments, but most of this material is not facetable.</p> <p>In <b>2002</b> , major new deposits were discovered in the Mogok area which led to the recovery of several thousand crystals and fragments.</p> <p>Until 2004-2005, there were only two faceted gems.</p> <p>In <b>2004</b> , the first primary deposit of painite was identified, which had initially been recovered as alluvial cobble near the village of Ohngaing. The mine known as Sinhalite Mine (produces mainly assorted colored spinels, tourmaline and sinhalite) is located about 2 km from Mogok in Myanmar. The first rare crystals found showed modest rounding due to the action of water, indicating that the primary source was nearby. The painite is said to be found at the top of the mine near the contact between leucogranite and marble in the weathered ground.</p> <p>In <b>2007</b> , a brown specimen from the Natural History Museum in London, originally identified as a Mogok ruby tourmaline, was revealed to be a painite.</p> <p>As of <b>2020</b> , this gem was mainly mined in two locations, Wet Loo and Thurein Taung.</p> <p><b>Name</b> : It was called painite in honor of the English mineralogist and gemologist <i>Arthur Charles Davy Pain</i> (1901-1971), who first discovered this gem, although he initially mistakenly identified it as a ruby.</p> <p><b>Other trade names:</b></p> <p><b>Variety</b> : /</p>		
<b>Attributed properties</b>	<p>Painite is not associated with any zodiac sign nor is it a gemstone for those born in a particular month. However, it has significant meaning for those who practice Feng Shui. Painite is considered a chakra opener, that is, a stone that promotes the free flow of energy through the chakras.</p> <p>The term "chakra" refers to an internal, rolling energy source that some believe impacts nerves, bodily functions and overall well-being. A <b>chakra opener</b> , such as painite, is used to encourage a free flow of energy, thus helping to improve physical, mental and emotional health.</p>		

	<b>Planet:</b> NA <b>Month:</b> July <b>Zodiac sign:</b> NA <b>Chakras:</b> Chakra opener		
<b>Treatments</b>	Painitis does not undergo treatments to improve its appearance (also given its rarity).		
<b>Synthetic counterpart</b>	There is no synthetic counterpart on the market.		
<b>May be confused with</b>	Colors and specific weight overlap with those of some species of garnet (almandine, vedortine or pyrope) and ruby. However, the refractive index, birefringence and absorption spectrum can quickly lead to unambiguous separation.		
<b>Indicative gemological tests</b>	Appearance, refractive index (at the liquid limit RI) and high birefringence make the identification of this gem relatively simple.		
<b>Value (2021)</b>	<b>High :</b> 50,000+\$/ct <b>3 carats+</b>	<b>Medium:</b> \$ 5,000 /ct <b>1-3 carats</b>	<b>Low:</b> \$1,000/ct <b>under the carat</b>
<b>Typical cut</b>	Typically, the rough is highly included and fractured so the gemstone cuts tend to be shallow, which can compromise its brilliance.		
<b>Famous stones</b>	Two of the very first rough specimens ever discovered of painite (1.70 and 2.12 g), are housed at the Natural History Museum in London.		
<b>Record stones</b>	<p>The largest currently known painite specimen weighs <b>213.52 carats</b> (42.7 grams), according to the <b>Guinness Book of World Records as of March 2020</b> .</p> <p>Another notable specimen of exceptional size reported in 2006 weighs an impressive 3,165 carats (633 grams), although it is not pure painite but a mix that also features rubies. The price of painite per gram as a gemstone ranges from \$50,000 to \$60,000 per carat. However, an increase in availability (albeit limited) could allow some facet-cut painites to be found at a price between \$1,000 and \$5,000 per carat. Small raw (uncut) painite crystals are priced significantly lower, usually around \$0.50 - \$20 per carat if they are not jewelry quality.</p>		