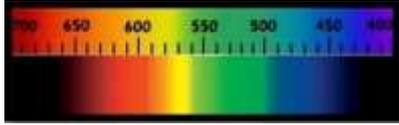


Warning: this version has been completed with Google Translate , it certainly contains errors or inaccuracies.

Technical sheet - general: **Green chromed tourmaline**

Gemma - names	(Italian - Green tourmaline) (English - Green tourmaline) (French - Tourmaline verte) (Spanish - green tourmaline) (Portuguese - green tourmaline) (Thai - ทัวร์มาลีน สี เขียว Th a wr ' m ā l ī n s ī k ' h e ī yw)	(German - Grüner Turmalin) (Arabic - التورمالين الأخضر altawrmalayn al'akhdar) (Russian - Зеленый турмалин Zelenyy turmalin) (Mandarin - 绿色 碧玺 Lùsè bīxǐ) (Swahili - Tourmaline ya kijani) (Hindi - हरी टुमलाइन haree toomalain)	<p style="text-align: center;">photo</p> 	
Colors (GIA)	<p>The yellow and green are the most common of all tourmaline varieties, but emerald green (chrome tourmaline) it is much rarer and more valuable. The color (chromium-vanadium) varies from a strong bluish green to a slightly yellowish green . In fact, until the eighteenth century tourmaline was often confused with emerald The pastel shades of green tourmaline they offer the market pleasant alternatives to the deep, rich hue of emerald and the more tenuous green of peridot. At best, green tourmalines are transparent, bright and clean, with attractive bluish green undertones . The color of the chrome tourmaline tends to darken with larger stones, often exhibiting almost blackish hues. Some specimens may also appear dull. The color is deeper along the main axis of the tourmaline crystals, which means that a precise orientation of the cut is required to achieve the optimum color.</p>			
Cause of Color	<p>Dravite , the species to which chromed tourmaline belongs, usually appears as brown or yellow-brown but also brownish-black, or dark yellow or blue. Other tourmaline species may exhibit green color, for example u <u>varovite, elbaite, paraiba, watermelon</u> (watermelon). The deep green tourmaline owes its appearance to chromium and / or vanadium . The fine chrome tourmaline is a visually pure "forest" green with slightly yellowish to bluish secondary undertones. Blue will normally show in incandescent light, yellow will be more visible in daylight. Dravite forms more series , with other members of tourmaline, including Schorl and elbaite . Species such as chromium-rich green dravite and brown dravite are diamagnetic .</p> <p>Allochromatic Gem -</p>			
Classification	Mineral class Complex borosilicate (chromed)	Species - Group (mineral) dravite - Tourmaline	Variety Tourmaline chrome	
Optical properties	Specific Gravity: 3.03 - 3.18 Common: 3.10	RE: 1.614-1.675 Polariscope :SR Double refraction: 0.014 to 0.040	Character optical Negative uniaxial	Pleochroism Strong : dark green - yellow-green or green-blue
	Luster (luster) - luster of the fracture Vitreous-resinous - vitreous - resinous		Dispersion (fire) 0.017-0.018	
Light	Fluorescence SWUV (254 nm) : weak to inert LWUV (365nm) : from weak to inert		Phosphorescence NO	
Form	Crystalline dress Prismatic to acicular crystals Melting point: 1 °C	Phenomenal optical effects Color change Attitude Asterism	Crystalline system Trigonal Ditrigonal pyramidal Crystal class	

Chemical formula	Borosilicate sodium, lithium, aluminum rich in magnesium $\text{NaMg}_3\text{Al}_6(\text{Si}_6\text{O}_{18})(\text{BO}_3)_3(\text{OH})_3(\text{OH})$ (dravite) or $\text{Na}(\text{Cr}_2\text{Mg})(\text{Cr}_4\text{Mg}_2)(\text{BO}_3)_3(\text{Si}_6\text{O}_{18})(\text{OH})_4(\text{Cr-Mg})$ (chromium-dravite)		Spectrometer image  Cr3 + absorption bands wide, with rotation,
Fracture	Flaking Indistinct (1 direction)	Breaking- Parting .	Fracture Sub-conchoidal, irregular
Durability	Hardness (Mohs) - Absolute 7-7.5; 100 - 150	Toughness Fragile	Stability (heat, light, chemicals) Very good
Clarity - characteristics	Typical Inclusions: Generally these gems are devoid of visible inclusions. They may contain typical impurities external to their chemical composition, such as: Fe, Mn , Ti, Ca, Cr, V, K, F. They may sometimes contain inclusions of tiny flakes or spots, block rutile crystals, pyrite and graphite.		
Deposits - types of rocks	Type I. Typically free of inclusions	Transparency (commercial) - transparency From transparent to opaque	
Characteristics of rough stones	Tourmaline is found in two major geological occurrences. Igneous rocks, in particular granite and granite pegmatite, and in metamorphic rocks such as schists and marbles. Schorl and lithium-rich tourmalines are usually found in granite and granite pegmatite. Tourmalines rich in magnesium, dravites , are generally limited to shale and marble. Additionally, tourmaline is a durable mineral and can be found in smaller quantities as grains in sandstone and conglomerate. The dravite from Syros , Greece, is the earliest example of a Mg-rich tourmaline with a significant blend of tetrahedral boron (in addition to the dominant form of triangular coordination). That of a pegmatite in Forshammar , Sweden has the highest amount of REE (rare earths) for a pegmatite tourmaline, although this is still a trace (≤ 1200 ppm). Geological age : 300-400 million years		
Main deposits	The main sources of the mint / emerald green tourmaline are Kenya and Tanzania (Manyara Region), but some fine chromed tourmalines are found in Myanmar . Turkey (Massif of Menderes),		
Year of discovery	1707 (tourmaline) -1884 (dravite, see history): Many sources state that it was the German physician Christian Friedrich Garmann (from Chemnitz, in Saxonnia), member of the Academia Naturae Curiosorum , today's German Academy of natural scientists Leopoldina to use the Sinhalese term " turmali " or " tourmali " in 1707 (however some of his writings of 1709 and 1714 are known)		
History	For a long time it was believed that the Vikings used tourmaline to determine the direction to follow at sea. When they left the familiar fjords of Scandinavia for frozen and unexplored territories, they had no magnetic compasses and no way to orient themselves in the expanses of fog that made navigation with or without the sun difficult. Norse sagas refer to a sólarstein or " sun stone " which had special properties when held in the sky. The key to solar stone-guided navigation is polarization, a process that filters light rays so that they can only move in one plane. Sunlight begins swinging in multiple planes, but atmospheric particles create concentric rings of polarized light around the sun, even on cloudy days. Although some animals, such as ants and crickets, can detect these patterns, the polarization is virtually indistinguishable to the naked human eye. In 1967 , a Danish archaeologist named Thorkild Ramskou suggested that these were crystals that revealed distinct patterns of light in the sky, caused by polarization, which also exist in cloudy weather or when the sun dips below the horizon. More crystals have		

been indicated as possible candidates for this function: **calcite, cordierite and tourmaline** . None of them have ever been found at Viking archaeological sites, but a **calcite crystal** was recovered from the wreck of a 1500s British warship, indicating it may have been a tool known to advanced ocean navigators.

Tourmaline was sometimes called the "Ceylonese magnet of Sri Lanka" because it could attract and therefore repel hot ashes due to its pyroelectric properties. Tourmalines were used by chemists in the **19th** century to polarize light by shining rays on a cut and polished surface of the gem.

In **1500** , a Spanish conquistador found green tourmaline in Brazil, which he mistook for emerald. His mistake was only detected after 1800, when mineralogists finally identified tourmaline as a mineral species.

In **1703 a pack of "turmali"** arrived at a Dutch lapidary . Legend has it that children were playing with stones in the sunlight and noticed that they attracted fragments of ash and straw like a magnet attracts metal. This inspired further investigation. It was noted that while very few individual gems possessed this pyroelectric ability , **pyroelectric** gems showed up in every imaginable color. It took nearly 100 years to determine that all pyroelectric gems were the same mineral: a variety of tourmaline.

1820 was one of the most important years in the history of Maine, in the USA. In that year it became the 23rd state of the United States of America. Shortly thereafter (**around 1822**) green tourmaline was discovered in the mountains of western Maine. During the early 1900s, Maine and California were the **world's largest producers of gem tourmalines** .

Deposits of American tourmaline caused the gem's peak in popularity. In **1875** , 20-year-old Kunz walked into the offices of Tiffany & Co. in New York City (founded 1837) with a beautiful **green tourmaline** he had obtained from the Mount Mica mine in Maine. Tiffany & Co. was already a well-known jewelry store, but its business was focused on diamonds, rubies, emeralds and sapphires. That day Kunz convinced Tiffany to buy tourmaline. Eventually Kunz became the resident gem expert at Tiffany & Co., an influential position he held for nearly his entire life.

The tourmaline gemstone (of each color) is the official October birthstone adopted by the American National Association of Jewelers in **1912** . It is also the traditional October birthstone, the stone for the Leo zodiac sign and the accepted gemstone for **the 8th wedding anniversary** .

Name : The name tourmaline derives from the Sinhala word **turmali** (tomali / tourmali) which means *together / group of mixed / various / generic or unidentified stones* or **tōramalli** which indicated the stone carnelian (a chalcedony).

According to the *Madras Tamil Lexion* , the name tourmaline derives from the Sinhalese word "**Thoramalli**" (**තොරමල්ලි**) or "**tōra -mollī**", or from the Tamil word tuvara -malli "-toramalli (**துவரைமல்லி**) which apply to a group of precious stones found in Sri Lanka. The word **Dravite** was introduced in his book *Lehrbuch der Mineralogie* (published in 1884), by the German mineralogist Gustav Tschermak , Professor of Mineralogy and Petrography at the University of Vienna, who was inspired by the magnesium-rich (and sodium-rich) tourmaline extracted near the village of Dobrova , near Unterdrauburg in the Drava River area, Carinthia, then part of the empire Austro Hungarian. Today this town (near Dravograd) is part of the Republic of Slovenia. Tschermak gave this tourmaline the name **dravite** , from the name of the river Drava, in German: Drau , in Latin: Drave) in Austria and Slovenia, but which was born in Dobbiaco, in Alto Adige. The chemical composition that Tschermak gave in 1884 to roughly correspond to the current formula for this crystal: $\text{NaMg}_3 (\text{Al}, \text{Mg})_6\text{B}_3\text{Si}_6\text{O}_{27} (\text{OH})$, which is in good agreement (except for the OH content) with the final member formula of dravite as known today.

The **chromium-dravite name** was first used in 1983.

Other trade names: Chromed tourmaline (emerald green), African tourmaline (blue-green), chromium-tourmaline.

The **tourmaline mineral group** is chemically one of the most complicated ensembles of silicates. It is a complex silicate of **aluminum and boron** , but due to isomorphic substitution (solid solution), its composition varies widely with **sodium, calcium, iron, magnesium, lithium** and other elements entering the structure. Stones are mainly valued as gems and its general formula can be written as $\text{XY}_3\text{Z}_6 (\text{T}_6\text{O}_{18}) (\text{BO}_3)_3\text{V}_3\text{W}$, where:

	<p>X = Ca, Na, K, □ = vacant position Y = Li, Mg, Fe²⁺, Mn²⁺, Zn, Al, Cr³⁺, V³⁺, Fe³⁺, Ti⁴⁺, □ = vacancy Z = Mg, Al, Fe³⁺, Cr³⁺, V³⁺ T = Si, Al, B B = B, □ = vacancy V = OH, O W = OH, F, O</p> <p>Other varieties of dravite: /</p>
<p>Property attributed</p>	<p>Tourmaline is a shamanic stone , which provides protection during ritual work. By transforming negative energy into positive, Green Tourmaline helps to "see with the heart" and witness the miracles of life. It encourages a feeling of gratitude and promotes interest in other humans and the environment. Green tourmaline brings invigorating growth and expansion to the emotional body, allowing you to be more expressive and less fearful of change. Inspires compassion, tenderness, patience and nurtures a sense of belonging. It can be used to divine, and was traditionally used to indicate a cause of trouble or a wrongdoer and to indicate a good direction to move . It strengthens the sense of smell and the perception of pheromones which produce an aphrodisiac effect. It is specifically used to treat motion sickness and to restore shine to hair and nails. Green tourmaline attracts luck, success, abundance and prosperity . It inspires creativity and can be used to design, create and manifest your goals. It could also increase their chances of earning a second income by turning an interest or hobby into a business . As a stone of energy and endurance, green tourmaline is excellent for sportsmen and athletes, and for anyone engaging in activities where rigorous activity is required. It carries the essence of the plant kingdom and is conducive to plant healing and helps gardens flourish. It helps to overcome the emotional problems associated with a father figure or other male forces in one's life. It can help stimulate proper cell function and regeneration and is excellent for helping in cell growth imbalances and fortifies the nervous system and is beneficial for the eyes, thymus, ductile glands and the immune system. It is a useful detoxifier and for the treatment of bowel and chronic intestinal diseases and can be useful in weight loss . Green tourmaline calms sleep and calms the mind, reduces claustrophobia and panic attacks and is beneficial for hyperactive children. Balance the left / right hemispheres of the brain. Green tourmaline concentrates its energies in the heart chakra, purifies and strengthens the nervous system. As more energy is carried within the physical body, higher levels of consciousness can be maintained. It is ideal for sealing holes in the aura that leave you vulnerable to negativity. Natural tourmaline rods are considered to be quite special and channel a high-powered electrical energy capable of transcending physical laws and producing phenomenal healing. The positive force of these tools of Light effectively clears blockages in the aura and removes negative energy. Green Tourmaline Wands can be used to trace meridian lines and nerve pathways to charge the body's electrical systems, rejuvenate the physical body, and provide optimal balance in the ethereal body.</p> <p>In industry , tourmalines are highly regarded as electrical tuning circuits for conducting television and radio frequencies. They are used for their durability as high frequencies can be passed through without breaking, as many crystals do. In addition to its use as a gem, tourmaline is used in pressure devices due to its piezoelectric properties , i.e. its ability to generate electric charge under mechanical stress or its shape change when voltage is applied. It has been used in echo sounders and other devices that detect and measure changes in pressure.</p> <p>Planet: Month: October (green and pink) Zodiac sign: Sagittarius (chromed tourmaline) Chakra: heart</p>
<p>Treatments</p>	<p>Chrome tourmaline is not normally heated, treated or enhanced in any way. However, other specific varieties of tourmaline may occasionally be heated or irradiated to enhance color and transparency.</p>
<p>Synthetic counterpart</p>	<p>Synthetic tourmalines are used for research purposes only. The stones, offered as synthetic tourmaline, are rarely tourmaline-colored synthetic spinels. There are no stones of this type available on the jewelry market, but tourmaline can be imitated by artificial materials such as CZ and synthetic spinel, as well as glass and plastic.</p>
<p>It can be confused with</p>	<p>Tourmalines mint (elbaite) and verdelite (elbaite), the color from bluish green to greenish blue of which is due to the trace elements of iron and titanium.</p>

	<p>the scratch test (not to be done on faceted stones) can help identify chrome tourmaline among other similar green materials, such as chrome diopside, tsavorite, peridot, green tourmaline (verdelite, which owes its color to iron and titanium) and emerald (more expensive and included). Less common are imitations include chrysoberyl (more yellow),</p>		
Indicative gemological tests	<p>Chromed tourmaline can be easily distinguished from other green tourmaline varieties by the presence of chromium. Chromium content testing is typically performed using a specialized filter, known as a "Chelsea filter". A Chelsea filter will show flashes of red or orange-red when displaying chromium-rich stones. In many cases, tourmaline crystals are doubly refractive to a high degree, which can help with identification.</p>		
Value (2021)	High : 700+ \$ / ct 3 carat +	Medium : 100 \$ / ct 1-3 carats	Low : \$ 7-20 / ct below the carat
	<p>Tourmaline chrome (mint green) can be a cheaper alternative to tsavorite or emerald. Both of these gems are rare over two carats in size, but chromed tourmaline up to five carats in size is not difficult to find. And, while tourmaline cannot match the sheen or brilliance of tsavorite, it is far less expensive than a tsavorite of equivalent size and quality.</p>		
Typical cut	<p>Many tourmalines are faceted with elongated cuts such as shuttle, baguette or marquise, to follow the natural shape of the crystals, long and narrow. The dark-toned stones, which are more common on the market, are not very attractive. Some of them absorb light so intensely that they appear almost black from certain directions. Green tourmalines can be cut in many ways, but they require special care, since the intensity of the color of most of these gems is variously developed depending on the direction of growth . For this reason, the dark stones must be faceted in such a way that the board is parallel to the main axis. With light stones, however, the table top should be perpendicular to the longitudinal axis, in order to receive more color depth. Chrome tourmaline is generally only available in small sizes, which makes it more suitable for accessories with smaller gems, such as small rings, earrings, or small charms.</p>		
Famous stones	<p>A unique tourmaline gem is found in Russia and is 255 carats; At first, however, this gem was thought to be a ruby and was part of Rudolf II's collection in Prague, possibly from Burma.</p>		
Record stones	<p>There is no particular information about it.</p>		