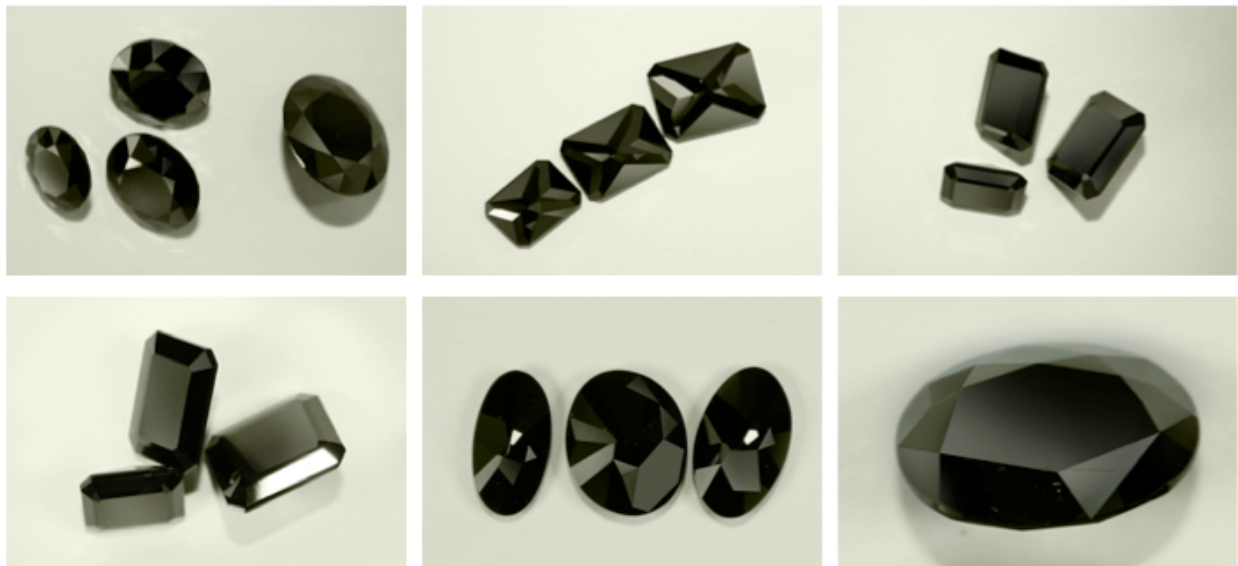


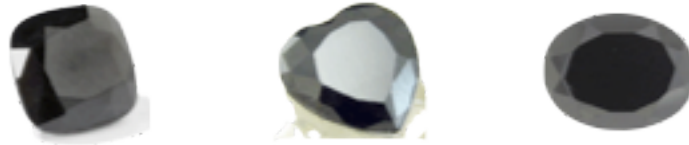
Black Spinel

The Premier Black Gemstone



Rattanachart Minning

Black Spinel, the premier black gemstone



Black spinel is not well-known among the gem world, yet its outstanding features make it the ideal choice for an opaque black gem. These days, where most gems undergo routine enhancement treatments, black spinel can stand proud as a gem requiring nothing more than cutting and polishing to bring out its inner beauty. If you want a totally natural and untreated black gemstone – black spinel is the one!



Black Spinel or “Pleonast” is not widely known but has been mined and used in Thailand for centuries where it is called “Nin”. Black Spinel has the mineral composition of $MgAl_2O_4$. Similar mineral composition to corundum (Al_2O_3) means that it is often found in ruby/sapphire bearing areas. Miners here often call it Blackjack and regard it as an indicator of good sapphire being present in the wash. Spinel comes in a variety of colors but the relatively rare opaque black variety is only found in a few areas - traditionally Thailand is the main source but Australia is also an important producer.



Known by various names including Pleonast, Ceylonite or Nin, black spinel is also sometimes sold under misleading names such as "Black Sapphire", "Black Onyx", etc. However, there is no need to pretend it is something else as there is nothing more elegant than the striking contrast of this jet black gemstone set in a quality piece of silver or gold jewelry.

Black Spinel can stand on its own as a unique and beautiful gemstone.

With a hardness of 8.0, only black diamond or sapphire is harder but is far more expensive and not easily available in a range of sizes. Good hardness, high reflectance and lack of cleavage make Black Spinel ideal for everyday wear in jewelry. This gem combines durability with beauty. **Black spinel is not treated in any way - simple cutting and polishing is enough to bring out its natural beauty.**

Rarity

Even in Thailand most medium-size and large-size rough black spinels have become scarce. Most mines have sold out large rough black spinels to local market. The spinels are generally cut into different local styles to go along with either stainless steel or sterling silver settings. When one deals with a cutting factory, it is likely that the rough black spinels be processed very quickly just to keep up with the cutting labor salary.



Please note that not all black spinels are of gem quality. The cutting grade spinels must be solid, dense with no deep cracks running through it. Another stone that could look just like black spinel but very different is "black tourmaline". I believe Brazil is the source for this tourmaline. While black spinel has truly black opaque look, black tourmaline is black but transparent under sunlight.

Black spinels go perfectly with white gold, platinum, titanium and sterling silver settings.

Gemology matters: Spinel ($MgAl_2O_4$) is a mineral similar to corundum (Al_2O_3) and is often found in ruby and sapphire bearing areas. Spinel comes in a variety of colors but the relatively rare opaque black variety is only found in a few areas – traditionally Thailand is the main source but Australia is also a major producer. With a hardness of 8.0, uniform nature, high reflectance and lack of cleavage, black spinel makes excellent gem material. Black spinel has been often called “black sapphire” or “nin” in Thailand. Miners here often call it Blackjack and regard it as an indicator of good sapphire being present in the wash. Let there be no confusion though as black spinel is an excellent gemstone in its own right.

Mythology and Lore: There is a wealth of mythology surrounding black spinel. It is believed to protect its owner from harm, to reconcile differences, and to console sadness. Some say that black spinel is the stone for people born on Saturday and it is the recommended gift for the 22nd wedding anniversary. While in Western culture, black may be associated with evil or mourning; in other cultures, black may represent power, fertility or wisdom. In any case, black is the essence of style and sophistication with a timeless quality that means it will never go out of fashion.

ALTERNATIVES IN BLACK

There are a number of alternative products to black spinel – all with a number of disadvantages.

Black Diamonds have become extremely popular in recent years with a price tag to match. Although diamond is the hardest material at 10 on the Mohs scale, the high level of dark colored inclusions in black diamond weaken the stone making it difficult to cut and polish. Almost all commercially available gems have been heated and irradiated to produce a dark color and larger gems are difficult to find.

Black Onyx is widely available but inferior for use in jewelry. With a hardness of only 6.5-7.0, onyx is susceptible to damage. Buyers must assume that all commercially available black onyx has been heated and dyed to achieve the black color as naturally occurring onyx ranges from white to brown, often with striping. Black onyx is the easy option but it is not the best.

Jet was made popular by Queen Victoria who wore it as mourning jewelry after the death of Prince Albert. Jet is really a form of highly compressed coal and is extremely soft (3.0-4.0 Moh) so should be worn with great care to avoid damage.

Today more so now than ever jewelers, designers and jewelry manufactures are looking for different sources for metals and gemstones. Some are doing this to be more unique than their competitors and some are simply just doing to increase profits. In either case new materials and gemstones are being tested in applications where five years ago they wouldn't have been given much thought. One example is the use of black stone jewelry and even black metals in designs today. Black stones have always been out there but up until the last three years you only occasionally would see people wearing large black stones. In addition to this, most of the jewelry using black stones is set in men's jewelry. Leaving a potentially large untapped market for women's black jewelry.

When you really think about the color black, its easy to see its mystic and elegance. Its combinations are limitless and black has the unique ability to dominate or accent equally. In today's market it seems most people are familiar with onyx and black diamonds. Although there are other types of black gemstones, not all are truly gemstones. Since diamonds, even in black are still relatively expensive, I will spend more time looking at the other stones available, in particular the stones used in larger volume.

Lets start by looking at what's out there. Let's start with Hematite, this is more metallic looking than true black and is brittle so its easy to see why its not used much. Next is Obsidian which is natural volcanic glass, the key word for this is glass. Meaning its going to chip and not be very durable. This brings us to Jet, which is used mostly in carvings so this material is too soft to use. This would also be true with black coral.

Lastly, you of course have your glass and plastic which is just too cheap looking to ever look good in any jewelry.

This brings us to Onyx. Which is a misnomer all in itself. The GIA Lab Manual and Gem Reference Guide all list Onyx as follows:

Variety: Onyx (when parallel black and white bands are present)
Species: Chalcedony

Now most Onyx that is on the market today is solid black. If this is the case than does that mean it has all been dyed black to cover the bands? If I was a buyer this being disclosed before I made a purchase would be a great concern. Here is where it can get even more confusing. In the GIA Lab Manual, if you look under Calcite, it reads as follows:

Variety: Onyx marble(if banded and translucent to opaque.)
Species: Calcite

This may not seem like a big difference but imagine you were the buyer and were sold what you thought was Onyx-Chalcedony and you were sold Onyx-Calcite, regardless if they both disclosed that they were dyed you would be extremely upset. Here's why, even though both are aggregates Calcite has perfect cleavage in three directions, which is obscured in aggregates but this weakens the stone and it also has a hardness of 3. Now Onyx-Chalcedony has no cleavage and a hardness of 6.5. So between these two versions of onyx, what may be sold off as the same thing, you can see which is the better of the two stones. Now if there was something out there that didn't need to be dyed or heated and was a true gemstone it would just make sense to use that, if a stone like that exists in large quantity. **To answer this question you need look no further than the beautiful Black Spinel.**

Starting with its properties it has a bipyramidal crystal growth and doesn't need to be irradiated or heated to be true black. With a hardness of 8.5 out of 10 it would be more than durable. What we find most interesting is that in the GIA Gem Reference Guide they list the spinel as having a vitreous to subadamantine polish luster, this is important because most black if not all with the exception of black diamond would have a polish luster listed as sub adamantine. After cut and faceting these stones even though black will still have a sparkle and display brilliance.

We can clearly see how much superior the black spinel is than its other competitors but why the more important question is why isn't it being used more? Our conclusion for that is lack of education on black spinel from a consumer standpoint coupled with no type of marketing from any large companies or celebrities even and cost. It may be easier and more economical for manufacturers and designers to keep buying onyx if it only makes up a small majority of their sales. With that being said it then should be easier to start buying spinel when your inventory needs more black stones. Not everyone has to begin buying immediately but just knowing of the

spinel may make them rethink about ordering more onyx. There is a growing trend for black jewelry and well made jewelry.

Rattanachart Mining can currently supply cut or rough spinel in almost every size imaginable and can be up and running filling orders as soon as they come in.

Rattanachart Mining is the best and only source for large black spinel in the world.



Rattanachart Mining, Thailand

Black Spinel - Data Sheet



Gemstone: Black Spinel

Birthstone Month: Black Spinel is not associated with any particular birthstone month.

Zodiac: Black Spinel is not associated with any particular zodiac sign.

Chemical Symbol: $MgAl_2O_4$

Chemical Make-up: Black Spinel is a Magnesium Aluminum Oxide, or Magnesium Aluminate.

History and Lore: It is not known for certain how the name Spinel originated. The most common suggestion is that it may have derived from the Latin word “spina” meaning a thorn, possibly referring to its fiery color or the sharp pointed crystals that are found within some Spinel. Spinel is associated with love and help the wearer to put their ego aside and become devoted to another person. Spinel also encourages passion and is said to increase the duration of one’s life. Black Spinel in particular is said to be a protective stone and helps re-establish relationships and resolve issues. It is also believed to relieve sadness.

Availability: Spinel is relatively unheard of to the common consumer and has not been marketed by any major gem companies. Black Spinel is only found in a few locations in the world, and because of its rarity, if the demand were to rise, supply would not be abundant enough to keep up with it. **Black Spinel is mine mainly in Thailand (Bo Ploi, Kanchanaburi Province), where it is known as “Nin”.** There are also known deposits in Africa, Myanmar (Burma), and Sri Lanka.

Evaluation: Black Spinel is rated at 8 on Moh’s Scale of Hardness and are a durable stone that lacks cleavage, making it suitable for all jewelry purposes. Black Spinel looks elegant when set with a quality piece of gold or silver jewelry because of the striking contrast. Black Spinel is the opaque jet-black variety of the Spinel family and it lacks the metallic luster of other popular black gemstones. Spinel is a favorite amongst gem connoisseurs and gem collectors alike, and make a beautiful, durable stone for all jewelry purposes.

Common Cuts: It is most often found in oval, round, emerald and cushion cuts. Because its hardness can also be carved.

Routine Enhancements: There are no known enhancement for Black Spinel.

Care & Cleaning: Spinel is very durable stone that lacks cleavage making it difficult to chip and scratch. Spinel can also be cleaned in warm soapy water with a soft brush. Always store your Spinel jewelry in a fabric-lined box in order to avoid scratching.

ABOUT PRECIOUS GEM STONES

To The American Geological Institute, a **precious gem stone** is defined as:

"A gemstone that, owing to its beauty, rarity, durability, and hardness, has the highest commercial value and traditionally has enjoyed the highest esteem since antiquity; specifically, diamond, ruby, sapphire, and emerald (and sometimes pearl, opal, topaz, and chrysoberyl)."

Semi Precious gem stone

A **semiprecious stone** is defined as:

"Any gemstones other than a precious stone, or any gemstone of lower commercial value than a precious stone; specifically, a mineral that is less than 8 on the Mohs scale of hardness. A gemstone may also be regarded as semiprecious because of its comparative abundance, inferior brilliance, or unfamiliarity to the public, or owing to the whims of fashion. This arbitrary classification is misleading, as it does not recognize, for example, that a ruby of poor quality may be far less costly than a fine specimen of jadeite."

There was a time when the boundaries between precious and semiprecious stones were clearly defined. Diamonds, emeralds, rubies, and sapphires were considered the precious stones and all others fell in a class below them.

This has not been the case for some years, and today gems are evaluated by a different criteria.

- Beauty
- Rarity
- Durability
- Desirability
- The above qualities now determine the overall class and value of gemstones.

Gem stone beauty

This, of course, is open to much discussion since the saying "beauty is in the eye of the beholder" is true. The beauty of a gemstone can vary widely, depending on whose opinion is being voiced. This is a good reason to decide what is *beautiful to you*, and choose gemstones for your collection that are pleasing to your own eye.

Gem stone rarity

To determine the rarity of a stone, you must take into account the mineral group, it's quality, and the source of the stone. For example, not all emeralds are considered rare due to the fact that there are still large deposits of emeralds available throughout the world. Emeralds of excellent color and proportion are very rare and collectible, commanding many thousands of dollars.

Some of the rarest gems on the current market are the formerly called semiprecious stones. Examples of this are watermelon tourmaline, black precious opal, and natural alexandrite. These stones can be hard to find in good quality and you will discover they are quite expensive to acquire.

Gem stone durability

Durability should take into consideration the ability of the stone to withstand wear and also how practical the stone is for its intended use. Most gemstones are made into jewelry and must withstand being rubbed, dropped and knocked against hard objects. The stronger, harder stones will continue to sparkle much longer than their metal settings.

There are many very beautiful stones that appear to be good candidates for jewelry but in fact are easily damaged and nearly impossible to cut because of the structure of the crystal. The Moh's hardness scale is the accepted gauge for determining a stone's overall durability.

Gem stone desirability

Even within the same type of gem, not all gemstones are equal. There is a huge variance that can result in one stone being graded gem quality and its similar 'cousin' being labeled industrial quality.

The diamond is a good example of this. Some diamonds are only suitable for industrial use (80% of all diamonds produced) and others command tens of thousands of dollars as gem quality stones. This phenomenon exists throughout every mineral group. Today, a quarter carat garnet of exceptional beauty and quality can be worth far more than a 3 carat emerald that contains heavy inclusions (foreign matter).

The rank of **precious or semiprecious gem stone** is determined by taking into consideration the stone's beauty, rarity, durability and desirability.

Some of these things change with fashion, or the availability of stone deposits. The operations of various mines in different parts of the world can be subject to political and other factors. Gemstone values change periodically, which makes gemstone collecting all the more an exciting adventure

Gem Stone Hardness

The hardness of a gem stone is measured by its ability to resist scratching. The jewelry trade relies on a unit of measure called the **Moh's hardness scale** to define the fragile nature of one stone compared to another.

The system was developed by German gem expert, Friedrich Mohs in 1812 and is still in use today. The scale involves a numerical value of 1 through 10, with 1 being the most easily scratched, and 10 being the most scratch-resistant.

Mohs developed this scale by rating 10 common minerals: talc, gypsum, calcite, fluorite, apatite, orthoclase, quartz, topaz, corundum and diamond.

He discovered that each of these minerals can scratch those assigned a smaller number, and in turn can be scratched by those with a larger number. All gem stones are rated according to this scale by comparing their hardness with these originally selected 10 minerals.

The hardness of a gem stone is useful to know when considering which stones will be best for daily wear and which are best for occasional wear. Obviously a bracelet will get more wear and tear than a pair of earrings.

Knowing the hardness of your gem stones can also assist in choosing appropriate cleaning methods and overall care of the stone.

Gem Stone Toughness

While hardness lets us know the scratch resistance of a particular stone, toughness indicates its resistance to breaking. This is an important factor to consider when choosing a durable stone. The hardness and the toughness of a stone can vary considerably.

For example, though a diamond has a hardness rating of 10, its toughness rating is only 'good'. Jade, on the other hand, is easily scratched but is highly valued as a carving stone - being rated as 'extreme' in its toughness.

When purchasing a stone, you should consider its durability in relation to its intended use. Any gem, if cared for properly, will provide years of enjoyment for its wearer.

Moh's Harness Scale			
Mineral	Hardness	Gem or Mineral	Hardness
Agate	7.00	Labradorite	6.00
Alexandrite	8.50	Lapis Lazuli	5.50
Almandine Garnet	7.50	Mabe Shell*	2.50
Amber*	2.50	Malachite	4.00
Amethyst	7.00	Mandarin Garnet	7.00
Ametrine	7.00	Milarite	5.50
Andalusite	7.50	Moldavite	5.00
Andradite	6.50	Moonstone	6.00
Apatite	5.00	Morganite	7.50
Aquamarine	7.50	Nephrite Jade	6.50
Aventurine	7.00	Obsidian	5.00
Azurite	3.50	Onyx	7.00
Black Opal	6.00	Opal	6.00
Bloodstone	7.00	Orthoclase	6.00
Blue Chalcedony	7.00	Padparadscha	9.00
Blue Sapphire	9.00	Pearl*	3.00
Blue Topaz	8.00	Peridot	6.50
Calcite	3.00	Petrified Wood	7.00
Carnelian	7.00	Pyrope	7.25
Cat's Eye Chrysoberyl	8.50	Quartz Crystal	7.00
Cat's Eye Quartz	7.00	Red Beryl	7.50
Chrysoprase	7.00	Rhodochrosite	4.00

Citrine	7.00	Rhodolite	7.00
Coral*	3.50	Rhodonite	6.00
Danburite	7.50	Rose Quartz	7.00
Demantoid	6.50	Rubellite	7.50
Diamond	10.00	Ruby	9.00
Diopside	5.50	Sapphire	9.00
Dioptase	5.00	Sard	7.00
Emerald	7.50	Sardonyx	7.00
Fire Opal	6.50	Scapolite	6.00
Fluorite	4.00	Serpentine	2.50-5.00
Goldenite	7.00	Sillimanite	7.50
Goshenite	7.50	Smoky Quartz	7.00
Grossular Garnet	7.00	Sodalite	5.50
Heliodor	7.50	Spectrolite	6.00
Hematite	6.50	Spessartine	7.00
Hessonite	7.25	Spinel	8.00
Hiddenite	7.00	Sunstone	6.00
Hyacinth	7.50	Tanzanite	6.50
Indicolite	7.50	Tiger's Eye Quartz	7.00
Iolite	7.00	Titanite	5.00
Ivory*	2.50	Topaz	8.00
Jadeite Jade	7.00	Tortoiseshell*	2.50
Jasper	7.00	Tourmaline	7.50
Jet*	2.50	Tsavorite	7.00
Kunzite	7.00	Turquoise	6.00
Kyanite	7.00/5.00	Uvarovite Garnet	7.50
		Zircon	7.50

*not technically a gem or mineral, but organic matter



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