



*The beautiful Angie's Stone, evocative of a butterfly wing.*





*Bearpaw Formation in Southern Alberta, Canada, where ammonites are mined.*

# AMMOLITE

## *One of Earth's Most Colorful and Best Kept Secrets*

AMONG THE COLORED GEMSTONES OF THE WORLD, THERE ARE ONLY A FEW THAT CREATE AWE AND WONDER, THAT CAPTURE THE NATURAL BEAUTY OF RAINBOW HUES. AND ONLY ONE OF THESE IS FOUND EXCLUSIVELY IN CANADA, WITH AN EXTRAORDINARY HISTORY THAT TRACES BACK 71 MILLION YEARS.

*By Amarjeet Grewal*

**A**mmolite has long been off the radar screen, considered to be a lesser-known gemstone in its infancy. It was certified by the World Jewellery Confederation (CIBJO) only in 1981, and the last of the gemstones to be accepted in the past 300 years.

Since then, it's estimated that Ammolite's value has increased exponentially, approximately 30% year-over-year in the past 15 years, and interest continues to grow for this intriguing rainbow gem. Limited production and supply, however, make Ammolite one of the rarest gemstones in the world.

### **Prehistoric Timeline**

Within the rolling foothills of Canada's Southern Alberta are glimpses of a prehistoric time deeply embedded in the rock formations of the Earth.

During the Late Cretaceous period, this area of land was a warm and shallow sea surrounded by tropical rainforests, home to marine life recognized as mollusk-like creatures called Ammonites, invertebrates with tightly coiled shells similar to the present-day Nautilus.

At the end of this prehistoric period, the extinction of life saw Ammonite fossils fall to the seafloor. Clay deposits and sediment brought in by rivers flowing from the west settled to the bottom, resulting in a rock formation that is now recognized as the *Bearpaw Formation*.

As the sea receded, layers of mineral sediment preserved the shells and cavities of Ammonite specimens. Over time, the fossils were preserved through a combination of immense tectonic pressure and mineralization from the soil and heat. This





*Ammonites were cephalopods that lived 65 million years ago and populated the world's seas during the Jurassic and Cretaceous period. As their shells fell to the seabed, they became covered in mud, which hardened over the years to become shale. Right: Fossilized ammonite.*

geological formation created the perfect condition for their fossilization, and the unique conditions in this region preserved Ammonites with the stunning colors seen today.

Unlike the many other fossilized mollusks discovered worldwide, colorful shells of Ammonite are only found deep within Alberta, along the region of the St. Mary River.

There are three primary Canadian Ammonite specimens that are found in Alberta that yield gem-quality Ammolite. These species include the *Placenticerias costatum*, *Placenticerias intercalare* and *Placenticerias meeki*.

The colorful Ammonite shell is notably caused by the composition of aragonite that consists of hundreds of thin, iridescent layers, resulting in a range of hues, colors and patterns caused by light interference. Each aragonite layer acts as a tiny prism allowing for the kaleidoscope of color. The structure of these layers contributes to the differences in patterns, intensity and colors. As a result, each shell is unlike any other—they are distinctly individual.



***Ammolite has been described by the Discovery Channel as the “sleeping beauty of the gem world.”***



*Over 71 million years, the Ammonite fossils were preserved through a combination of immense tectonic pressure, mineralization from the soil, heat, and time. The composition of these shells consists of hundreds of thin, iridescent layers of minerals.*





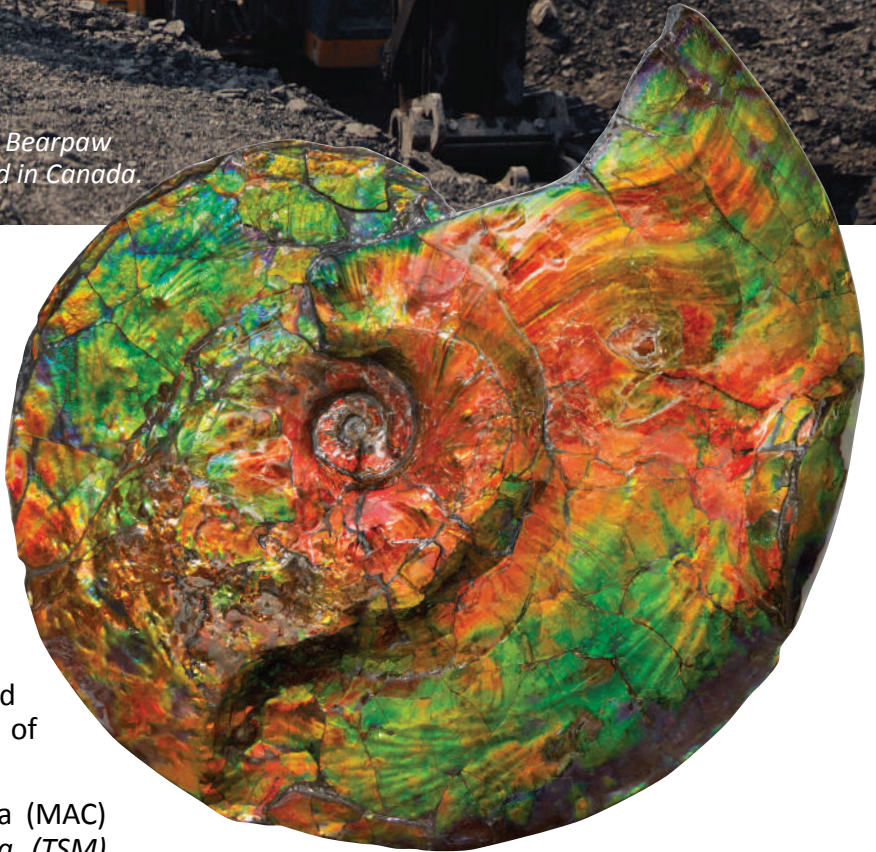
*Mining operations to find Ammonite in the Bearpaw Formation. Colorful Ammonites are only found in Canada.*

## Mining

The first documented discovery of Ammolite was in 1962. From that date, interest from a small group of fossil hunters led to the birth of mining operations when they recognized significant deposits in the depths of the land where the best gem-quality material could be found.

Over the years, there have only been a handful of legal mining operations for Ammolite and Ammonite, working alongside federal and provincial regulatory bodies and the world-renowned Royal Tyrrell Museum of Paleontology.

In 2004, the Mining Association of Canada (MAC) launched the *Towards Sustainable Mining (TSM)* initiative, which set an international standard for ethical mining. As the first mining standard in the world, the TSM initiative pushes for better environmental and social performance. The limited number of operations and longevity of these companies have ensured ethical and sustainable mining, alongside transparency and reclamation of land with the lowest environmental impact.



The best practices of the Ammolite industry have seen ebbs and flows in transparency and traceability over the years. Despite the efforts of the legal Ammolite mining operations—similar to those of other gemstone mining endeavors—there have also been unethical businesses and strip miners.





*Only a small fraction of specimens found in Alberta are gem-quality. The term Ammonite refers to the fossil shells of Ammonites, while Ammolite refers to the gem-quality material from them.*

## Sourcing

Ethical sourcing of gemstones is at the forefront of many gemstone industry conversations and Ammolite is no exception. As a result, it is important for buyers to source Ammonites and Ammolites from trusted vendors with long-term relationships who can demonstrate their ethical business practices. An alignment with the CIBJO Congress 2023 Transparent and Traceable Gemstone Supply Chains Initiative is a good place to start when looking for suppliers.

Ethical producers of Ammonite and Ammolite gemstones demonstrate eco-friendly techniques and cause the least impact on the mining environment near the Foothills of Southern Alberta. After the specimens are collected, they are prepared by employees who are provided with fair and equal employment, under safe working conditions.

A hot topic that continues to fuel questions about transparency in production includes conflict-free gemstones. Due to the stringent laws in Canada, the likelihood of environmentally harmful techniques or unsavory funding in the Ammolite industry is considered minimal.



*The ammonite consists of hundreds of thin, iridescent layers composed mostly of aragonite. Each layer acts as a prism allowing for a kaleidoscope of color.*





*Painstakingly digging out the Ammonite to find material that can be gem-quality. The pendant is a AA Grade Ammolite.*

Buyers may also want to ensure that producers are certified by the Federal Department of Canadian Heritage. The legitimacy of purchasing a part of Alberta and Canadian history adds significance and awareness to the importance of sourcing Ammolite, and it's recommended never to purchase from a supplier who cannot provide certification.

### Gem-Quality Ammolite

Though Ammolite has been millions of years in the making, it has only recently emerged as one of the most colorful and rarest gemstones in the world. Mysterious, new-found, and distinct, the gemstone sparks interest with its natural artistry and expressiveness in color.

Ammolite captured the attention of the Discovery Channel early on as the “sleeping beauty of the gem world,” as it gained popularity and recognition as one of the rarest gemstones on earth.

The patterns, vibrancy and range of color all contribute to the overall characteristics and value of an Ammolite gemstone. Unlike Black Opal—which

the gem is often compared to—green and red are the most common colors, while blue and violet are rarer and are seen as more valuable and hence more sought-after.

The Ammolite layer of the shell is thin, with a hardness of approximately 3.5-4.5 on the Mohs scale. Due to its softness, Ammolite is carefully cut and polished with incredible care and typically stabilized for commercial jewelry use. This can be achieved by either using a hard quartz or spinel cap, or an epoxy to stabilize the material and then hand polish it, depending on the supplier.

As each Ammolite discovery uncovers various shapes, freeform natural Ammolite gemstones are cut to maintain as much color and shape as possible to ensure that the natural material of Ammolite is not compromised. Calibrated Ammolite triplet gemstones are also popular as an industry standard and cut for conventional shapes such as pear, square, rectangles, ovals, cabochon, tapered baguette and marquise. The results of this unique organic gem? Beautifully set jewelry that showcases a wonderful iridescent sheen unlike any other gemstone.



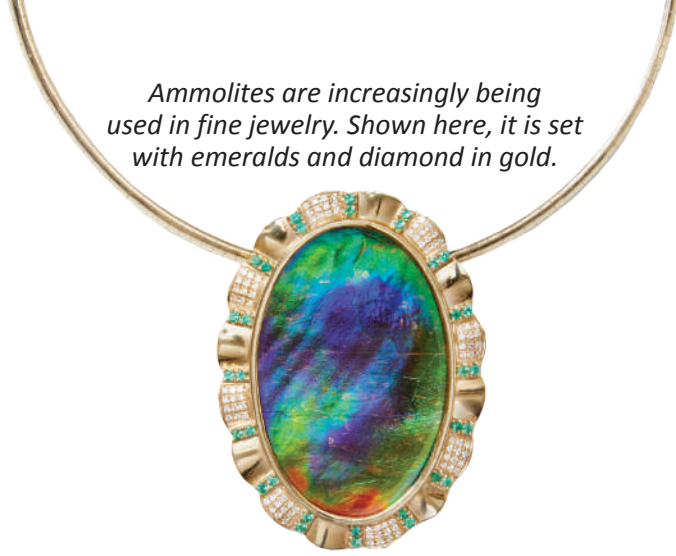
## Industry-Wide Grading

In recent years, Ammolite gemstone grading has become standardized and accepted within the industry. The difference in grading is predominantly focused on color, vibrancy, and consistency in pattern and aesthetic. The highest grade is AAA (exquisite), which means that the specimen has three or more brilliantly vivid colors, with no matrix lines visible. Between 5% and 8% of the Ammolite mined today is of this grade.

From there, the brilliance may lower in quality and the matrix lines may be more present as the rankings decrease from AA (extra fine), A (fine), and Standard. Standard grading will typically only show one or more common colors, primarily green or red, with a less desirable color, pattern, and vibrancy.

When mining Ammolite, there are two zones that are used for sourcing gem-quality material. The lower ranked graded material is found in the K Zone that exists approximately 15 meters below the surface and extends 30 meters down. Ammolite within this layer is typically cracked and fractured through deposition, also known as having matrix lines. Deeper into the

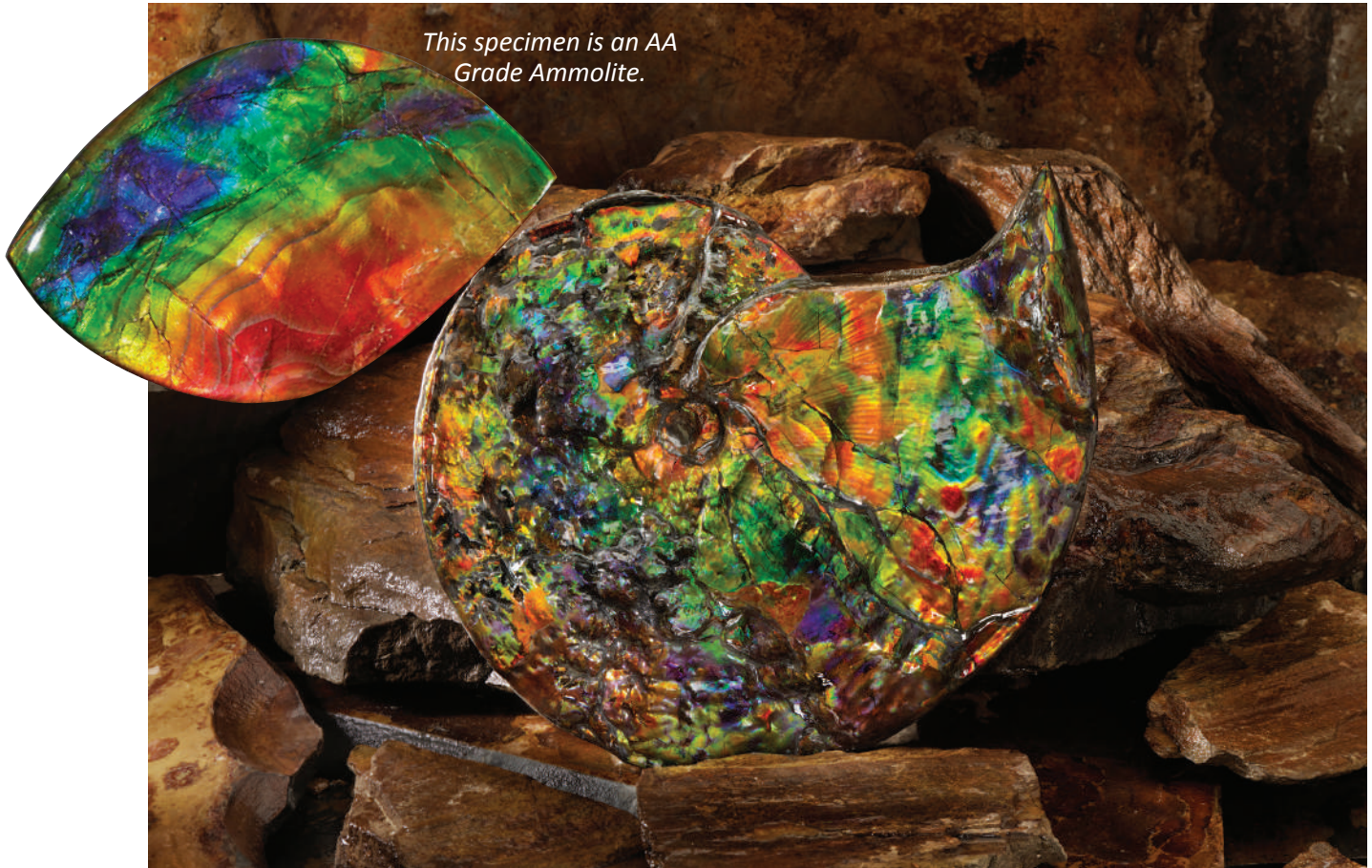
*Ammolites are increasingly being used in fine jewelry. Shown here, it is set with emeralds and diamond in gold.*



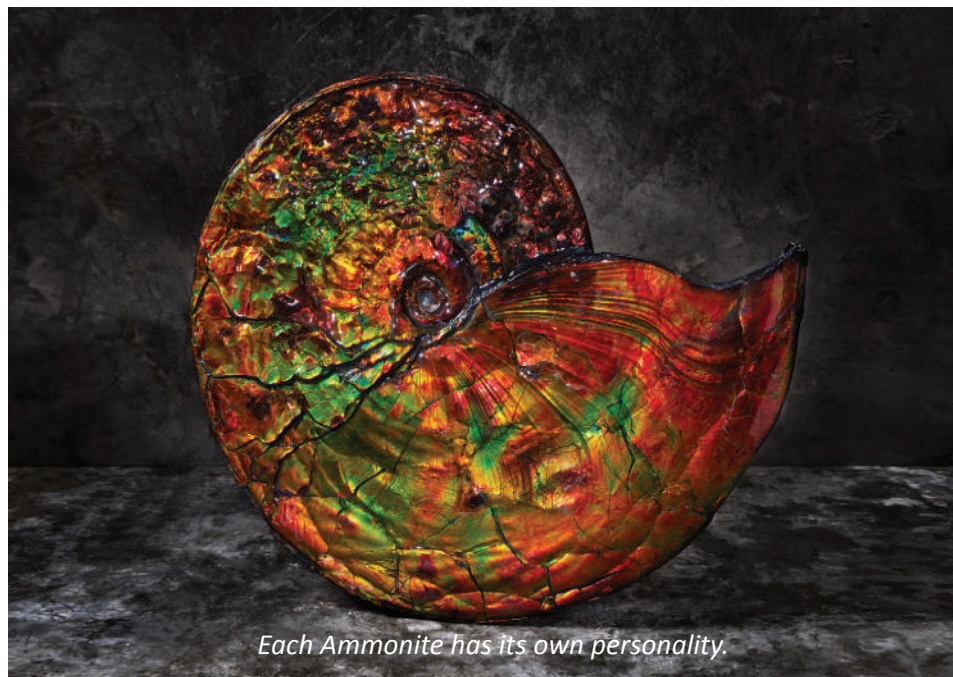
ground is the Blue Zone, approximately 20-65 meters down, where the highest-quality Ammolite is found, called sheet Ammolite. This is typically where AA and AAA grades are sourced with little to no matrix lines and a vibrant array of color.

Grading greatly determines pricing and quality for Ammolite and Ammonite products, but consumers have also made purchasing decisions based on individual preferences of colors, patterns, and jewelry design. Each combination is distinct and individualistic, and truly caters to how a person expresses themselves.

*This specimen is an AA Grade Ammolite.*







*Each Ammonite has its own personality.*

***In April 2022,  
Ammonite was  
designated the  
official gemstone  
of Canada.***

Recent trends worldwide show that as consumers embrace the unconventional and show a preference for colored gemstones, Ammonite is gaining new-found recognition. Consumers with a discerning eye and a passion for color, particularly Millennials and Gen Z, are attracted to what is different.



*Author Amarjeet Grewal, whose mission is to bring Ammonite's colorful and natural expression to the world.*

## **The Edge of a New Frontier**

Ammonite is a niche market that hasn't had a level playing field over the years, because it was dominated by only a handful of businesses. Today, however, the landscape is changing along with increased interest in new markets, new consumers, and new jewelry designers.

As the Canadian gemstone continues to make its mark with a touch of fascination, its future is bright. To this end, in April 2022, it was designated the official gemstone of Canada.

To celebrate Ammonite's rarity and increasing popularity, we anticipate new and creative jewelry designs and one-of-a-kind statement pieces. Clearly, these 71-million-year-old Ammonites are indeed captivating examples of some of Earth's most colorful and best kept secrets.

## **About the Author**

Early in her career, Amarjeet Grewal fell in love with the iridescent mosaic of Ammonite. Her desire to bring awareness to this unique gemstone fueled her passion to create Iniskim International, one of the world's leading suppliers of ethically-sourced Ammonite and Ammonite. ([www.iniskim.com](http://www.iniskim.com))

*All images are courtesy of the author. ■*