

GEMSTONES



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Beautiful and Rare

Pirate's loot! A chest spilling over with rubies, diamonds, emeralds, and other precious stones – a vision that has inspired countless treasure hunters and writers of fiction. Prized and sought after for millennia, gems and other ornamental stones are valuable because they're beautiful and they're rare.

Most gems, like diamonds and emeralds, are mineral crystals. Some, such as lapis lazuli and jade, are actually rocks. But living things can produce gem material as well – ivory from the tusks of woolly mammoths, or pearls from oysters.

Gemstones are often changed to enhance their beauty. They are cut and polished. Rubies, sapphires, and aquamarines are heated to clarify the colour, and emeralds are oiled to hide internal blemishes. Others, such as agate, are stained to more interesting colours.

Since the 1800s, some gems, such as synthetic diamond and cubic zirconium, are made in laboratories.

Although gemstones tend to be durable, some aren't. Pearls generally do not last a long time, and opal, because it contains water in its crystal structure, can dry out and crack. Even diamond, the hardest natural substance known, is brittle and can fracture.



Lazulite in quartz, northern Yukon

ESS 1992-123C



Brooch carved from mammoth ivory

S. McCracken, NRCan



Iolite in rock, and gemstones, near Nelson, British Columbia



Garnets, near Nelson, British Columbia

Anglo Swiss Resources Inc.

Anglo Swiss Resources Inc.

Making Gems



56 facets.

The gemstone industry not only needs prospectors, geologists, and miners, it needs people to make rough stones into gems. First the gemstones are graded for size, weight, clarity, and colour, and then worked by a lapidary or gem cutter. A gem is first shaped by splitting or sawing. It is then ground and polished to make the facets. These smooth, flat surfaces reflect light at different angles, giving the gem its sparkle. A typical diamond in an engagement ring has at least

Size Matters

Gems are measured in carats. One carat is equal to 200 mg (a gold karat is a measure of purity, not mass). The more carats the bigger the gem. For example, a 1 carat (0.2 g) brilliant cut diamond is 6.5 mm in diameter. The largest uncut diamond ever found was 3106.75 carats (over 600 g). Size matters in gem price, but so do other factors such as clarity, colour, and cut.

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How do They Form?

Mineral and rock gemstones form through geological processes. Diamonds, sapphires, and emeralds crystallize in rock that was once molten (magma). Other gemstones form when water containing the right elements cools slowly in cavities and fissures.

Ellsworth sapphire (CMNMC 30052)



Courtesy of the Canadian Museum of Nature © Canadian Museum of Nature

Groundwater also plays a role in forming gems. It flows through cracks in rocks and dissolves minerals. Later, recrystallization happens, forming minerals such as agate, opal, turquoise, and malachite.

Organic gemstones come from plants or animals. Amber is fossilized tree sap. Jet is a hard form of coal that was once used in mourning jewellery and rosaries. Pearls from oysters, and shell from the abalone snail and the extinct ammonite are all used to make jewellery.

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Opal in rock



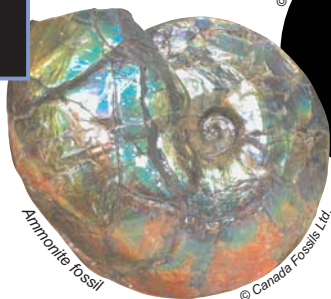
Tourmaline in quartz

GSC KGS-2359W

Design C. Yorke-Hardy
Photo R. Yorke-Hardy
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Opal pendant



Ammonite fossil



Ammonite pendant (ammonite shell)

- Amber
- Amethyst
- Ammolite
- Aquamarine
- Citrine
- Diamond
- Tourmaline
- Emerald
- Jade
- Labradorite
- Lazulite
- Opal
- Sapphire
- Garnet, lolite

Does Canada have Gemstones?

Lots! The Precambrian Shield of Canada is a good place to look for gemstones. This includes areas of Ontario, Quebec, Northwest Territories, and Nunavut that were once ancient mountain ranges. The younger mountainous areas of eastern and western Canada are also excellent places for prospecting. For years, diamonds were known from scattered occurrences in glacial sediments, but it was not until 1991 that commercial quantities of diamonds were found in bedrock. Now, Canada is the world's third largest producer of diamonds. Our geology is also favourable for finding more deposits of coloured gemstones.

