



GIA[®]
Diamond
Origin

CANADA



Billion Years

More than a billion years ago, 100 miles (161 km) or more beneath the earth's surface, in a cauldron of extreme temperatures and high pressure, carbon atoms bonded tightly together. At temperatures higher than 2100°F (1150°C) and pressures 45,000 times greater than at sea level, crystals formed, resulting in the hardest natural mineral on Earth: diamond.

Diamonds remained hidden deep within the earth for hundreds of millions of years, until volcanic activity violently transported them upwards towards the earth's surface in magma. Vertical rock formations, called "kimberlite pipes," are remnants of these ancient volcanoes. Erosion subsequently frees rough diamonds from their host rock to be transported by rivers and deposited sometimes at great distances, from their original source. Miners in places like India and Brazil would uncover them in alluvial deposits. Today, most diamonds are found in kimberlite pipes, which are the primary source of mined diamonds.

The discovery of a kimberlite pipe in South Africa in 1869 marks the beginning of the modern diamond industry. With it came the development of mining operations that produce tens of millions of carats of rough diamonds each year – that includes a major discovery in Botswana in 1967, as well as other areas of Africa, Australia, Siberia and the Northwest Territories of Canada.

Incredible Birth

Canada is a relatively new diamond producer. While alluvial diamonds found in the United States and southern Canada in the late 1800s suggested that glaciers may have transported the crystals from Hudson Bay in northeastern Canada, it wasn't until the 1990s that the first kimberlite was discovered. In April 1990, after a decade of exploration across 750 miles (1,130 km) in the Northwest Territories, the discovery of chrome diopside (a bright green indicator mineral) suggested a kimberlite pipe nearby, and led to the first major diamond mine, Ekati. This find triggered an exploration rush that thrust the country into the ranks of the world's top diamond producing nations.

The Northwest Territories cover more than 700,000 square miles (1,813,000 square km) in Canada filled with pristine lakes and unspoiled tundra. It has one of the world's harshest climates. The region must be accessed by air, except for about three months during the winter, when ice roads, built and maintained by the mining companies, allow vehicles to move through the region. The sub-arctic climate made it difficult to attract other industries, but diamond mining has flourished in the past 20 years, bringing employment and prosperity to the province, which has a population of under 60,000 mainly clustered around the capital, Yellowknife.

After Ekati, two other major diamond mines were discovered and developed in the Northwest Territories: Diavik and Gahcho Kué. Explorations in other parts of Canada led to the development of the Renard mine in Quebec and the Victor mine in Ontario with further, promising searches proceeding in Saskatchewan and elsewhere in the Northwest Territories.

Together, Canada's diamond mines are responsible for nearly 6,000 jobs, including suppliers and contractors in some of the most remote parts of the country.



Transformation Journey

The transformation of diamond rough into polished stones requires a blend of old-world craftsmanship and high-tech tools. Today, Surat, India is the primary diamond cutting and polishing center. Other cutting centers historically have included New York, Antwerp and Tel Aviv.

The hardness of the material requires highly trained artisans who use specialized saws, laser equipment and polishing tools to complete the task in stages. Traditionally, cutters fashioned the rough into a finished stone by hand. Today, computer imaging and lasers aid the cutter in revealing the stone's beauty. First, the diamond cutter must assess the rough to determine how to cut the most beautiful diamond – or diamonds, as one piece of rough can yield multiple finished diamonds. To achieve the greatest yield, each cutter must decide whether a round, rectangular, pear, marquise or square gem can best be fashioned from the rough. The gem's sparkle is unleashed through a series of processes including shaping, faceting and polishing.

GIA and other diamond grading laboratories evaluate the quality of polished diamonds using the 4Cs of Diamond Quality (Color, Clarity, Cut and Carat Weight), the international standard created by GIA, and issue grading reports documenting their assessment. The GIA Diamond Origin Report for your diamond includes this independent and objective analysis in addition to confirming the country of its origin.

Doing Good

Before diamond mining began in Canada, the government and the people made it clear that any work would require special attention to the environment and to the indigenous people in the region. The mining industry has brought billions of dollars in economic activity to the Northwest Territories, contributing revenue that has improved the socio-economic well-being of Canadian citizens, and offering new prospects for independent businesses.

Diamond mining in northern Canada specifically benefits Canada's First Nations, which consist of over 600 communities of more than 50 nations of indigenous people. Before mining began, agreements were signed with five of these First Nations to guarantee that members received jobs, training, scholarships and financial support. These promises are now realities: A significant percentage of the workforce at the mines are First Nations members, and jobs pay about twice the national average wage.

The ice roads built and maintained by the mining companies provide benefit to the people as well, by creating the only land-route to deliver much needed supplies to replenish stocks of food, fuel and building materials for the dozens of tribes who occupy this remote land. Transporting items by air is expensive and out of reach for these villages, making the ice roads a lifeline for these communities.





Doing Good

Strict environmental laws require mining sites be fully restored to their original state. This means all buildings and equipment must be removed. Rock piles must match the original landscape and slopes must be stabilized to protect humans and wildlife. The goal is to result in a neutral effect on the balance of nature in this sensitive environment, ensuring that miners leave the land as close as possible to how they found it.

“We engage with the communities to learn from their Traditional Knowledge of the land and wildlife. We recognize that Traditional Knowledge holders and Elders have a lot to teach us. For example, we recognize the significance of caribou to the culture, traditional land use, and economies of the local communities.”

— *Brendan Bell, CEO of Dominion Diamond Company*



Every diamond has a story. Now make this story part of your own.

About GIA

The Gemological Institute of America® is internationally recognized as the leader in gem research, education and laboratory services. Committed to protecting all purchasers of gemstones and jewelry, the Institute developed the International Diamond Grading System™ and the 4Cs of Diamond Quality, and continues to set the standard for grading and identification practices used all over the world.



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