



talk about minerals

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Facts on minerals

Quick facts

- Toothpaste, buildings, eyeglasses, computers, automobiles and hospital equipment are but a few of the many things that cannot be made without minerals.
- Mining is the prime industry in over 150 Canadian communities and directly employs one in 40 Canadians.
- Alberta is the cement-manufacturing hub for the Prairie provinces. There are two major plants, one near Exshaw (west of Calgary) and the other in Edmonton.
- Other minerals produced or potentially available in Alberta include metallic minerals, precious stones, industrial minerals and stone.

The past

Archeological evidence suggests that in North America, minerals such as copper and silver were mined and traded by First Nations peoples over 6,000 years ago, long before Europeans arrived in North America. Expeditions led by early explorers in Canada often included mineral exploration work. Coal and building stone were the first minerals mined in large quantities in Alberta.

The present

Non-energy minerals quarried and mined in Alberta today include limestone, sandstone and other building stone, salt, iron and magnetite, gold and ammonite shell. Five major quarries currently exist in Alberta.

Alberta also has hundreds of sand and gravel pits of various sizes. Some sand and gravel is washed for placer minerals, such as gold and platinum, before being used for construction, fill and cement manufacturing. Salt in Alberta is recovered by solution mining. Water is pumped down wells to dissolve the salt and the resulting salt brine is pumped to the surface.

There is one metal refinery/smelter in Fort Saskatchewan, producing nickel and cobalt. Exploration work continues for diamonds, gold, platinum group metals, uranium, zinc, lead and other minerals.

The future

Alberta is considered relatively unexplored ground in the mineral exploration world. Lack of discovery of other minerals is partly due to a lack of good geoscience and mapping relevant to these kinds of minerals.

Exploration work to date suggests the potential for uranium in northeastern and southwest Alberta; lead, zinc and copper in northern Alberta; iron in the Peace River area; and diamonds in north-central Alberta. Alberta's transportation and utilities infrastructure, along with northern areas already opened up for oil and gas exploration, are favourable for mineral exploration and development, even in fairly remote areas.

Alberta's non-energy minerals

Ammonite

Ammonites are members of the cephalopod class, which includes nautilus, squid, octopus and cuttlefish. The coloured shell of the ammonite first generated interest among Alberta mineral collectors in the 1970s and a significant Alberta industry soon developed to produce ammonite shell jewellery.

Diamonds

Diamonds are a hard, compact and natural crystalline form of carbon, colourless when pure but sometimes coloured by traces of impurities. One of the world's hardest-known substances, diamonds are used for cutting tools and drill bits, and as decorative gemstones.

The discovery of commercial quantities of diamonds



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in the Northwest Territories in the early 1990s generated significant interest in exploring for the mineral in Alberta. Since that time, many diamond-bearing kimberlites have been discovered in north central Alberta, but the deposits are too deep and/or too small to be economical to mine. Exploration for a mineable deposit continues.

Gold

Gold is an extremely malleable bright yellow metal that is extracted from ores and hardened by being combined in alloys with silver or copper. It is used in coins, jewellery and dentistry, and gold compounds are used in photography and medicine.

In Alberta, gold is almost always found as tiny particles mixed with streambed deposits of sand and gravel; these deposits are called placers. Prospectors have been searching for placer gold in the river systems of north-central Alberta since the mid-1800s.

Industrial minerals

Industrial minerals encompass a wide range of minerals, mainly non-metallic, which are used in agriculture, the natural resource sector, manufacturing and chemical processes.

Iron and magnetite

Iron is a base metal. Magnetite is a magnetic form of iron ore. A quarry between Calling Lake and Wabasca started producing 40 to 45 tonnes of iron per year in 2004. This iron product is used as a feedstock for making cement.

Limestone

Limestone (calcium carbonate) is quarried at Cadomin, Exshaw and in the Crowsnest Pass and processed in giant kilns to produce cement and chemical lime. It is used in a wide range of products, from cement to fertilizer. Other uses for limestone

include use in oil sands operations and in landscaping.

Other building stone

Small quantities of other stone are produced for use in buildings and limestone.

Salt

A residue of ancient seas covering parts of Alberta at various times, salt is produced in significant quantities from four brining operations in east-central Alberta.

While salt is probably best known for table salt and road salt, most salt produced in Alberta is used for chemical production and in the pulp industry.

Sand and gravel and other aggregate

The last glaciers deposited much of Alberta's sand and gravel, which is mainly used in cement making and as construction aggregate for roads, buildings and other large structures. Gravels such as "Alberta rainbow rock" are also used for decorative purposes in landscaping, while clay and shale are used to make bricks and other ceramic products. Bentonite clay, the swelling type, is used for drilling mud in the oil and gas sector in Alberta.

Sulphur

Sulphur is a common by-product of oil sands and natural gas production in Alberta. This bright yellow powder, seen in stockpiles around the province and at the Vancouver port, is used in making fertilizers and other industrial products.