

Lithium Resources in Canada

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Lithium is one of the 34 “minerals” considered critical by Canada for the sustainable economic success of the country. Canadian lithium production is solely from pegmatite deposits and in 2023 was an estimated 1.8% (3,400 metric tons) of the worldwide production of >180,000 metric tons. As of 2023, Canadian estimated measured and indicated lithium resources were assessed to be 2.9% (3,000,000 metric tons) of the estimated worldwide total of >105,000,000 metric tons.

The production in Canada in 2023 was from two pegmatite mines, Sinomine’s Tanco mine, 135 km NE of Winnipeg in Manitoba, and Sayona Québec’s North American Lithium mine, 60 km N of Val-d’Or in Quebec. Canada also has potential for lithium associated with petrobrines.

The majority of advanced exploration pegmatite projects are in Quebec, Ontario, and Manitoba. In northern Quebec the proposed Whabouchi Mine, the Rose Lithium-Tantalum Mining Project, and the James Bay Lithium Mine, all within 100 km of Nemaska, will together produce ~13,000 metric tons of ore per day for 15-26 years. The Bécancour lithium refinery near Trois-Rivières will process spodumene concentrate from a variety of sources to produce 18,270 metric tons of lithium carbonate per year. In northern Ontario the Pak project, 175 km N of Red Lake, is proposed to produce >1,000,000 metric tons per year of concentrate for 24 years. The Separation Rapids petalite deposit, 70 km N of Kenora, is estimated to contain 10.08 metric tons averaging 1.35% of measured and indicated Li₂O. The Georgia Lake deposit, approximately 70 km N of Nipigon, is predicted to produce 100,000 metric tons of spodumene concentrate annually for nine years. In northern Manitoba the Snow Lake lithium project is estimated to contain 8.2 million metric tons grading approximately 1% Li₂O.

Most advanced brine projects are in Manitoba, Saskatchewan, and Alberta. In these deposits direct lithium extraction technology will be used to extract lithium from the petrobrines. Alberta is estimated to have one of the world’s largest lithium deposits in brines in oil and gas reservoirs.