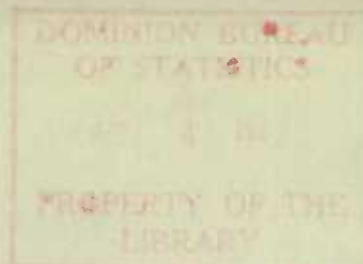


CANADA

DEPARTMENT OF TRADE AND COMMERCE

DOMINION BUREAU OF STATISTICS



Production

of

THE MISCELLANEOUS NON-METALLIC MINERALS

IN CANADA, 1931

including

Actinolite  
Barytes  
Bituminous Sands  
Fluorspar  
Graphite  
Magnesite  
Bog Manganese

Mineral Waters  
Peat  
Phosphate  
Silica Brick  
Sodium Carbonate  
Sodium Sulphate  
Sulphur

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The Mining, Metallurgical and Chemical Branch of the Dominion Bureau of Statistics at Ottawa reports finally revised statistics on the production in Canada during 1931 of actinolite, barytes, bituminous sands, fluorspar, graphite, magnesite, bog manganese, mineral waters, peat, phosphate, silica brick, sodium carbonate, sodium sulphate and sulphur as follows:-

ACTINOLITE - This mineral is an amphibole which, when fibrous, may be classed as an asbestos, the fibres are usually weak and brittle. The production of actinolite in Canada has been confined to the Ontario townships of Elzevir and Kaladar in Hastings and Addington counties, respectively. The total 1931 output amounted to 35 tons valued at \$456; the mineral was crushed and pulverized and after mixing with mica was exported to the United States. Actinolite, often with mica, is used in the manufacture of coal tar roofing compounds.

BARYTES -- Barytes shipments from Canadian deposits during 1931 totalled 1.6 tons valued at \$363. This production came entirely from the Lake Ainslie mine situated in Inverness county, Nova Scotia. The use of barytes, especially in the United States, for the manufacture of lithopone, has increased very rapidly during recent years. Crude barytes used in the manufacture of barium products in the United States during 1930 was as follows: 69,426 tons as ground barytes, 178,944 tons in the manufacture of lithopone, and 76,825 tons for barium chemicals. During 1931 the Bellew barytes mine was operated for a limited period; this property is located in Lanark county, Ontario. Prices quoted in the United States at the end of the year were:-- f.o.b. mines, California crude, \$7.00 per ton; Georgia crude, \$6.00 to \$6.50 per long ton; Missouri water ground, floated and bleached, \$23 car lots, f.o.b. works; crude ore, minimum 95 per cent,  $\text{BaSO}_4$ , less than 1 per cent iron, \$6.00; and 93 per cent  $\text{BaSO}_4$ , one per cent iron, \$5.50, f.o.b. mines.

BITUMINOUS SANDS - Shipments of bituminous sands from the Fort McMurray district, Alberta, amounted in 1931 to 1,015 tons valued at \$4,060 as compared with 2,067 tons worth \$8,268 in 1930. In 1931 the International Bitumen Company Ltd. carried on development work in the McMurray district.

Preliminary to commencement of operations on a commercial basis, the Scientific and Industrial Research Council of Alberta has conducted important investigations on these sands in an endeavour to find an economic method for the extraction of bitumen. During 1930 and part of 1931 the Mines Branch, Ottawa, conducted experimental hydrogenation and pressure-cracking experiments on Alberta bitumen at the Fuel Research Laboratories. The Department state that on the assumption that bitumen is more amenable to hydrogenation than coal, and that the difference in price between bitumen and coal is not too great, there is a possibility that gasoline can be produced from Alberta bitumen at a price lower than 14 cents per gallon. Such a prediction, however, is subject to confirmation by large scale tests and by a complete study of the economics of the situation.

These deposits of bituminous sands are stated to rank among the largest of their kind in the world.

FLUORSPAR - Production of fluorspar in Canada during 1931 totalled 40 tons valued at \$620 as against 80 tons worth \$1,240 in the previous year. This output came entirely from deposits of the mineral occurring in Hastings county, Ontario. Fluorspar also occurs at the Rock Candy mine situated north of Grand Forks, British Columbia; the mineral is mined at this property by the Consolidated Mining and Smelting Company for use in the metallurgical plants at Trail. This mine was idle during 1931. During 1931 fluorspar mines in the United States shipped 39,832 tons to steel plants, 1,123 tons to foundries, 5,279 tons to glass works, 1,996 tons for enamel and vitrolite, 4,586 tons for the manufacture of hydrofluoric acid and derivatives, and 557 tons for miscellaneous purposes. Fluorspar prices, per ton f.o.b., ruling at the close of the year for Kentucky and Illinois mines were: gravel, not less than 85 per cent  $\text{CaF}_2$ , and not over 5 per cent  $\text{SiO}_2$ , bulk basis, \$13. Foundry lump 85-5, \$15 to \$17; ground, 95 to 98 per cent  $\text{CaF}_2$ , and not over  $2\frac{1}{2}$  per cent  $\text{SiO}_2$ , \$30 in bulk, \$34 in bags or barrels; Colorado mines 82-5, \$10. Imports of fluorspar during 1931 totalled 3,215 tons valued at \$31,257.

GRAPHITE - Graphite production in 1931 came entirely from the province of Ontario, the total sales for the year amounted to 548 tons valued at \$32,149 as against 1,535 tons appraised at \$96,392 in 1930. The general world industrial depression with a declining demand for graphite and resultant lower prices have seriously affected mining operations in most of the graphite producing countries. Canada produces both flake and amorphous graphite. During 1931 the Dominion imported \$116,852 worth of graphite and its products of which \$32,081 came from the United Kingdom and \$84,754 from the United States; the total value of imports included \$1,404 for crude graphite, \$34,215 for crucibles and \$81,233 for ground graphite and other manufactures, n.o.p. Imports of graphite in 1930 totalled \$116,233. Exports of crude and refined Canadian graphite for the year under review totalled 19,024 cwt. valued at \$44,606 as compared with 48,351 cwt. worth \$127,291 in 1930. Carbon and graphite electrodes exported amounted to \$154,470 as against \$230,282 in the previous year. At the close of the year graphite prices f.o.b. New York were: Ceylon lump,  $6\frac{1}{2}$  to  $7\frac{1}{2}$  cents per pound, carbon lump, 3 to 6 cents; chip, 5 to 6 cents; dust, 3 to 4 cents; Madagascar flake, 5 to 6 cents. No. 1 flake, 8 to 16 cents per pound; No. 2,  $5\frac{1}{2}$  cents upward; fine ground, 55 to 70 per cent carbon, 3 cents upward, amorphous, 3 cents upward. Crude amorphous graphite, \$15 to \$35 per ton, according to grade.

The increased use of carborundum, the product of the electric furnace, is having a decided influence on the demand for graphite.

MAGNESITE - Shipments of calcined and clinkered magnesite in Canada in 1931 totalled 11,411 tons valued at \$295,579 as compared with \$13,336 tons worth \$336,162 in 1930. Quebec is the only Canadian province producing magnesite, the output coming from Harrington and Grenville townships along the north shore of the Ottawa river, some sixty miles west of Montreal; the deposits are stated to occur as replacements in ancient crystalline limestones of the Grenville series. Deposits of hydromagnesite occur near the town of Atlin, British Columbia. 1931 closing prices in the United States for California dead burned were \$25 per ton f.o.b.; kiln run, 93%  $\text{MgO}$  (artificial periclase) \$68; 88 per cent  $\text{MgO}$ , \$35. Caustic, 95 per cent  $\text{MgO}$ , \$45; 90 per cent, \$40. Washington dead burned grain magnesite, \$22. Imports of dead burned, sintered, caustic, and calcined or plastic magnesite into Canada during 1931 totalled 1,787 tons valued at \$40,628 as compared with 1,182 tons worth \$21,799 in 1930; magnesite firebrick imported were appraised at \$152,435 as against \$270,180 in 1930. Exports of Canadian magnesite calcined, dead burned, etc., in 1931 amounted to 1,611 tons worth \$45,257, in 1930 similar exports totalled 1,851 tons valued at \$48,536. The greater part of these exports went to the United Kingdom.



MANGANESE BOG Bog manganese, usually an impure earthy mixture of manganese and other metallic oxides, occurs at Dawson Settlement, near Hillsborough, New Brunswick. Shipments from this deposit during 1931 amounted to 77 tons valued at \$462 and constituted the total Canadian production of this material for the year. Bog manganese is utilized largely in the ceramic industry.

MINERAL WATERS Production of natural mineral waters in Canada during 1931 amounted to 217,408 imperial gallons valued at \$13,324 as compared with 227,141 gallons worth \$24,481 in 1930. Of the 1931 production Quebec contributed 19,868 gallons and Ontario 197,540 gallons. Numerous Canadian spring waters are reported to possess distinct therapeutic qualities and have been employed for medicinal purposes in several of the provinces. Total imports of mineral and aerated waters, n.o.p., during 1931 amounted in value to \$154,971 as against \$195,257 in the previous year.

PEAT Production of peat in Canada in 1931 totalled 1,498 tons valued at \$6,594 while in 1930 shipments totalled 2,847 tons worth \$10,932. The output in 1931 came entirely from the provinces of Quebec and Ontario. The Ontario Department of Mines report that a market is developing for humus, particularly in the Montreal and Toronto metropolitan areas where golf clubs are using the product as a top dressing. It is also used as a litter for bedding animals.

PHOSPHATE There was no production of rock phosphate or apatite in Canada in 1931; during the previous year apatite shipments from deposits near Templeton, Quebec, amounted to 40 tons valued at \$760. In British Columbia the Consolidated Mining and Smelting Company continued underground work at the Martin mine, the width of bed and grade remaining practically the same as reported in 1930; development on the leases known as the Crow mine was continued until May and indicated further tonnages of 50 per cent tri calcium phosphate over mineable widths. The Solar Development Company, allied to Consolidated Mining and Smelting Company, reports that the Star phosphate property at Paris, Idaho, was operated continuously and shipped 15,881 tons of phosphate rock to Tadanac, B.C. Some 1,800 tons of fertilizer were produced in the Warfield plant in British Columbia by the Consolidated Mining and Smelting Company and sold in the Prairie Provinces and British Columbia for 1931 spring seeding. The results were very gratifying. Substantial production of all three products - ammonium sulphate, triple superphosphate, and ammonium phosphate - began in the autumn of 1931. December 1931 prices for Florida pebble export phosphate, f.a.s., ranged from \$7.15 for 76 to 77 per cent to \$4.10 per long ton for 68 per cent; Tennessee ground lime phosphate, 80 per cent through 300 mesh, 33 per cent  $P_2O_5$ , \$12.80 per net ton, bags extra.

SILICA BRICK - Production of silica brick in 1931 totalled 900 thousand valued at \$35,746 as compared with 2,418 thousand worth \$97,379 in 1930. In Nova Scotia the Dominion Steel and Coal Company Limited manufactured silica brick at Sydney from silica rock quarried at Leitches Creek, Nova Scotia, and at Sault Ste. Marie. Ontario, the Algoma Steel Corporation produced this product from quartz obtained along the Algoma Central Railway. Imports of fire brick containing not less than 90 per cent silica in 1931 were appraised at \$234,909 as compared with a valuation of \$315,039 in the preceding year.

SODIUM CARBONATE (NATURAL) Several lacustrine deposits of sodium carbonate occur in British Columbia and during 1931 shipments of sal soda were made from the Salco claims in the Kamloops division. Sal soda was also shipped from the Margaret and Anita claims at Davison Lake, Cariboo Road, the output from this latter property was consigned to soap plants. Shipments were made during the year from sodium carbonate deposits at Rose Lake near Coulson on the P.C.E. R.R.; Soda Mining and Products Ltd. operated at Rose Lake. Total production of sodium carbonate from Canadian deposits during 1931 amounted to 712 tons valued at \$7,351 as compared with 364 tons worth \$4,550 in 1930. Sodium carbonate, or soda ash, has many different uses, being employed in the manufacture of glass, soap making, and in the purification of oils, etc..

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artificial sodium carbonate is produced from sodium chloride (salt) by the Solvay or ammonia soda process and also by electrolytic methods.

Imports of soda ash or barilla in 1931 amounted to 1,647,304 pounds valued at \$25,771 as against 3,041,965 pounds worth \$45,310 in 1930; soda bicarbonate imports in 1931 totalled 10,931,335 pounds valued at \$188,268.

SODIUM SULPHATE (NATURAL) - Sodium sulphate occurs naturally in large deposits in western Canada. During 1931 all shipments were made from the various deposits in Saskatchewan. Hydrous glabers salt was shipped to Eastern Canada from White Shore Lake, refined sodium sulphate went to paper mills in the United States and Canada from deposits at Frederick Lake, cleaned and dried crude sodium sulphate recovered at Ormiston was consigned to Copper Cliff, Ontario, for use in the metallurgical treatment of copper-nickel ores; shipments from other deposits were made to various points.

Artificial sodium sulphate is known as salt cake, and the usual process for producing it is from the action of sulphuric acid on natural sodium chloride. The salt for this process is preferably rock salt or the coarsest salt produced from evaporation. Sodium sulphate finds its principal use in the pulp and paper industry for the manufacture of "kraft paper" by the sulphate process, in the manufacture of glass, in the dyes industry, in the smelting of nickel-copper ores, and as one of the raw materials in the manufacture of sodium carbonate. Production of natural sodium sulphate in Canada during 1931 came entirely from the province of Saskatchewan and amounted to \$421,097 in value as compared with \$293,847 in 1930. It is reported that Canadian Industries Limited is designing a commercial plant to be constructed at Copper Cliff, Ontario, to produce sodium and aluminum sulphates from waste slag by a new process developed by Canadian Industries. It is stated that a sufficient quantity of slag is produced at the International Nickel plants to allow approximately 15,000 tons of sodium sulphate and 25,000 tons of aluminum sulphate to be reclaimed annually.

Imports of glauber salts in 1931 totalled 1,999,042 pounds valued at \$10,838; soda bisulphate or nitre cake imports amounted to 28,516,182 pounds worth \$175,648; soda sulphate, crude and salt cake imports were 17,321,652 pounds worth \$97,215 as compared with 49,107,678 pounds valued at \$395,236 in 1930.

SULPHUR (Pyrites) - The sulphur content of pyrites shipped and of waste bessemer gases used in the manufacture of sulphuric acid amounted in 1931 to 50,107 tons valued at \$429,457 as compared with 37,730 tons worth \$314,835 in 1930. Pyrites concentrates were shipped from properties in Quebec and British Columbia; these were recovered in the mining and milling of copper ores. Sulphur employed in the manufacture of sulphuric acid was recovered from salvaged smelter gases in Ontario and British Columbia. The three 110 ton units at the sulphuric acid plants constructed by the Consolidated Mining and Smelting Company at Trail, B.C., were completed, the last going into operation in October, 1931. These plants all obtain their sulphur dioxide gas as a by-product from the zinc concentrates roasted in the concentrate burning furnaces. This sulphur recovery is not only very desirable but was one of the conditions of the Joint International Commission's recommendations. This condition has been fulfilled by these new plants which together with the 35 ton unit previously installed are capable of making about 375 tons of 100 per cent acid per day. During the year Canadian Industries Limited completed an oleum unit at Copper Cliff, Ontario. The total imports of sulphur and limestone, crude, roll or in flour in 1931 amounted to 124,192 tons valued at \$2,281,654 as compared with 179,728 tons worth \$3,177,492 in 1930, practically all of this sulphur came from the southern United States. December 1931 price, per long ton unit of sulphur in pyrites, C.I.F., United States ports, guaranteed 48 per cent sulphur, Spanish, was 13 cents; sulphur prices per long ton for the United States market was \$18 f.o.b. Texas mines; \$22 for export, Atlantic ports.



Prices in this bulletin taken from "Engineering and Mining Journal."

PRODUCTION OF MISCELLANEOUS NON-METALLIC MINERALS IN CANADA, 1931.

Item	Unit of measure	Quantity	Value
Actinolite .....	tons	35	456
Barytes .....	tons	16	363
Bituminous sands .....	tons	1,015	4,060
Fluorspar .....	tons	40	620
Graphite .....	tons	548	32,149
Magnesite .....	tons	11,411	295,579
Manganese bog .....	tons	77	462
Mineral waters .....	Imp. gal.	217,408	13,324
Pest .....	tons	1,498	6,594
Phosphate .....	tons	...	...
Silica brick .....	M	900	35,746
Sodium carbonate .....	tons	712	7,351
Sodium sulphate .....	tons	...	421,097
Sulphur (x) .....	tons	50,107	429,457
TOTAL .....	-	...	1,247,258

(x) Includes sulphur content of pyrites at its sales value and estimated figures for quantity and value of sulphur in smelter gases used for acid making.

PRINCIPAL STATISTICS RELATING TO MISCELLANEOUS NON-METALLIC MINERAL INDUSTRIES IN CANADA, 1930 and 1931.

	1930	1931
Number of firms .....	38	33
Capital employed .....	3,608,896	5,457,930
Number of employees:- On salary .....	57	41
On wages .....	441	234
Total .....	498	275
Salaries and wages:- Salaries .....	84,598	68,947
Wages .....	442,585	228,447
Total .....	527,183	297,394
Cost of fuel and electricity .....	188,449	205,149
Selling value of products .....	1,192,417	1,247,258

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