GOVERNMENT OF CANADA

THE MISCELLANEOUS NON-METAL MINING INDUSTRY 1950

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THE MISCELLANEOUS NON-METAL MINING INDUSTRY 1950

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NOTICE

The Industry and Merchandising Division of the Bureau of Statistics collects and compiles figures on (a) the primary industries in Canada — mining, forestry and fishing; (b) manufacturing; (c) construction, and (d) merchandising and services.

The following reports constitute the complete volume on Mineral Statistics of Canada. Individual reports are issued as the information becomes available; they are arranged in a form suitable for binding.

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THE MISCELLANEOUS NON-METAL MINING INDUSTRY 1950

Canadian operators which produce certain industrial or non-metallic minerals, and which are usually too few in number to permit the publication separately of complete details of operations, have been classified for statistical purposes to a group which has been designated as the Miscellaneous Non-Metal Mining Industry. Minerals or primary mineral products recovered (or deposits developed) by this industry during 1950 included barite, brucite, diatomite, fluorspar, garnet, graphite, grindstones, dolomitic-magnesite, mineral waters, phosphate rock, silica brick, sodium carbonate and sodium sulphate.

In 1950 there were 36 producing plants or mines in this industry which had a gross value of production of $6,709,579 compared with $6,236,811 in 1949. Salaries and wages paid to the 1,121 employees amounted to $2,640,013, about $842,617 was paid for fuel, and $205,494 for 17,524,189 k.w.h. of electricity. Process supplies cost $696,907 and containers cost $100,951.

This report also includes data for arsenious oxide, titanium oxide, and sulphur contained in pyrites and smelter gases; these are by-products of the metal mining and smelting industries and output, employment, etc. are credited to the producing industries. Also, for convenience, the statistics for the mica mining industry and for the iron oxides mining industry are published in this report, although they are not included in the figures for the Miscellaneous Non-Metal Mining Industry.

TABLE 1. Principal Statistics Relating to The Miscellaneous Non-Metal Mining Industry, 1948, 1949 and 1950

—		1948	1949	1950
Number of plants		40	37	36
Number of employees:				
Administrative		137	144	140
Workmen		1,024	1,016	981
Total		**1,161**	**1,160**	**1,121**
Salaries and wages:				
Administrative	$	325,306	388,797	413,968
Workmen	$	2,172,612	2,244,011	2,226,045
Total	$	**2,497,918**	**2,632,808**	**2,640,013**
Gross selling value of products	$	6,034,352	6,236,811	6,709,579
Cost of fuel and electricity	$	1,081,147	1,011,021	1,048,111
Cost of process supplies used	$	689,908	576,919	696,907
Cost of containers	$	126,355	107,820	100,951
Freight	$	80,575	79,121	42,286
Net value of production	$	4,056,367	4,461,930	4,821,324

TABLE 2. Production of Miscellaneous Non-Metallic Minerals, 1949 and 1950

Item		1949		1950	
		Quantity	Value	Quantity	Value
			$		$
Barite	ton	47,138	557,662	77,177	750,378
Diatomite	ton	60	1,703	49	1,665
Fluorspar	ton	64,477	1,592,908	64,213	1,553,004
Garnet (schist)	ton	–	–	3	240
Graphite	ton	2,147	212,496	3,586	390,815
Grindstones	ton	195	12,450	100	10,000
Dolomitic-magnesite	ton	–	1,536,200	–	1,717,879
Mineral waters	Imp. gal.	306,691	146,240	318,829	158,897
Phosphate	ton	20	291	129	1,070
Silica brick	M	3,663	453,797	3,126	408,813
Sodium carbonate	ton	47	513	–	–
Sodium sulphate	ton	120,259	1,614,731	130,730	1,615,867
Total	–	–	**6,128,991**	–	**6,608,628**
Sulphur [1]	ton	261,871	2,039,384	301,172	2,189,660
Iron oxides	ton	13,625	207,887	13,696	262,632
Mica	ton	1,745	108,458	1,940	252,611
Arsenious oxide [2]	ton	263	26,332	397	52,029
Titanium oxide [2]	ton	–	–	1,596	149,565

1. 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. General statistics relating to production of sulphur are included with those of the copper-gold mining and non-ferrous smelting industries.
2. General statistics relating to arsenious oxide and titanium oxide are included with the non-ferrous smelting industry.
Note. Value of containers is excluded.

TABLE 3. Workmen, by Months, in the Miscellaneous Non-Metal Mining Industry, 1949 and 1950

Month	1949						1950					
	Mine			Mill		Total	Mine			Mill		Total
	Surface		Underground				Surface		Underground			
	Male	Female		Male	Female		Male	Female		Male	Female	
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
January	244	2	241	684	4	1,175	156	2	141	484	1	784
February	232	2	238	652	4	1,128	159	2	143	528	1	833
March	229	2	226	646	4	1,107	171	2	234	534	1	942
April	241	2	227	600	3	1,073	162	2	238	517	1	920
May	208	2	169	580	3	962	197	2	258	516	1	974
June	288	2	228	573	3	1,094	206	2	260	511	1	980
July	275	2	224	548	2	1,051	224	2	259	563	1	1,049
August	194	2	168	483	1	848	254	2	264	544	1	1,065
September	196	2	243	489	1	931	250	2	260	534	1	1,047
October	205	2	239	561	1	1,008	257	2	257	557	1	1,074
November	184	2	210	566	1	963	235	2	239	592	1	1,069
December	185	2	154	457	1	799	210	2	234	551	1	998
Average	**228**	**2**	**214**	**570**	**2**	**1,016**	**208**	**2**	**234**	**536**	**1**	**981**

ARSENIOUS OXIDE

Production (shipments) of arsenious oxide from Canadian ores during 1950 was 794,091 pounds valued at $52,029 compared with 526,645 pounds valued at $26,332 in 1949. In Quebec the Consolidated Beattie Mines Ltd. and the O'Brien Gold Mines Ltd. roast their arsenical ores. Both crude and refined grades of arsenic are produced by the Beattie mine but the crude from the O'Brien mine is shipped to the Deloro smelter for refining. The production from Ontario ores originated in the silver-cobalt ores treated at the Deloro plant. The auriferous quartz ores exported to the United States from British Columbia mines contain considerable amounts of arsenic but no data are available on the possible recovery of this arsenic and since the Canadian gold mines receive no payment for the arsenic content, it is not credited as commercial production. Because there are only two producers, the figures for refined arsenic are not shown separately.

TABLE 4. Production, Imports and Exports of Arsenic, 1949 and 1950

—	1949		1950	
	Quantity	Value	Quantity	Value
	(pounds)	$	(pounds)	$
Production:				
White arsenic (crude and refined)	526,645	26,332	794,091	52,029
Imports:				
Arsenic acid	1,701,154	86,602	2,114,532	100,960
Arsenious oxide and arsenic sulphide	256,957	18,091	16,290	3,229
Soda, arseniate of, binarseniate	55,142	21,203	75,020	23,223
Arsenate of lead	—	—	—	—
Arsenate of lime	—	—	—	—
Exports:				
Arsenic[1]	3,880,700	157,947	3,567,400	147,074

1. Includes arsenic content in gold ores exported from British Columbia as follows: 1949—3,868,300 pounds at $157,017; 1950—3,206,000 pounds at $129,692.

TABLE 5. Production, Imports and Exports of White Arsenic, 1942-1950

Year	Production (crude and refined but no duplication)	Imports[1]	Exports	
			Refined	Crude
	(pounds)			
1942	7,853,123	2,082	2,204,889	5,844,611
1943	3,153,538	400	2,358,400	199,358
1944	2,627,022	2,405	2,016,000	—
1945	2,045,730	—	1,519,697	—
1946	745,885	500	418,000	—
1947	787,736	246,379	130,300	—
1948	1,161,996	84,390	170,800	—
1949	526,645	256,957	12,400	—
1950	794,091	16,290	361,400	—

1. Arsenious oxide and arsenic sulphide.

TABLE 6. Consumption of Refined White Arsenic, 1947-1950

Industry	1947	1948	1949	1950
	(pounds)			
Glass	432,449	432,711	392,560	384,079
Insecticides[1]	117,051	5,390	2	2
White metals	37,454	30,927	34,828	62,830
Miscellaneous chemicals	39,520	229,561	49,313	107,293
Total accounted for	**626,474**	**698,589**	**476,701**	**554,202**

1. Does not include arsenic acid (As_2O_5) imported for use in making insecticides, as follows: 1946—3,867,606 pounds; 1947—3,589,018 pounds; 1948—1,395,809 pounds; 1949—1,831,089 pounds.
2. Included with miscellaneous chemicals total.

TABLE 7. World Production of White Arsenic, by Countries, 1946-1949

(Taken from the "Minerals Yearbook" of the United States Bureau of Mines)

Country[1]	1946	1947	1948	1949
	(metric tons)			
Argentina[2]	3	3	3	3
Australia	1,651	1,210	520	69[4]
Austria	3	3	3	3
Belgium-Luxembourg[5]	3	3	151	527
Brazil	829	1,001	984	3
Canada	338	357	527	272
France	3,140	2,510	3,000	3
Germany	3	3	3	3
Greece	8	14	18	13
Italy	1,420	1,620	1,730	1,050[6]
Japan	1,092	1,407	1,765	3
Mexico	9,648	9,685	7,571	3,576
New Zealand	18	8	8	3
Peru	753	608	1,011	500
Portugal	508	1,005	3	228[4]
Southern Rhodesia	216	416	283	148
Spain	440	484	573	3
Sweden	10,109	16,088	19,100[7]	3
Union of South Africa	12	3	13	3
United Kingdom[8]	147	91	3	3
United States	9,263	17,014	16,909	11,607
Total[9]	**41,000**	**56,000**	**57,000**	**36,000**

1. Arsenic is also believed to be produced in China, Czechoslovakia, Hungary, Iran, Korea, Turkey and U.S.S.R. but data are not available.
2. Arsenic content of ore mined.
3. Data not available: estimate included in total.
4. January to June inclusive.
5. Exports.
6. January to September, inclusive.
7. Includes 7,900 metric tons crude (90-99% As_2O_3).
8. White arsenic, including arsenic soot.
9. Estimated; excludes countries listed in footnote 1.

BARITE

During 1950, the barite shipped from Canadian mines amounted to 77,177 tons valued at $750,378 compared with 47,138 tons valued at $557,662 in the preceding year.

For most industrial purposes barite is used in finely ground form, 325 mesh being the general specification. The material should be of good white colour, the best grades being obtained by wet grinding, bleaching with acid, and water floating. Some off-colour material is used for less exacting purposes.

The Canadian Industrial Minerals, Limited at Walton, Nova Scotia is the largest producer of barite, mostly for the export markets. A mill now under construction at Brookfield, Nova Scotia is expected to be ready to handle the ore of Maritime Barytes Limited in the summer of 1951.

Content of $BaSO_4$ is usually required to be not less than 95 per cent. Chief uses for ground barite are as a heavy, inert filler or loader in rubber, asbestos products, paper, linoleum and oilcloth, textiles, leather and plastics. It is one of the leading pigments and extenders in paints, and has become of increasing importance as a heavy weighting medium in oil-well drilling muds to overcome gas pressures. About 5 tons of barite are used for each 1,000 feet of hole drilled. The requirements are a minimum specific gravity of 4.25 (corresponding to a $BaSO_4$ content of 93 per cent) and absence of soluble salts. Considerable barite is used in the glass industry as a batch fluxing ingredient for moulded flint glass, for which purpose it should contain not less than 96 per cent $BaSO_4$, under 3 per cent moisture, and not more than 0.4 per cent iron oxide (Fe_2O_3), with a fineness range of 20 to 100 mesh.

TABLE 8. Production of Barite, 1941-1950

Year	Short tons	$	Year	Short tons	$
1941	6,890	74,416	1946	120,419	1,006,473
1942	19,667	188,144	1947	128,675	1,380,753
1943	24,474	279,253	1948	95,747	1,073,380
1944	118,719	1,023,696	1949	47,138	557,662
1945	139,589	1,211,403	1950	77,177	750,378

TABLE 9. Imports of Barite, 1941-1950

Year	Tons	$	Year	Tons	$
1941	3,431	81,620	1946	1,547	42,904
1942	2,536	68,196	1947	1,737	51,060
1943	1,686	43,239	1948	1,263	39,613
1944	1,824	47,913	1949	934	32,269
1945	1,150	32,531	1950	2,089	70,095

TABLE 10. Consumption of Barite, 1946-1949

—	1946	1947	1948	1949
	(Tons)			
(a) By Uses				
Paints	1,711	1,658	1,331	1,202
Rubber goods	461	556	659	559
Glass	266	237	380	184
Miscellaneous	400	313	1,075	1,200
Total	**2,838**	**2,764**	**3,445**	**3,145**

TABLE 10. Consumption of Barite, 1946-1949 – Concluded

–	1946	1947	1948	1949
	(Tons)			
(b) By Provinces:				
Newfoundland	Not available			34
Nova Scotia	34	24	6	18
Quebec	1,123	1,146	1,711	1,274
Ontario	1,179	1,210	1,182	1,329
Manitoba	276	227	121	116
Saskatchewan	4	7	4	6
Alberta	106	11	310	297
British Columbia	116	139	111	71
Canada	**2,838**	**2,764**	**3,445**	**3,145**

Note. Above figures do not include amounts used in oil drilling.

TABLE 11. World Production of Barite, by Countries, 1946-1949

(Taken from the "Minerals Yearbook" of the United States Bureau of Mines)

Country[1]	1946	1947	1948	1949
	(Metric tons)			
Algeria	14,240	23,692	16,681	16,874
Argentina	10,000	35,000[2]	[3]	[3]
Australia	7,711	5,500	3,831	[3]
Austria	808	2,007	3,842	8,135
Belgium	[3]	—	[3]	[3]
Brazil	10,326	13,971	10,000	—
Canada	109,242	116,731	86,860	36,029
Chile	3,752	2,546	2,141	[3]
Colombia	—	2,800[2]	120	[3]
Cuba (exports)	—	—	—	[3]
Egypt	—	167	—	30
France	34,570	53,970	[3]	[3]
Germany	45,736[4]	35,000[5]	41,000[5]	183,457
Greece	—	—	18,706	15,604
India	29,558	24,700	22,691	[3]
Ireland	13,557	12,927	7,112	[3]
Israel and Jordan	3	[3]	[3]	[3]
Italy	24,861	68,736	62,234	46,616
Japan	581	907	3,404	9,322
Korea:				
Northern	100[2]	1,000[2]	[3]	[3]
Southern	—	—	—	[3]
Peru	7,187	6,500	[3]	[3]
Portugal	294	1,211	406	[3]
South-West Africa	—	—	—	48
Southern Rhodesia	173	18	51	488
Spain	12,245	19,817	14,153	[3]
Swaziland	224	172	98	104
Sweden	505	1,319	1,914	[3]
Switzerland	—	—	—	[3]
Tunisia	408	470	230	630
Union of South Africa	2,326	2,672	1,734	2,222
United Kingdom[6]	112,705	96,267	[3]	[3]
United States	657,908	802,146	705,642	663,428
Total	**1,155,000**	**1,395,000**	**1,320,000**	**1,255,000**

1. In addition to countries listed, barite is produced in China, Czechoslovakia, Mexico, Norway, U.S.S.R. and Yugoslavia. Out data on production are not available.
2. Estimate.
3. Data not available; estimate included in total.
4. Excludes British zone.
5. Excludes British, French and Soviet zones.
6. Includes witherite.
7. Estimate; excludes countries in footnotes 1, 4 and 5.

CORUNDUM

No corundum has been produced in Canada since October, 1946, when treatment of the old tailings at the Craigmont property, Renfrew county, Ontario, for the recovery of corundum was completed. This operation was undertaken during the war at the request of the United States Government. During the two years of operation about 2,600 tons of concentrate were shipped from the Craigmont property to American Abrasive Company, Westfield, Massachusetts, the only handler of corundum on the continent.

The main and only zone from which production has been obtained is in a belt 100 miles long and 6 miles wide in Haliburton, Hastings, and Renfrew counties in Ontario. Several of the numerous deposits examined recently contain fair amounts of corundum, the most promising being an extensive deposit in Monteagle township on the east side of the York River, about 10 miles northeast of Bancroft. (For a description of corundum-bearing nepheline syenite belts of south and eastern Ontario, see report No. 820 "The Corundum Mineral Industry in 1945", page 53, issued by the Bureau of Mines, Ottawa.) It is doubtful, however, if the production of corundum alone would be economic and consequently marketable by-products would be necessary. Present indications are that a large tonnage of good quality nepheline feldspar product suitable for the glass trade, as well as fine mica for fillers and for backing, can be extracted from the Monteagle deposit, in addition to high-quality fine-grained corundum.

DIATOMITE

All of the Canadian production of diatomite since 1939 has come from deposits in the swamps and lake bottoms of northern Nova Scotia, in southern British Columbia, in the Muskoka area, Ontario, and in various parts of British Columbia. Production in 1950 came from two deposits, one at Digby Neck, Nova Scotia, operated by G. Wightman, and the other on the west bank of the Fraser River, north of Quesnel, British Columbia, operated by Lt.T. Fairey of Vancouver. The Tertiary fresh-water deposits near Quesnel in the Cariboo area are by far the largest known in Canada; they extend for many miles along the Fraser River, are compact, and are up to 40 feet thick. At Digby Neck, Nova Scotia, is the largest known recent fresh-water (swamp) deposit in Canada.

Diatomite is used as a fertilizer dusting agent, for filtration, and as a filler in the paint, chemical, paper, rubber and textile industries. Small amounts are used in silver polish bases, and as an admixture in concrete. A small amount of lime-diatomite insulation bricks is made by a company in Toronto which uses diatomite from Nova Scotia. Diatomite is being used in pressure filters in industrial plants in place of sand filters for the removal of disease-producing organisms.

The ammonium nitrate fertilizers in which diatomite is used as a dusting agent are made in Canada by The Consolidated Mining and Smelting Company of Canada Limited in its plants at Trail, British Columbia, and at Calgary, Alberta; and by North American Cyanamid, Limited, in its plant near Welland, Ontario. The diatomite thus used is highly porous and when added to the nitrate it absorbs moisture and coats the small grains or nitraprills which prevents caking and ensures even spreading. Specifications call for uncalcined material of 325 mesh and less than 5 per cent moisture. Much of the output of these fertilizers is exported.

TABLE 12. Production of Diatomite, 1941-1950

Year	Short tons	$	Year	Short tons	$
1941	344	9,935	1946	90	2,532
1942	365	9,088	1947	103	2,677
1943	98	3,331	1948	46	1,487
1944	13	437	1949	60	1,703
1945	46	1,238	1950	49	1,665

TABLE 13. Consumption of Infusorial Earth in the Sugar Refining Industry, 1940-1949

Year	Tons	Value	Year	Tons	Value
		$			$
1940	2,492	112,369	1945	1,992	102,961
1941	2,672	138,973	1946	2,196	104,794
1942	1,504	75,295	1947	2,490	141,885
1943	1,726	89,075	1948	2,865	167,259
1944	2,188	115,053	1949	2,871	187,508

TABLE 14. Consumption of Diatomaceous Earth in the Manufacture of Fertilizers, 1945-1949

Year	Tons	$
1945	6,444	274,968
1946	8,185	308,446
1947	7,488	295,773
1948	7,653	316,383
1949	7,469	324,702

TABLE 15. Imports of Diatomaceous Earth, 1941-1950

Year	Tons	Value	Year	Tons	Value
		$			$
1941	6,915	229,555	1946	17,063	469,968
1942	4,294	155,802	1947	15,074	431,125
1943	5,623	184,010	1948	17,050	512,115
1944	11,664	335,939	1949	16,914	551,954
1945	13,217	362,882	1950	18,247	599,216

FLUORSPAR

Production of fluorspar in Canada during 1950 amounted to 64,213 tons valued at $1,553,004 compared with 64,477 tons worth $1,592,908 in 1949. Over 85 per cent of the output came from the fluorspar deposits at St. Lawrence, Newfoundland. Ontario's production originated at Madoc.

Fluorspar is used chiefly as a powerful fluxing agent in the steel industry, and is used in small amounts in numerous other metallurgical industries. The next largest market is in the manufacture of hydrofluoric acid, which is used mainly in making artificial cryolite and aluminum fluoride for the aluminum industry; the fluorspar from Newfoundland is used for this purpose at Arvida, Quebec. The ceramic industry is next, using fluorspar as a fluxing and opacifying ingredient in glass and enamels. Uranium hexafluoride is used for the gaseous diffusion separation of the uranium isotopes U235 and U238 in the development of atomic energy.

TABLE 16. Principal Statistics of the Fluorspar Mining Industry, 1948, 1949 and 1950

—		1948	1949	1950
Active firms	No.	4	5	5
Employees:				
Administrative	No.	4	32	36
Workmen	No.	60	282	296
Total	**No.**	**64**	**314**	**332**
Salaries and wages:				
Administrative	$	19,799	86,052	111,099
Workmen	$	105,648	546,112	615,405
Total	**$**	**125,447**	**632,164**	**726,504**
Gross value of production	$	344,834	1,592,908	1,553,004
Cost of fuel and electricity	$	24,139	139,205	146,433
Cost of process supplies	$	7,892	48,785	60,926
Net value of production	$	312,803	1,404,918	1,345,645

TABLE 17. Production of Fluorspar, 1941-1950

Year	Short tons	Selling value, f.o.b. works	Year	Short tons	Selling value, f.o.b. works
		$			$
1941	5,534	97,767	1946	8,042	237,491
1942	6,199	146,039	1947	7,186	209,886
1943	11,210	318,424	1948	11,340	344,834
1944	6,924	217,701	1949	64,477	1,592,908
1945	7,369	233,708	1950	64,213	1,553,004

TABLE 18. Imports of Fluorspar, 1941-1950

Year	Tons	$	Year	Tons	$
1941	26,539	567,656	1946	31,813	717,094
1942	47,784	1,046,526	1947	32,001	702,419
1943	77,436	1,738,669	1948	48,925	1,105,190
1944	37,100	840,309	1949	2,510	81,650
1945	20,517	530,670	1950	1,572	66,823

TABLE 19. Consumption of Fluorspar, 1947-1950

—	1947	1948	1949	1950
	(Tons)			
(a) By Uses:				
Steel	18,768	20,651	21,136	21,800
Glass	752	569	432	484
Enamelling and glazing	244	257	297	229
Heavy chemicals	21,571	32,596	32,947	29,620
White metal alloys	44	36	14	4
Total	**41,379**	**54,109**	**54,826**	**52,137**
(b) By Provinces:				
Nova Scotia	7,566	7,908	8,522	8,570
Quebec	18,142	29,777	30,629	27,670
Ontario	15,181	16,054	15,357	15,598
Manitoba	225	298	313	214
Alberta	245	61	—	—
British Columbia	20	11	5	85
Total	**41,379**	**54,109**	**54,826**	**52,137**

TABLE 20. World Production of Fluorspar, by Countries, 1946-1949

(Taken from "Minerals Yearbook", of the United States Bureau of Mines.)

Country[1]	1946	1947	1948	1949
	(Metric tons)			
Argentina (shipments)	2,133	2,400	2	2
Australia:				
Queensland	875	887	361	568
Victoria	326	332	159	—
Bolivia (exports)	2	28	227	264
Brazil	—	841	751	537
Canada:				
Newfoundland	23,366	36,191	47,833	50,417
Other Provinces	7,296	6,519	10,287	5,795
France	19,235	31,596	32,000	2
French Morocco	—	—	—	445
Germany:				
Bizonal	30,910	19,235	37,549	33,871
Soviet Zone	2	2	2	2
India	2	2	2	2
Italy	7,430	20,860	39,540	17,746
Japan	288	61	68	960
Korea:				
North	2	2	2	2
South	—	—	—	1,230
Mexico (exports)	21,949	45,737	75,381	56,000[3]
Norway	1,440	1,089	—	2
Southern Rhodesia	—	154	12	239
Spain	8,712	13,885	30,250	61,915
Sweden	3,722	2,780	4,303	2
Tunisia	—	—	525	352
Union of South Africa	4,821	4,815	3,754	5,107
United Kingdom	47,200	45,016	71,124	2
United States (shipments)	252,142	298,901	300,956	214,733
Total (estimate)	**567,000**	**670,000**	**796,000**	**660,000**

1. In addition to countries listed China and U.S.S.R. produce fluorspar, but data of output are not available; estimates are included in total.
2. Data not available: estimated.
3. Estimate.

GARNET

In 1950 there was no garnet mined, but about 3 tons of crushed material were shipped from the stockpile. In earlier years the Niagara Garnet Company mined a deposit near River Valley in Dana township, Ontario. The ore was crushed and concentrated at the firm's mill located at Sturgeon Falls.

Garnet is used for making abrasive-coated papers and cloth, which in turn are used mainly in the wood-working and shoe-leather industries. Garnet flour or superfine grade is used as a partial substitute for corundum flour for polishing optical lenses.

GRAPHITE

Production of graphite in Canada came from the Black Donald Mine, Renfrew county, Ontario, the only operating property in Canada. The property has been sold to the Hydro-Electric Commission of Ontario, in connection with water power development on the Madawaska River. Completion of the project will result in flooding a part of the property, but the Black Donald mine retains the right to operate until the land is actually required for flooding purposes.

Graphite has many uses, but is employed principally in foundry facings, lubricants, crucibles, retorts and stoppers, packings, pencils and crayons, paints, and stove polish. Important quantities, mostly amorphous or artificial, are used in dry batteries, electrodes, and commutator brushes. Flake from the Black Donald deposit is too small for crucible use and finished products consist mainly of amorphous foundry grades, but include high-grade fine flake and dust sold for use in lubricants, packings, and polishes. Prepared facings for the domestic foundry trade also are made.

In Canada, graphite is used chiefly in the foundry, dry battery, packings, lubricants, and paint trades. Foundry needs are met in part by domestic production, and in part by plumbago from Ceylon. The battery trade uses mainly Mexican amorphous, and paint requirements are filled largely by low-grade amorphous flake. American imports of Canadian graphite are used chiefly in foundry facings, lubricants, and pencils.

TABLE 21. Mine Shipments of Graphite, 1941-1950

Year	Short tons	$	Year	Short tons	$
1941	1,644	132,924	1946	1,975	180,405
1942	1,192	117,904	1947	2,398	207,364
1943	1,903	197,431	1948	2,539	239,931
1944	1,582	179,457	1949	2,147	212,496
1945	1,910	187,364	1950	3,586	390,815

TABLE 22. Imports and Exports of Graphite[1], 1948-1950

	1948	1949	1950
	$	$	$
Imports:			
Plumbago, not ground	81,899	83,301	71,440
Crucibles, plumbago, and covers	116,999	128,696	164,142
Plumbago, ground, and manufactures of	333,679	293,267	330,442
Exports:			
Graphite, crude and refined	191,398	166,224	313,457
Carbon and graphite electrodes	1,260,696	1,158,499	1,194,964

1. Includes artificial graphite.

TABLE 23. Available Data on the Consumption of Graphite, 1948 and 1949

—	1948	1949
	(Pounds)	
By Industries:		
Iron and steel foundries	2,310,375	2,665,000
Paints	165,699	143,000
Electrical apparatus	1,401,254	250,000
Heavy chemicals	300,852	372,000
Prepared foundry facings	1,091,280	444,000
Polishes	47,937	54,000
Brass and bronze foundries	59,416	63,000
Total for above industries	**5,376,613**	**3,991,000**
By Provinces:		
Newfoundland	—	3,000
Nova Scotia	20,345	9,000
New Brunswick	3,107	3,500
Quebec	1,344,380	1,048,000
Ontario	3,765,538	2,655,000
Manitoba	42,088	47,500
Saskatchewan	6,050	6,700
Alberta	15,085	21,300
British Columbia	180,020	197,000
Total	**5,376,613**	**3,991,000**

TABLE 24. World Production of Natural Graphite, by Countries, 1946-1949

(From the "Minerals Yearbook" of the United States Bureau of Mines.)

Country[1]	1946	1947	1948	1949
	(Metric tons)			
Argentina	250	[2]	[2]	[2]
Australia:				
New South Wales	117	100	77	[2]
Queensland	234	187	147	13[3]
South Australia	2	21	10	34[4]
Tasmania	—	—	—	5[3]
Western Australia	—	—	—	[2]
Austria	252	3,845	11,300	14,093
Brazil (exports)	92	129	83	[2]
Canada	1,792	2,175	2,303	1,905
Ceylon (exports)	8,212	9,150	14,221	12,437
China	10,000[5]	—	—	[2]
Czechoslovakia	5,108	7,000	15,000	[2]
Egypt	—	—	50	[2]
French Morocco	640	400	284	72
Germany (Bavaria)	3,800	4,930	5,757	5,097
India	1,653	1,255	1,675	[2]
Italy	2,593	3,845	6,743	4,011
Japan[6]	7,417	8,000[7]	9,137	5,299
Korea	6,204	10,000[7]	15,454[8]	40,671[8]
Madagascar	6,315	5,170	8,438[9]	9,767[9]
Malaya	—	—	[2]	[2]
Mexico	21,949	27,984	35,261	23,812
Mozambique	200	126	120	[2]
Norway	661	2,481	1,125	[2]
South-West Africa	1,193	1,639	1,627	2,264
Spain	320	309	241	[2]
Spanish Morocco	120	150	25	—
Sweden	—	—	—	[2]
Union of South Africa	278	221	172	83[3]
United States	5,058	3,980	9,026	5,536
Total (estimate)	**75,000**	**94,000**	**139,000**	**150,000**

1. In addition to countries listed graphite has been produced in Bulgaria, Greenland, Nyasaland and U.S.S.R. but production data are not available. No estimates for these countries are included.
2. Data not available; estimates included in total.
3. January to September, inclusive.
4. January to June, inclusive.
5. Estimated Japanese imports from Manchuria.
6. Data revised to represent refined graphite rather than crude.
7. Estimate.
8. South Korea only.
9. Exports.

GRINDSTONES, PULPSTONES AND SCYTHESTONES

Sandstone beds in Nova Scotia, New Brunswick and British Columbia contain material suitable for grindstones. The output is only from the New Brunswick coast where the stones are removed along the shore area of the Bay of Chaleur. During 1950 the shipments of grindstones amounted to 100 tons valued at $10,000 compared with 195 tons valued at $12,450 in the preceding year.

TABLE 25. Production of Grindstones, Pulpstones and Scythestones, 1941-1950

Year	Tons	$	Year	Tons	$
1941	188	11,500	1946	295	17,450
1942	216	10,000	1947	335	21,475
1943	164	6,225	1948	220	20,100
1944	225	12,000	1949	195	12,450
1945	225	10,870	1950	100	10,000

TABLE 26. Consumption of Pulpstones by the Canadian Pulp and Paper Industry, 1941-1950

Year	Number for 2 ft. wood	Value	Number for 2.5 ft. wood	Value	Number for 4 ft wood	Value
		$		$		$
1941	295	127,349	77	35,843	97	215,913
1942	237	100,466	53	23,898	94	208,986
1943	197	102,888	54	20,000	66	151,411
1944	187	89,133	57	34,865	76	193,396
1945	191	117,585	33	14,132	114	271,108
1946	233	121,705	41	16,868	139	349,866
1947	258	153,075	35	22,629	153	409,060
1948	201	146,328	38	34,339	127	372,453
1949	105	102,685	26	29,650	95	295,664
1950	136	101,029	12	8,773	124	378,050

IRON OXIDES

Ochreous iron oxides shipped during 1950 amounted to 13,696 tons valued at $262,632 compared with 13,625 tons valued at $207,887. All production came from deposits in Quebec. The depletion of ore stopped operations in British Columbia.

The ochreous iron oxide used in the manufacture of paints is largely in the calcined form. However, a small quantity of natural iron oxides associated with clay-like materials in the form of umbers and siennas is also used as pigments in paints, both in the raw and calcinated state.

Iron oxide pigments are used also as colouring agents and fillers in the manufacture of imitation leather, shade cloth, shingle stain, paper and cardboard. Siennas and umbers are used in wood stains and wood fillers. The natural ochre is used as a pigment for linoleum and oilcloth; as a pigment in wood stains and wood fillers; and in colouring cement, stuccos, and mortar.

A portion of iron oxide mined in Quebec and nearly all of that mined in British Columbia is used for the purification of illuminating gas.

The prices as quoted by the Canadian Chemistry and Process Industries for iron oxide were: red, 6 to 11 cents per pound; yellow, 5 to 7 cents; brown, 5 to 8 cents; and black 9 to 12 cents per pound.

TABLE 27. Principal Statistics of The Natural Iron Oxides Industry, 1948-1950

—		1948	1949	1950
Number of firms		7	8	6
Number of employees:				
Administration		7	7	5
Workmen		48	37	39
Total		**55**	**44**	**44**
Salaries and wages:				
Administration	$	11,157	12,301	8,737
Workmen	$	73,402	60,810	61,667
Total	$	**84,559**	**73,111**	**70,404**
Gross selling value of products	$	203,391	207,887	262,632
Cost of fuel and purchased electricity	$	25,574	20,692	23,405
Cost of process supplies	$	4,625	4,424	3,049
Freight	$	8,066	15,290	10,906
Net value of production	$	165,126	167,481	225,272

TABLE 28. Production of Natural Iron Oxides, 1941-1950

Year	Quantity	Value	Year	Quantity	Value
	Short tons	$		Short tons	$
1941	10,045	142,069	1946	12,695	152,268
1942	9,304	151,653	1947	13,418	258,322
1943	8,401	135,893	1948	13,181	203,391
1944	8,599	150,250	1949	13,625	207,887
1945	10,314	172,053	1950	13,696	262,632

TABLE 29. Imports and Exports of Ochres and Colours, 1949 and 1950

—	1949		1950	
	Quantity	Value	Quantity	Value
	Tons	$	Tons	$
Imports:				
Ochres, ochrey earths, siennas and umbers	1,580	85,171	1,544	89,043
Oxides, fireproofs, rough stuff, fillers and colours, dry, n.o.p.	3,406	2,338,537	4,096	2,980,758
Exports:				
Iron oxides	3,386	324,202	3,934	411,895

TABLE 30. Consumption of Iron Oxides in Specified Canadian Industries, 1946-1950

Year	Coke and gas		Paints and varnishes			
			Iron oxide pigments		Ochres, siennas and umbers	
	Quantity	Value	Quantity	Value	Quantity	Value
	Tons[1]	$	Tons	$	Tons	$
1946	9,385	69,899	2,564	288,190	543	75,769
1947	10,105	78,244	2,865	339,151	404	57,876
1948	9,157	77,035	2,222	302,562	306	47,379
1949	8,189	77,824	2,045	291,378	260	48,240
1950	11,624	114,138	2,453	378,423	268	51,514

1. Oxide and purifying materials.

LITHIUM MINERALS

Amblygonite, spodumene, and lepidolite are the chief lithium minerals of commerce; their ores contain, respectively, about 8, 6 and 4 per cent of lithium oxide. Spodumene is in greatest supply, and is the base raw material for the manufacture of many lithium salts, lithium metal, and alloys. Amblygonite has similar uses, but is scarcer and more expensive. Lepidolite, or lithia mica, is employed mainly in the natural state as a batch ingredient in glass. The occurrence of all three minerals is confined to pegmatite dykes of a definite type, which usually have a localized, regional distribution and often carry, also, important amounts of beryl and tantalite-columbite. In some cases, such dykes have been worked for the recovery of all of these minerals.

There has been no recorded production of lithium minerals in Canada since 1937, when 32 tons of amblygonite and spodumene valued at about $1,700 were shipped, and little if any lithium ore is known to be used or required for any purpose in the Dominion. Thus, an outside market would have to be found for any production. Considerable development work has been done in recent years, however, on deposits in the Pointe du Bois area in southeastern Manitoba; increased interest was shown in the commercial possibilities of lithium deposits in other sections of that province though activities have been confined to exploratory drilling. Some attention has been given, also, to lithium-bearing deposits in the Yellowknife-Beaulieu area in the Northwest Territories, and in LaCorne township in northwestern Quebec.

Total production in Canada during the active period 1925-1937, inclusive, is estimated at about 250 tons, and comprised lepidolite, spodumene, and amblygonite. Most of the material was exported to the United States.

MAGNESITE AND BRUCITE

Dolomitic magnesite is quarried at Kilmar, Argenteuil county, Quebec, by Canadian Refractories Limited, and is processed there into basic refractory products. These include dead-burned grain material; bricks and shapes (burned and unburned); and finely ground refractory cements.

Brucitic limestone, a rock composed of granules of the mineral brucite (magnesium hydroxide) thickly distributed throughout a matrix of calcite, is quarried from large deposits near Wakefield, Quebec, by Aluminum Company of Canada, Limited, and is processed there for the recovery of magnesia and lime. The magnesia was used in part by the company for making magnesium metal at Arvida, Quebec, but the major part of the output is sold for the manufacture of basic refractories and for use as fertilizer. Hydrated lime, the co-product, is produced in the process of recovering the magnesia, and is sold for the various purposes for which lime is used.

TABLE 31. Production of Dolomitic Magnesite, 1941-1950

Year	Value	Year	Value
	$		$
1941	831,041	1946	1,225,593
1942	1,059,374[1]	1947	1,167,584
1943	1,260,056	1948	1,587,709
1944	1,139,281	1949	1,536,200
1945	1,278,596	1950	1,717,879

1. 1942 and following years include the value of brucite shipped.

TABLE 32. Magnesite and Dolomite Used in the Canadian Primary Iron and Steel Industry, 1946-1950

Year	Calcined dolomite		Dolomite, crude		Magnesite	
	Short tons	Value	Short tons	Value	Short tons	Value
		$		$		$
1946	3,788	66,473	87,217	230,384	13,049	546,396
1947	6,748	124,107	188,449	357,288	18,261	783,336
1948	9,587	198,040	226,683	539,522	18,334	888,755
1949	25,769	533,679	233,372	569,348	17,094	843,274
1950	29,857	648,830	255,616	611,762	14,315	711,658

TABLE 33. Calcined Magnesite Used by the Artificial Abrasives Industry, 1946-1950

Year	Tons	Value
		$
1946	1,676	187,250
1947	1,832	195,586
1948	3,284	389,335
1949	1,416	156,290
1950	2,510	291,566

MAGNESIUM SULPHATE

Natural hydrous magnesium sulphate (Epsom Salts or Epsomite) occurs in deposits in lake bottoms or in solution in brine lakes in British Columbia. In Saskatchewan, it is found associated with sodium sulphate. Attempts have been made to produce refined salts, and a number of years ago there was a considerable production from several of the "lakes" in British Columbia. Experimental shipments have been made also from one of the lakes in Saskatchewan.

Canada's output of magnesium sulphate has come chiefly from a deposit in Basque, British Columbia, production from which was discontinued in the autumn of 1942. The salt was refined at Ashcroft, 15 miles south of the deposit, and the grade of the product was high. The refinery, now owned by Ashcroft Salts Company, Limited, had a capacity of 10 tons of salt a day. There are a number of other occurrences in British Columbia, near Clinton, north of Kamloops, and in Kruger's Pass, south of Penticton.

In Saskatchewan, two lakes south of Wiseton contain brines high in magnesium sulphate, and Muskiki Lake, just north of Dana, contains brine high in magnesium and sodium sulphates, which at certain times of the year crystallizes into a bedded deposit with layers of both salts.

In the chemical industries Epsom salts has many uses. It is employed for tanning and in dyeing, and for textile and medicinal use. Magnesium sulphate is used in the paper industry for weighting paper. In the sole leather industry it is used to obtain a clean shiny cut, and it also helps to retain moisture in the leather and increases its weight. Magnesium salt is used to a small extent in the dyeing industry. In some cases it is used in the treatment of leather to increase the fastness of the colour in washing. It is used extensively and in large quantities in medicine and for various purposes in the manufacture of textiles. In bleaching wool, magnesium sulphate is added to destroy the corrosive effect of sodium peroxide. It is also used for weighting textile fabric, especially silk. Mixed with gypsum and ammonium sulphate, it is used in the manufacture of non-inflammable fabrics.

TABLE 34. Production of Natural Magnesium Sulphate[1], 1940-1950

Year	Tons	Value
		$
1940	—	—
1941	265	7,343
1942	1,140	38,760
1943-1950	—	—

1. Produced entirely in British Columbia.

TABLE 35. Imports of Magnesium Sulphate, 1941-1950

Year	Tons	Value	Year	Tons	Value
		$			$
1941	2,729	109,022	1946	3,463	132,342
1942	1,688	68,532	1947	2,908	108,840
1943	3,379	137,372	1948	2,797	118,792
1944	2,684	108,795	1949	2,783	120,881
1945	2,545	101,695	1950	2,793	100,644

TABLE 36. Available Data on Consumption of Magnesium Sulphate, 1945-1949

Industry	1945	1946	1947	1948	1949
	(Tons)				
Leather tanneries	1,013	1,019	935	789	723
Medicinals	828	645	611	439	645
Fertilizers	431	57	14	15	150
Textiles	44	28	38	35	19
Total accounted for	**2,316**	**1,749**	**1,598**	**1,278**	**1,537**

MICA

Mica shipped by Canadian producers in 1950 amounted to 3,879,209 pounds valued at $252,611 compared with 3,490,556 pounds valued at $108,458 in 1949. Mines in Quebec shipped 2,263,400 pounds valued at $90,213 while the producers in Ontario shipped 1,161,809 pounds valued at $156,865. In British Columbia flake muscovite mica amounted to 454,000 pounds worth $5,533.

TABLE 37. Principal Statistics of the Mica Mining Industry, 1948, 1949 and 1950

—	1948	1949	1950
Number of firms or operators	34	34	26
Number of employees:			
Administrative	13	6	10
Workmen	96	90	90
Total	**109**	**96**	**100**
Salaries and wages:			
Administration $	18,167	12,163	27,999
Workmen $	100,815	103,504	108,728
Total $	**118,982**	**115,667**	**136,727**
Gross selling value of products $	219,948	108,458	252,611
Cost of fuel and electricity $	14,622	14,490	18,620
Cost of process supplies used $	18,228	6,026	28,768
Net value of production $	187,098	87,942	205,223

TABLE 38. Mica Production (Primary Sales), by Classes, 1949 and 1950

Grade	1949		1950	
	Pounds	Total value f.o.b. shipping point	Pounds	Total value f.o.b. shipping point
		$		$
Rough, mine-run or rifted	10,091	1,214	20	4
Mica sold for mechanical splitting	8,019	1,762	104,400	17,062
Splittings	8,550	7,470	2,100	1,785
Ground or powdered	1,854,844	49,907	2,215,919	68,253
Scrap – mine or shop waste and mica mined and sold for grinding	1,518,101	13,202	1,376,040	11,651
Ungraded	43,069	3,172	–	–
Trimmed mica	47,882	31,731	180,730	153,856
Total mica shipments	**3,490,556**	**108,458**	**3,879,209**	**252,611**
Varieties:				
Phlogopite mica (amber) and biotite	2,869,143	92,878	3,236,430	118,594
Muscovite mica (white)	621,413	15,580	642,779	134,017

TABLE 39. Production of Mica, by Provinces and by Varieties, 1950

Province	Phlogopite and biotite		Muscovite		Total	
	Pounds	Value	Pounds	Value	Pounds	Value
		$		$		$
Quebec	2,263,400	90,213	–	–	2,263,400	90,213
Ontario	973,030	28,381	188,779	128,484	1,161,809	156,865
British Columbia	–	–	454,000	5,533	454,000	5,533
Total Canada	**3,236,430**	**118,594**	**642,779**	**134,017**	**3,879,209**	**252,611**

TABLE 40. Production of Mica, 1941-1950

Year	Short tons	$	Year	Short tons	$
1941	1,743	335,288	1946	4,360	199,039
1942	3,010	383,567	1947	4,159	200,903
1943	4,025	553,856	1948	3,951	219,948
1944	3,342	841,026	1949	1,745	108,458
1945	3,522	233,270	1950	1,940	252,611

TABLE 41. Imports and Exports of Mica, 1949 and 1950

–	1949		1950	
	Pounds	Value	Pounds	Value
		$		$
Imports:				
Mica and manufactures of, n.o.p.	–	567,469	–	757,825
Exports:				
Mica, scrap and waste	678,300	3,526	1,183,000	12,585
Mica splittings	–	–	–	–
Mica manufactures	–	3,426	–	1,475
Mica, rough, untrimmed	78,000	12,983	164,800	27,983
Mica, trimmed	97,900	26,571	67,300	96,481
Mica, ground	460,000	17,086	560,000	28,117
Total mica exports	–	**67,018**	–	**166,641**

TABLE 42. Consumption of Mica, in Specified Industries, as Recorded to The Annual Census Of Industry, 1948 and 1949

–	1948	1949
	Pounds	
By Industries:		
Paints	582,417	1,137,583
Electrical apparatus	402,877	531,149
Rubber goods	435,308	383,381
Roofing	1,742,000	2,284,000
Wallpaper	230,000	158,000
Mica products	100,007	105,534
Total accounted for	**3,492,609**	**4,599,627**
By Provinces:		
Quebec	1,761,832	2,755,660
Ontario	1,169,123	1,243,945
Manitoba	3,150	6,067
British Columbia	558,504	593,955
Canada	**3,492,609**	**4,599,627**

TABLE 43. World Production of Mica, by Countries, 1946-1949

(Taken from the "Minerals Yearbook" of the United States Bureau of Mines)

Country[1]	1946	1947	1948	1949
	(Metric tons)			
North America:				
Canada (sales)	3,955	3,773	3,584	1,587
Guatemala	4[2]	3	3	3
Mexico	81[4]	231[4]	3	3
United States:				
Block	489	189	122	233
Scrap	48,627	45,175	47,316	29,806
South America:				
Argentina	430	3	3	3
Bolivia (exports)	—	—	3	3
Brazil	1,639	857[4]	987[4]	7,280
Peru	207	2	—	—
Uruguay	6	14	2	2
Europe:				
Austria	36	78	95	253
Italy	52	16	3	3
Norway (exports)	224	169	241	113
Portugal	—	3	—	3
Rumania	3	3	3	3
Spain	4	12	11	9
Sweden	69	155	64	3
Asia:				
Ceylon	5	5	—	—
India (exports)	10,675	9,788	18,384	20,000[6]
Korea:				
North	3	3	3	3
South	—	—	—	—
Africa:				
Angola	31	89	108	57
British East Africa:				
Kenya	—	—	3	4
Tanganyika	342[4]	71[4]	75[4]	99
Uganda	3	—	2	2
Eritrea	5	3	3	3
French Morocco	—	—	144	54
Madagascar	468	450	507	959
Mozambique	2	1	1	3
Northern Rhodesia	5	—	—	3
Southern Rhodesia	335	296	293	303
Union of South Africa	1,785	2,008	1,362	1,066
Oceania:				
Australia	229	371	427	733
New Zealand	—	—	—	—
Total (estimate)	**70,000**	**65,000**	**75,000**	**63,000**

1. In addition to countries listed, mica is also produced in China, Colombia, Ethiopia and U.S.S.R. but data on production are not available: no estimates for these countries are included in total.
2. Imports into United States.
3. Data not available; estimate included in total.
4. Exports.
5. Less than 1 ton.
6. Estimate.

NATURAL MINERAL WATERS

Production of natural mineral waters in past years originated in Ontario and Quebec. Some of the more prominent Canadian mineral waters possessing special therapeutic or hygienic properties include the following: in Quebec, the Abenakis Springs on the St. François river in Yamaska county, Potton Springs in Brome county and the Coulombia spring at L'Epiphanie. In Ontario, saline, sulphur and gas springs occur at Caledonia Springs and at Carlsbad Springs, near Ottawa; the waters range from alkaline to strongly saline. St. Catharines, near Niagara, is one of the oldest Canadian mineral water resorts and sulphur waters are found at the Preston mineral springs in Waterloo county. The most famous of all Canadian springs is undoubtedly the group of hot sulphur springs at Banff, Alberta. In British Columbia, the Harrison Hot Springs in Fraser Valley and the Halcyon Hot Springs on Arrow Lake are noted for their curative properties.

There were 14 firms reporting production of natural mineral waters in the Dominion in 1950. Twelve of these firms were in Quebec and 2 in Ontario.

TABLE 44. Shipments of Natural Mineral Waters from Canadian Springs, 1941-1950

Year	Quebec		Ontario		Canada	
	Imp. gal.	Value	Imp. gal.	Value	Imp. gal.	Value
		$		$		$
1941	144,441	58,062	36,623	14,469	181,064	72,531
1942	129,062	60,316	28,023	14,189	157,085	74,505
1943	125,605	61,793	14,006	5,748	139,611	67,541
1944	148,965	88,113	7,185	805	156,150	88,918
1945	236,476	148,714	8,285	976	244,761	149,690
1946	211,842	121,526	6,000	878	217,842	122,404
1947	195,452	116,840	3,500	600	198,952	117,440
1948	190,136	109,789	2,400	470	192,539	110,259
1949	304,216	145,830	2,475	410	306,691	146,240
1950	316,654	158,457	2,175	440	318,829	158,897

PERLITE

Perlite is a volcanic glass characterized by a concentric "onion skin" fracture and usually a 2 to 5 per cent water content. When heated rapidly in a furnace it expands into a frothy material of low density.

Commercially expanded perlite is granular material and is generally white. Because of its cellular nature it is light in weight and has good insulating and sound-proofing qualities. Expanded perlite is used chiefly in lightweight concrete aggregates, insulating and sound-proofing pre-cast wallboard, and in lightweight plaster. A sack of expanded perlite containing 3 cubic feet weighs approximately 30 to 36 pounds.

Development work has been done on deposits of perlite at François Lake, B.C., about eighteen miles by road from Burns Lake on the C.N.R. Other deposits have been found in British Columbia at Empire Valley northwest of Clinton.

There was one plant in Montreal producing insulation from imported perlite.

PHOSPHATE

Phosphate in the form of apatite was mined in Canada on a fairly substantial scale up to 1895 but since then the production has been small and spasmodic. In 1949 about 129 tons were shipped.

There has been renewed activity at the High Rock and Big Union mines near Notre Dame de la Salette in the Buckingham Quebec area. It is expected that an economical separation process may be developed to produce a high grade material. In Ontario some development work was done in Bedford township.

For many years, the Electric Reduction Company Limited, Buckingham, Quebec, has purchased most of the small output for use in the production of elemental phosphorus and various phosphorus compounds. This company, however, obtains most of its phosphate rock requirements from Florida. That state and Montana supply the great bulk of the phosphate rock which Canada imports for the manufacture of fertilizer, occasional shipments being obtained also from North Africa. Rock low in fluorine is obtained from Curacao, Netherlands West Indies, for use in stock feeds.

TABLE 45. Production of Phosphate Rock, 1941-1950

Year	Short tons	$	Year	Short tons	$
1941	2,487	33,376	1946	57	869
1942	1,264	17,431	1947	—	—
1943	1,451	18,385	1948	—	—
1944	482	6,716	1949	20	291
1945	299	4,356	1950	129	1,070

TABLE 46. Imports of Phosphate Rock, 1941-1950

Year	Tons	Value	Year	Tons	Value
		$			$
1941	237,029	863,833	1946	373,677	2,164,841
1942	271,373	1,053,229	1947	485,391	2,857,522
1943	260,846	1,085,080	1948	482,008	2,911,168
1944	388,247	1,710,378	1949	620,808	3,879,523
1945	317,695	1,450,580	1950	491,026	3,296,341

TABLE 47. Consumption of Phosphate Rock, 1947-1950

	1947	1948	1949	1950
	(Tons)			
(a) By Uses:				
Fertilizers	398,685	372,976	390,370	419,000
Chemicals	25,343	28,280	28,949	43,957
Steel furnaces	1,295	—	—	49
Refractories	148	188	191	252
Miscellaneous	9,500	8,813	10,209	9,183
Total	**434,971**	**410,257**	**429,719**	**472,441**
(b) By Provinces:				
Quebec	107,484	99,254	105,068	111,778
Ontario	83,243	72,197	78,157	85,167
British Columbia	244,244	238,806	246,494	275,496
Total	**434,971**	**410,257**	**429,719**	**472,441**

TABLE 48. World Production of Phosphate Rock, by Countries, in Metric Tons

(Taken from the "Minerals Yearbook" of the United States Bureau of Mines)

Country[1]	1946	1947	1948	1949
	(Metric tons)			
Algeria	584,827	713,790	670,591	645,906
Angaur Island	94,000[2]	170,000[2]	[3]	[3]
Australia:				
New South Wales	—	231	488	[3]
South Australia	20	5,171	1,682	—
Austria	3,240	11,525	[3]	[3]
Belgium	69,927	58,045	68,938	44,643
Brazil (apatite)	10,421	5,592	[3]	4,553
British Borneo (guano)	[3]	[3]	427	508
Canada	52	—	—	11
Chile (apatite)	15,210	13,994	59,529	[3]
Christmas Island (exports)	34,444	106,765	108,311	255,236
Curacao (N.W.I.)	73,594	79,229	58,827	92,784
Egypt	294,046	371,227	377,005	350,000
France	97,285	104,068	[3]	[3]
French Morocco	2,783,580	2,960,735	3,226,700	3,693,000
French Oceania (exports)	241,085	205,136	183,104	239,532
Italy	—	—	[3]	[3]
Japan	7,985	6,802	3,590	684
Korea	[3]	[3]	[3]	[3]
Nauru and Ocean Island	88,244	390,062	671,152	1,067,157
New Zealand	11,224	203	—	[3]
Seychellis Islands	21,397	14,516	21,924	14,243
Southern Rhodesia	—	9	—	67
South-West Africa (guano)	1,665	2,223	1,038	957
Spain	18,608	20,204	23,012	23,093
Sweden (apatite)	50,730	7,696	1,441	[3]
Tanganyika	279	220	313	157
Tunisia	1,399,880	1,755,226	1,863,710	1,441,918
Uganda	7,213	7,269	—	—
Union of South Africa	37,691	41,831	39,656	56,471
U.S.S.R. (apatite)	1,626,000	2,032,000	[3]	[3]
United States	6,970,827	9,171,914	8,807,903	9,131,173
Total (estimate)	**14,581,000**	**18,294,000**	**18,493,000**	**18,412,000**

1. In addition to countries listed, Caymen Islands, China, Madagascar, New Caledonia, Phillippines, Poland and Rumania produce phosphate rock; but data are not available, no estimates have been included in total.
2. Estimate.
3. Data not available; estimate included in total.
4. Bizonal.

SILICA BRICK

The manufacture of silica brick for refractory use was confined to the plants of the Dominion Steel and Coal Company, Limited, Sydney, Nova Scotia, and the Algoma Steel Corporation Limited, Sault Ste. Marie, Ontario. The brick manufactured by both these firms are processed from crushed silica rock and are utilized in furnace construction and repairs.

TABLE 49. Production of Silica Brick, 1941-1950

Year	M	$	Year	M	$
1941	4,111	238,433	1946	2,902	197,804
1942	4,273	263,006	1947	3,094	193,998
1943	4,165	295,505	1948	3,464	393,821
1944	3,997	312,092	1949	3,663	453,797
1945	4,208	317,263	1950	3,126	408,813

Note. Quantities are shown as 9" equivalent.

SODIUM CARBONATE (NATURAL)

Deposits of natural sodium carbonate in the form of "Natron" (sodium carbonate with 10 molecules of water) and of brine occur in a number of small "lakes" throughout the central part of British Columbia, chiefly in the Clinton Mining Division and in the neighborhood of Kamloops. As the deposits are far from the main eastern Canadian markets, production is restricted to the requirements of consumers within economical rail haul.

Sodium carbonate has many industrial uses, notably in the manufacture of glass and soap, in the purification of oils, in the production of aluminum, in the flotation of minerals, in the refining of metals, and in the production of caustic soda.

TABLE 50. Production of Sodium Carbonate (Natural), 1941-1950

Year	Tons	$	Year	Tons	$
1941	186	1,488	1946	—	—
1942	256	2,048	1947	163	1,793
1943	468	5,148	1948	—	—
1944	44	484	1949	47	513
1945	286	3,146	1950	—	—

SODIUM SULPHATE (NATURAL)

Natural sodium sulphate was obtained from the brine lakes in Saskatchewan. During 1950 the shipments amounted to 130,730 tons valued at $1,615,867 compared with 120,259 tons valued at $1,614,731 in 1949.

Sodium sulphate occurs as crystals or in the form of highly concentrated brines in many lakes and deposits throughout Western Canada. From these, hydrated sodium sulphate, known as Glauber's salt, and anhydrous sodium sulphate, known to the trade as "salt cake", are produced in Canada.

Glauber's salt is used widely in the chemical industries and the demand is increasing. Sodium sulphate is used chiefly in the sulphate process for the manufacture of kraft pulp. It is used in the glass, dye and textile industries, and to a smaller extent for medicinal purposes and for tanning.

TABLE 51. Principal Statistics of Sodium Sulphate Mining Industry, 1948-1950

—		1948	1949	1950
Active firms	No.	5	5	5
Producing plants	No.	6	5	5
Employees:				
Administrative	No.	29	31	24
Workmen	No.	337	181	157
Total	**No.**	**366**	**212**	**181**
Salaries and wages:				
Administrative	$	59,308	79,671	62,536
Workmen	$	720,572	412,606	408,358
Total	**$**	**779,880**	**492,277**	**470,894**
Gross value of production	$	2,142,576	1,616,631	1,620,639
Cost of fuel and electricity	$	536,337	399,355	431,040
Cost of process supplies and containers	$	114,357	58,891	97,062
Net value of production	**$**	**1,491,882**	**1,158,385**	**1,092,537**

TABLE 52. Production of Natural Sodium Sulphate[1], 1941-1950

Year	Short tons	Selling value, f.o.b. shipping points	Year	Short tons	Selling value, f.o.b. shipping points
		$			$
1941	115,608	931,554	1946	105,919	1,117,683
1942	131,258	1,079,692	1947	163,290	1,793,043
1943	107,121	1,025,151	1948	153,698	2,136,276
1944	102,421	987,842	1949	120,259	1,614,731
1945	93,068	884,322	1950	130,730	1,615,867

1. All produced in the province of Saskatchewan, with the following exceptions: includes production in Alberta – 1941 – 8 tons, value $32.

TABLE 53. Production of Manufactured Sodium Sulphate, 1941-1950

Year	Salt cake		Glauber's salt	
	Tons	Value	Tons	Value
		$		$
1941	5,191	83,991	3,372	64,203
1942	4,945	68,377	914	18,761
1943	4,256	57,526	–	–
1944	3,758	46,077	–	–
1945	2,850	35,226	–	–
1946	2,584	33,333	–	–
1947	3,175	51,047	–	–
1948	3,198	69,876	–	–
1949	3,738	83,996	–	–
1950	3,674	74,555	–	–

TABLE 54. Imports of Sodium Sulphate, 1941-1950

Year	Salt cake		Glauber's salt	
	Tons	Value	Tons	Value
		$		$
1941	7,819	105,502	250	8,244
1942	7,070	85,479	75	4,664
1943	11,904	150,496	566	15,399
1944	20,460	195,105	777	21,960
1945	13,535	120,982	1,016	29,452
1946	20,881	244,617	1,258	33,136
1947	9,329	172,531	1,383	41,125
1948	12,394	240,228	1,472	52,212
1949	4,294	65,722	1,996	59,959
1950	15,705	201,260	2,256	62,996

TABLE 55. Exports of Sodium Sulphate, 1945-1950

Year	Long tons	Value	Year	Long tons	Value
		$			$
1945	15,682	270,013	1948	26,439	468,561
1946	20,041	352,407	1949	18,830	294,367
1947	41,906	530,388	1950	25,335	302,329

Note. Exports from Canada are not recorded separately in the official trade statistics of Canada, but the imports into the United States from Canada are shown as above in the "U.S. Imports for Consumption of Merchandise" by the U.S. Department of Commerce.

TABLE 56. Available Data on Consumption of Sodium Sulphate (Salt Cake) in Canada, by Industries, 1947-1950

Industry	1947	1948	1949	1950
	(Net tons)			
Pulp and paper	95,975	107,592	105,112	114,494
Non-ferrous smelters	24,000	20,000	—	—
Heavy chemicals	2	74	—	—
Glass, including glass wool	8,383	1,234	1,107	1,412
Medicinals	32	26	38	31
Total accounted for	**128,392**	**128,926**	**106,257**	**115,937**

SULPHUR (INCLUDING PYRITE)

Deposits of native sulphur of commercial grade have not been found in Canada, but sulphur occurs in combination with copper, lead, zinc, nickel, or iron in many base metal sulphide orebodies in various parts of the country. In smelting these ores sulphur dioxide gas is produced, and to 1925 this gas was a total waste as no facilities were available for the recovery from it of sulphur or of sulphur compounds. In practice this gas can be used directly for the manufacture of liquid sulphur dioxide or for the production of elemental sulphur. Sulphur used in the making of sulphuric acid is recovered in the form of sulphur dioxide from salvaged gas by The Consolidated Mining and Smelting Company of Canada, Limited, at Trail, British Columbia, and by Canadian Industries Limited, at Copper Cliff, Ontario. There has been no production of elemental sulphur in Canada since July 1943, but two projects for the recovery of elemental sulphur from natural gas in Alberta are in the planning stage.

Pyrite is produced as a by-product in the treatment of copper ores at Quemont, East Sullivan, Waite-Amulet and Noranda mines in Quebec and Britannia mine in British Columbia.

Shipments of pyrite are made to pulp and paper mills and chemical plants in Canada and United States. Noranda Mines Limited has done extensive work on a process for the recovery of elemental sulphur from pyrites and mention has been made of plans for a commercial plant in the near future.

TABLE 57. Production of Sulphur[1], 1941-1950

Year	Tons	Value	Year	Tons	Value
		$			$
1941	260,023	1,702,786	1946	234,771	1,784,666
1942	303,714	1,994,891	1947	221,781	1,822,867
1943	257,515	1,753,425	1948	229,463	1,836,358
1944	248,088	1,755,739	1949	261,871	2,039,384
1945	250,114	1,881,321	1950	301,172	2,189,660

1. Sulphur content of pyrites and of recovered smelter gases; also in 1941 to 1943 some elemental sulphur recovered from smelter gases.

TABLE 58. Production of Pyrite with Sulphur Content, Including Sulphur Contained in Sulphuric Acid, etc., Made from Smelter Gases, 1948-1950

—	Pyrite			Smelter gas		Total sulphur	
	Sales	Sulphur content		Sulphur content			
	Tons	Tons	Value	Tons	Value	Tons	Value
			$		$		$
1948							
Quebec	142,205	69,463	263,330	—	—	69,463	263,330
Ontario	—	—	—	15,550	155,500	15,550	155,500
British Columbia	38,865	17,663	149,658	126,787	1,267,870	144,450	1,417,528
Canada	**184,070**	**87,126**	**412,988**	**142,337**	**1,423,370**	**229,463**	**1,836,358**
1949							
Quebec	186,071	88,804	348,777	—	—	88,804	348,807
Ontario	—	—	—	12,630	126,300	12,630	126,300
British Columbia	64,405	28,777	247,677	131,660	1,316,600	160,437	1,564,277
Canada	**250,476**	**117,581**	**596,154**	**144,290**	**1,442,900**	**261,871**	**2,039,384**
1950							
Quebec	299,879	144,675	627,594	—	—	144,675	627,594
Ontario	—	—	—	13,154	131,540	13,154	131,540
British Columbia	12,735	5,812	55,216	137,531	1,375,310	143,343	1,430,526
Canada	**312,614**	**150,487**	**682,810**	**150,685**	**1,506,850**	**301,172**	**2,189,660**

TABLE 59. Available Data on The Consumption of Sulphur (Brimstone), 1947-1950

—	1947	1948	1949	1950
	(Tons of 2,000 pounds)			
(a) By industries				
Pulp and paper	253,423	260,830	252,502	282,608
Heavy chemicals	63,265	60,882	68,508	80,008
Rubber goods	2,165	2,154	2,001	2,524
Explosives	1,496	1,759	1,712	1,900
Insecticides	1,545	1,298	2,333	4,114
Adhesives	93	61	83	95
Starch	267	227	244	268
Fruit and vegetable preparations	38	23	185	76
Sugar refining	127	107	153	213
Petroleum refining	127	167	215	220
Matches	92	74	71	64
Miscellaneous	180	561	295	257
Total accounted for	**322,818**	**328,143**	**328,302**	**372,347**
(b) By provinces:				
Newfoundland	Not available		15,659	14,078
Nova Scotia	5,312	4,455	6,233	5,769
New Brunswick	34,512	37,542	35,731	38,399
Quebec	120,192	124,074	115,475	128,962
Ontario	130,740	128,605	125,223	149,624
Manitoba	1,659	1,867	2,125	2,250
Alberta	109	92	93	119
British Columbia	30,294	31,508	27,763	33,146
Canada	**322,818**	**328,143**	**328,302**	**372,347**

TABLE 60. Imports of Sulphur, 1941-1950

Year	Tons	Value	Year	Tons	Value
		$			$
1941	235,271	3,920,184	1946	273,502	4,271,081
1942	290,121	4,680,672	1947	361,424	5,466,201
1943	218,527	3,524,006	1948	354,622	5,528,740
1944	235,955	3,875,649	1949	280,557	5,213,921
1945	248,846	4,063,324	1950	390,333	7,730,126

STRONTIUM MINERALS

In Ontario, several occurrences of celestite are known in the general Ottawa region, but very little mining has been undertaken for the mineral, and production has been small and intermittent.

Between 1918 and 1920, about 250 tons of white, fibrous celestite were mined from a deposit in Bagot township, Renfrew county, and after grinding in a small mill erected on the property were sold for use in paint. The material was not very pure and contained about 18 per cent of barium sulphate. The old pit was pumped out in 1941 and a few tons of ore were scaled down from a small drift. This, together with some stockpile material from the earlier work, was shipped to Montreal for grinding and pigment use. The property has since been idle. The above comprises the only production of strontium minerals in Canada of which there is any official record.

In British Columbia, celestite occurs near Birch Island, North Thompson River, Kamloops Mining Division. The deposit is reported to contain a large tonnage of ore consisting of a fine-grained intergrowth of fluorspar, celestite, feldspar, quartz, mica, and pyrite.

VERMICULITE

Vermiculite, a hydrated magnesian aluminum silicate, resembles mica closely but is softer and inelastic. Colours range from black through brown and dark green to almost colourless. Its principal characteristic is its ability to expand many times on heating, and in its expanded form it possesses low bulk density, low thermal conductivity, high beat resistance, chemical inertness, and acoustic properties. Vermiculite is generally regarded as a product of alteration and is usually associated with metamorphosed ultra-basic rocks.

There has been no production of vermiculite in Canada up to the present. Imports, all of which have been obtained from United States and South Africa were valued at $262,559 in 1950, an increase over 1949 of over 13 per cent.

During the year Siscoe Vermiculite Mines, Limited, subsidiary of Siscoe Gold Mines, Limited, undertook the development of what may be the first commercial deposit of vermiculite in Canada. The deposit, which was brought to light in the course of field investigations by the Mines Branch, is located near Stanleyville, about eight miles southwest of Perth, Ontario. A deposit of vermiculite was reported also from Blue River, Kamloops Mining Division, British Columbia.

The principal uses for vermiculite are loose insulation in buildings; concrete and plaster aggregate; lightweight fire-resistant and acoustic tile and wallboard; rooting medium; and soil amendment. It is also used in lubricants, dry chemicals (as a diluent), combination refractory and insulating brick, as a pigment and extender in paint, and as decorative filler in wallpaper. Vermiculite has been used as fireproof deck covering and partitions on ships, as loose insulation in fire and sound-proof partitions in vehicles and aircraft, as filler for life jackets and in finely powder forms, for oil-less bearings.

In 1949 there were 4 plants in Canada making insulation aggregates, etc., from imported vermiculite.

VOLCANIC DUST

Volcanic dust (pumice or pumice dust) is a natural glass or silicate, atomized by volcanic explosions and thrown into the air in great clouds which ultimately settle, forming beds of varying thickness, often hundreds of miles from its source. In many instances the dust has been washed down from higher levels and redeposited by the agency of waters, in which case the beds are stratified and mixed with foreign substances. It consists of aluminum silicate (80 to 90 per cent) and of oxides and silicates of iron, sodium, magnesium, calcium, etc.

During 1924 to 1933 the annual production varied from 30 to 485 tons. There has been no production in recent years. The last recorded shipments were 50 tons in 1943.

Volcanic dust deposits have been found in Alberta, Saskatchewan and British Columbia. Pumice dust is used for concrete aggregate, acoustic plaster, cleansing compounds, paint fillers, absorbents, etc.

Directory of Firms in the Miscellaneous Non-Metal Mining Industry, 1950

Name of Operator	Head Office Address	Plant Location
BARITE		
Nova Scotia:		
Canadian Industrial Minerals Ltd.	Walton	Walton
Maritime Barytes Ltd.	320 Bay St., Toronto	Brookfield
Ontario:		
Northern Barite Development Co. Ltd.	347 Bay St., Toronto	Langmuir
British Columbia:		
Mountain Minerals Ltd.	Box 273, Lethbridge, Alberta	Golden M.D.
BRUCITE		
Quebec:		
Aluminum Company of Canada Ltd.	Sun Life Bldg., Montreal	Wakefield
Davis, Norman B.[1]	512 Victoria Bldg., Ottawa, Ontario	Wakefield
DIATOMITE		
Nova Scotia:		
Wightman, Mrs. G.W.	Smith's Cove	Digby Co.
British Columbia:		
Fairey and Co.	661 Taylor St., Vancouver	Cariboo M.D., Vancouver
FLUORSPAR		
Newfoundland:		
Newfoundland Fluorspar Ltd.	Bank of Montreal Bldg., St. John's	St. Lawrence
St. Lawrence Corporation of Nfld., Ltd.	120 Broadway, New York	St. Lawrence
Ontario:		
Cardiff Fluorite Mines Ltd.[1]	26 Queen St. E., Toronto	Wilberforce
Millwood Fluorspar Mines Ltd.	Box 206, Madoc	Madoc Dist.
Reliance Fluorspar Mining Synd. Ltd.	Madoc	Huntingdon Twp.
GARNET		
Ontario:		
Niagara Garnet Co.	c/o Wm. A. Yarwood, 8373 Krull Parkway, Niagara Falls, New York, U.S.A.	River Valley
GRAPHITE		
Ontario:		
Frobisher Exploration Co. Ltd.	Black Donald Mines	Brougham Twp.
GRINDSTONES		
New Brunswick:		
Read, H.C.	Bathurst	Stonehaven
Bay of Chaleur Grindstone Co.	Clifton	Clifton
IRON OXIDE		
Quebec:		
Argall, Mrs. Thomas H.	1695 Blvd. St. Louis, Trois Rivières	Pointe du Lac
Begin Iron Oxide Mine	Casier 197, Trois Rivières	Chemin des Forges
Girardin, Chas. D.	Yamachiche	Almaville en Haut
Leveille, Oscar	791 Ste Catherine, St.Louis de France	St. Louis de France
The Sherwin-Williams Co. of Canada	2875 Centre St., Montreal	Red Mill, Champlain Co.
Vennes, Wm.	90-6 ième Ave., Grand'Mère	St. Adelphe
British Columbia:		
British Columbia Electric Co. Ltd.[1]	425 Carrall St.	Alta Lake
Burgess Bros. & Lundgren[1]	Ymir	Pend Oreille
LITHIUM MINERALS		
Quebec:		
Canadian Lithium Co. Ltd.[1]	100 Adelaide St. W., Toronto, Ontario	Landrienne Twp.
LaCorne Lithium Mines Ltd.[1]	320 Bay St., Toronto, Ontario	LaCorne Twp.
Great Lakes Carbon Corp.[1]	18 East 48th St., New York	LaCorne Twp.
Manitoba:		
Lithium Corp. of Canada Ltd.[1]	403 Avenue Bldg., Winnipeg	Bernic and Cat Lakes
Sherritt Gordon Mines Ltd.[1]	25 King St. W., Toronto, Ontario	Herb Lake

Directory of Firms in the Miscellaneous Non-Metal Mining Industries, 1950 — Continued

Name of Operator	Head Office Address	Plant Location
MAGNESITE DOLOMITE		
Quebec:		
Canadian Refractories Ltd.	1050 Canada Cement Bldg., Montreal	Kilmar and Harrington
MINERAL WATERS		
Quebec:		
Cie d'eau Minérale, de St.Hyacinthe	632 Concord Ave., St.Hyacinthe	St. Hyacinthe
Eau Minérale Etoile	Ste. Geneviève de Batiscan	Batiscan
Orange Crush Ltd.	1016 Bleury St., Montreal	Varennes
Lemay, Lucien	St. François du Lac	Nicolet Twp.
Gauthier, Charles	Louiseville	St. Léon
Montclair-Richelieu Spring Water Co. Ltd.	1515 Mountain St., Montreal	Chambly
Pellerin, Rolland	St. Barnabé Nord	St. Maurice
Paille, J.J.	Maskinongé	Maskinongé
Sources Abenakis Springs Ltd.	St. François du Lac	St. François du Lac
Source Coulombia	L'Epiphanie	L'Epiphanie
Source d'eau Minérale Radnor	St. Maurice	St. Maurice
Usine d'Embouteillage Maski	St. Justin	St. Justin
Ontario:		
Carlsbad Springs, The	Carlsbad Springs	Gloucester Twp.
Deneault, J.F.	Bourget	Bourget
MICA		
Quebec:		
Anacon Lead Mines Ltd.	330 Bay St., Toronto	Montauban les Mines
Active Exploration Prospecting Syndicate	11 Orrin Ave., Ottawa, Ontario	Low Twp.
Ahearn, W.	538 MacLaren St., Ottawa, Ontario	Hull Twp.
Biscope, G.W.	380 Cooper St., Ottawa, Ontario	Papineau
Blackburn Bros. Ltd.	85 Sparks St., Ottawa, Ontario	Cantley
Cross, W.C.	209 Bridge St., Hull	
Dominion Petroleum Co.	394 Sparks St., Ottawa, Ontario	Templeton
Gauthier, J.B.	Box 226, Buckingham	Denholm
Genest, Leo	31 Graham St., Hull	
Joanisse, Leo	33 Graham St., Hull	Gatineau
Laroche, E.	716 DeLaverendrye, Trois Rivières	St. Boniface
Massé, Onide	Wilson's Corners	Cantley
Murphy, Philip	Gatineau Point	
Mica Co. of Canada Ltd.	2 Lois St., Hull	
Poirier, A.	Wilson's Corners	Wakefield
Poirier, C.	Wilson's Corners	Wakefield
Rousseau, Comé	St. Remi	Argenteuil
Sabourin, V.	Perkins	Hull Twp.
Suzorite Company Ltd.	907 Dominion Square Bldg., Montreal	McCarthy
Wallingford, E.	Perkins	Templeton
Zimmerling, Adolf	Otter Lake	Pontiac
Ontario:		
Bancroft Mica & Stone Co.	Selby	Faraday Twp.
Cordick, H.V.	Perth	Lanark
Donnelly, J.C.	Stanleyville	N. Burgess Twp.
Green, W.E. and W.C.	Perth Road	North Burgess
North Bay Mica Co.	393 Fisher St., North Bay	Mattawa Twp.
Powers, Fred	Stanleyville	Burgess Twp.
Ontario Mica Mines Ltd.	Verona	Thirty Island Lake
Orser, C.C.	Verona	Mazanawa
Watts, R.W.	21 Isabella St., Perth	Lanark
British Columbia:		
Fairey & Co.	661 Taylor St., Vancouver	Vancouver
PERLITE		
British Columbia:		
Trans-Continental Resources Co.	Vancouver	Black Dome
Western Gypsum Products Ltd.	Childs Building, Winnipeg	François Lake

Directory of Firms in the Miscellaneous Non-Metal Mining Industries, 1950 – Concluded

Name of Operator	Head Office Address	Plant Location
PHOSPHATE		
Quebec:		
Bigelow, Robert[1]	Buckingham	Bowman Twp.
Blackburn Bros. Ltd.[1]	85 Sparks St., Ottawa, Ontario	Perkins
Quebec Smelting & Refining Ltd.	215 St. James St. W., Montreal	Notre Dame de la Salette
Industrial Phosphate Mines Ltd.[1]	18 Toronto St., Toronto	Portland East Twp.
Ontario:		
Ontario Phosphate Industries Ltd.	Room 1101, 62 Richmond St. W., Toronto	Bedford Twp.
SILICA BRICK		
Nova Scotia:		
Dominion Steel & Coal Corp. Ltd.	Sydney	Sydney
Ontario:		
Algoma Steel Corp. Ltd.	Sault Ste. Marie	Sault Ste. Marie
SODIUM CARBONATE (Natural)		
British Columbia:		
Bishop, V.C. (Mrs.)	c/o Boyd's Garage, Clinton	Clinton area
SODIUM SULPHATE (Natural)		
Saskatchewan:		
Ormiston Mining & Smelting Co. Ltd.	Ormiston	Ormiston
Midwest Chemicals Ltd.	Palo	Whiteshore Lake
Natural Sodium Products Ltd.	Bishopric	Frederic Lake, Alsask
Sybouts Sodium Sulphate Co. Ltd.	Gladmar	Gladmar
Saskatchewan Minerals	401 Westman Chambers, Regina	Chaplin
SULPHUR (Pyrite and smelter gas)		
Quebec:		
East Sullivan Mines Ltd.	1604 Aldred Bldg., Montreal	Bourlamaque Twp.
Quemont Mining Corp. Ltd.	350 Bay St., Toronto, Ontario	Rouyn Twp.
Noranda Mines Ltd.	Royal Bank Bldg., Toronto, Ontario	Noranda
Waite-Amulet Mines Ltd.	Noranda	Duprat Twp.
Ontario:		
International Nickel Company of Canada Ltd.[2]	Copper Cliff	Copper Cliff
British Columbia:		
Consolidated Mining & Smelting Company of Canada Ltd.[2]	Trail	Trail
Britannia Mining & Smelting Co. Ltd.	Britannia Beach	Britannia Beach

1. Active but not producing.
2. Recover sulphur from smelter gas.

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