

Department of Trade and Commerce
Dominion Bureau of Statistics
Census of Industry
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THE MICA MINING INDUSTRY, 1945

Canadian production or primary shipments of all grades of mica in 1945 totalled 7,044,221 pounds valued at \$233,270 compared with 6,684,846 pounds worth \$841,026 in 1944, which was the year of peak production. Of the total output in 1945, mines in the province of Quebec contributed 2,856,858 pounds valued at \$121,011 and Ontario deposits 2,903,363 pounds worth \$95,123; the British Columbia mines produced 1,284,000 pounds valued at \$17,136. Muscovite (white mica) produced weighed 1,349,717 pounds worth \$90,735 and the 5,694,504 pounds of phlogopite (amber) was valued at \$142,535.

A direct comparison of tonnage and value of one year cannot be made with that of another year due to wide variation of value in mica due to size and quality. As an example, a comparatively small quantity of large dimension clear crystals would be more valuable than a considerably greater weight of inferior grade material.

Table 1 - PRINCIPAL STATISTICS OF THE MICA MINING INDUSTRY IN CANADA, 1944 and 1945

	1944	1945			
	CANADA (*)	Quebec	Ontario	British Columbia	CANADA (*)
Number of firms or operators	70	28	11	1	40
Number of employees: On salary	22	7	9	...	16
On wages	378	103	55	...	158
Total	400	110	64	...	174
Salaries and wages: Salaries	\$ 39,587	11,499	20,474	...	31,973
Wages	\$ 320,210	94,220	63,945	...	158,165
Total	\$ 359,797	105,719	84,419	...	190,138
Selling value of products (gross)	\$ 841,026	121,011	95,123	17,136	233,270
Cost of fuel and electricity	\$ 23,586	16,259	5,338	...	21,597
Cost of process supplies used	\$ 33,038	27,987	908	...	28,895
Selling value of products (net)	\$ 784,402	76,765	88,877	...	182,778

(*) Does not include general statistics for one plant operating in British Columbia.

Table 2 - NUMBER OF WAGE-EARNERS ON PAYROLL OR TIME RECORD ON THE LAST DAY OF EACH MONTH OR NEAREST WORK DAY, 1944 and 1945

	1944				1945			
	Mine		Shop (*)		Mine		Shop (*)	
Month	Surface	Under-ground	Male	Female	Surface	Under-ground	Male	Female
January	72	55	65	241	64	46	44	84
February	77(x)	63	65	228	47	37	40	33
March	75(x)	70	64	210	44	35	41	30
April	72(x)	75	59	202	45	31	47	30
May	71(x)	64	64	160	38	23	55	21
June	73	72	65	155	52	24	64	12
July	78	79	65	151	59	19	69	20
August	66	74	57	186	52	19	55	14
September	64	72	48	179	63	8	42	14
October	69	68	41	128	65	13	40	14
November	73	63	38	90	48	22	48	14
December	76	60	32	79	54	20	48	14
AVERAGE	80	68	59	171	55	25	51	27

(*) Includes outside workers.

(x) Includes one female.

NOTE: This report was prepared by A. R. Deir, Mining Statistician.

Table 3 - WAGE-EARNERS WORKING NUMBER OF HOURS SPECIFIED DURING ONE WEEK IN MONTH OF HIGHEST EMPLOYMENT, 1945 (Including Overtime)

Number of Hours Worked	Number of Employees		Number of Hours Worked	Number of Employees	
	Male	Female		Male	Female
30 hours or less	10	26	55 hours	7	3
31-43 hours	26	47	56-64 hours	12	...
44 hours	18	19	65 hours and over	16	...
45-47 hours	14	4	Total	158	92
48 hours	13	3	Total wages paid in		
49-50 hours	18	2	week specified \$	4,304	1,346
51-54 hours	24	3			

Table 4 - FUEL AND ELECTRICITY USED DURING THE YEAR, EXCLUSIVE OF THAT SUPPLIED TO EMPLOYEES, 1944 and 1945

Kind	Unit of measure	1944		1945	
		Quantity	Cost at works	Quantity	Cost at works
Bituminous coal - From Canadian mines	ton	29	314	32	366
Imported	ton	172	2,074	190	2,375
Anthracite coal - From United States	ton	36	516	33	456
Coke	ton	30	545	5	65
Gasoline	Imp.gal.	33,179	9,459	29,594	9,926
Kerosene or coal oil	Imp.gal.	2,880	915	...	...
Fuel oil and diesel oil	Imp.gal.	1,410	235	7,157	806
Wood (cords of 128 cubic feet of piled wood).	cord	886	3,553	824	2,411
Electricity purchased for power and lighting, including service charges	K.W.H.	289,200	5,975	190,734	5,192
TOTAL .....	...	...	23,586	...	21,597
Electricity generated for own use	K.W.H.	...	...	6,000	...

Table 5 - POWER EQUIPMENT (Including Stand-by or Emergency Equipment) USED DURING 1945

	Ordinarily in Use		In Reserve or Idle	
	Number of units	Total horse power (*)	Number of units	Total horse power (*)
Steam engines	2	75	3	115
Steam turbines .....	...	...	...	...
Diesel engines	2	100	...	...
Gasoline, gas and oil engines, other than Diesel engines	15	480	1	3
Hydraulic turbines or water wheels .....	...	...	...	...
Electric motors operated by purchased power	9	215	2	30
TOTAL	28	870	6	148
Stationary boilers	3	88	1	40

(*) According to manufacturers' rating.

Table 6 - MICA PRODUCTION (PRIMARY SALES) IN CANADA, BY CLASSES, 1944 and 1945

Grade	Pounds	1944		1945	
		Total value f.o.b. shipping point		Total value f.o.b. shipping point	
Rough, mine-run or rifted	314,878	22,733	11,910	886	
Mica sold for mechanical splitting.	427,426	62,842	329,476	57,816	
Splittings	44,350	32,123	4,050	3,865	
Ground or powdered			1,753,030	36,799	
Scrap - Mine or shop waste and mica mined and sold for grinding	5,381,779	66,167	4,877,886	30,074	
Flake (mica schist) - Natural or recovered by milling					
Trimmed mica	516,413	657,161	67,869	103,830	
TOTAL MICA SHIPMENTS	6,684,846	841,026	7,044,221	233,270	
Varieties: Phlogopite mica (amber)	6,408,900	261,892	5,694,504	142,535	
Muscovite mica (white).	275,946	579,134	1,349,717	90,735	
Total Mica Shipments ..	6,684,846	841,026	7,044,221	233,270	

Table 7 - PRODUCTION (SALES) OF MICA IN CANADA, BY PROVINCES AND VARIETIES, 1945

Province	Phlogopite		Muscovite		T O T A L	
	Pounds	\$	Pounds	\$	Pounds	\$
Quebec	2,856,858	121,011	...	...	2,856,858	121,011
Ontario	2,837,646	21,524	65,717	73,599	2,903,363	95,123
British Columbia .....	...	...	1,284,000	17,136	1,284,000	17,136
TOTAL CANADA	5,694,504	142,535	1,349,717	90,735	7,044,221	233,270

Table 8 - PRODUCTION(*) OF MICA IN CANADA, 1933-1945

Year	Short tons	\$	Year	Short tons	\$
1933	944	49,284	1940	975	237,145
1934	998	97,071	1941	1,743	335,288
1935	628	82,038	1942	3,010	383,567
1936	801	74,556	1943	4,025	553,856
1937	945	133,731	1944	3,342	841,026
1938	519	80,989	1945	3,522	233,270
1939	1,068	147,321			

(*) Sales

The total value of mica produced in Canada from the first official recording of mica statistics in 1886 to the end of 1945 amounted to \$10,425,822.

Table 9 - IMPORTS AND EXPORTS OF MICA, 1944 and 1945

	1 9 4 4		1 9 4 5	
	Pounds	Value \$	Pounds	Value \$
Imports -				
Mica and manufactures of, n.o.p. ....	...	185,986	...	236,597
Vermiculite, crude .....	...	21,166	...	35,496
Exports -				
Mica, scrap and waste	4,879,200	36,072	4,853,600	33,200
Mica splittings	75,800	56,211	5,200	4,088
Mica manufactures .....	...	994	...	2,614
Mica, rough, untrimmed	955,600	133,149	801,400	107,740
Mica, trimmed	282,100	572,541	67,600	146,026
Mica, ground	600,900	18,340	352,000	11,055
Total Mica Exports .....	...	817,307	...	304,723

Table 10 - CONSUMPTION OF MICA IN CANADA, BY INDUSTRIES, AS REPORTED TO THE ANNUAL CENSUS OF INDUSTRY, 1943 and 1944

	1 9 4 3		1 9 4 4	
	Quantity tons	Cost at works \$	Quantity tons	Cost at works \$
In electrical apparatus industry	145	324,919	164	396,978
In rubber industry	111	12,314	117	14,011
In roofing (x)	395	23,160	702	36,260
In mica manufacturing industry	36	41,050	45	52,853
TOTAL ACCOUNTED FOR .....	...	401,443	...	500,102

(x) Includes mica used in manufacture of wall paper.

The following information has been extracted from a report on the Mica Industry by the Bureau of Mines, Ottawa:

"Mica possesses a combination of properties that make it of outstanding value as an insulating material in all forms of electrical equipment and appliances, and almost the entire production of sheet muscovite and phlogopite is used in the electrical industry.

"Most of the phlogopite mined in Canada has come from a belt of pyroxenite rocks that extends from Kingston to Ottawa, in Ontario, and thence northward into Quebec, between the Gatineau and Lievre Rivers. The productive belt is from 60 to 70 miles wide and about 200 miles long. Scattered, outlying mica deposits occur also in Pontiac and Argenteuil counties, Quebec, and as far east as Quebec City; and in Ontario, similar deposits have been mined to the west in Hastings and Haliburton counties.

"In general, Canadian phlogopite deposits tend to be of an erratic, impersistent, and pockety character, and this factor makes underground mining difficult and expensive and for the most part precludes any sustained, systematic attempt to develop ore-bodies. Only in comparatively few instances have workings been carried to depths greater than 100 feet, a great part of the production having been derived from a large number of small, scattered, and intermittently operated surface pits. Reserves, however, are probably sufficient to maintain output at present levels for a considerable period.

"The larger producers of phlogopite operate their own mica shops, and sell direct to the trade, but a substantial volume of business is done also by dealers who purchase small lots of mine-run or trimmed block from small operators and grade, trim, or split the material for sale. Most of the splitting work is farmed out in small rural communities and is done on a piecework basis.

"Madagascar, the other chief source of phlogopite, started to produce on an important scale around 1920, and since then has had an annual output of sheet mica about equal to that of Canada. Ceylon, Korea, Tanganyika, and Portuguese East Africa have also furnished small amounts of phlogopite, and a few years ago development of deposits in Mexico was commenced. Recently, the discovery of occurrences in the Northern Territory of Australia was reported.

"Muscovite, the occurrence of which in commercial sheet form is confined to granite pegmatite dykes, is far more widely distributed in Canada than phlogopite, and deposits are known in many sections of Quebec and Ontario, as well as in Manitoba and British Columbia, and in the Baffin Island section of the Eastern Arctic. Spasmodic attempts at development of certain of these occurrences have been made, but it was not until the discovery in 1942 of deposits in the Eau Claire region that serious production of muscovite was undertaken. Following the original discovery of the Eau Claire deposits on what is now the Purdy Company's property, several groups of claims were staked on adjacent ground by various syndicates, but none of these contain encouraging amounts of mica, and the quality, in general, is too low for profitable mining.

"In Quebec, there are deposits of ruby muscovite mica of strategic quality in Petain township, Abitibi county, and in Bergeronnes township, Saguenay county, the production from which has been small.

"Muscovite mica is widely distributed, and many countries produce small quantities. India has long been the chief source of supply, and production there since 1942 has exceeded all previous records. Indian "ruby" muscovite, obtained from Bihar Province, is the world standard for exacting electrical uses, particularly for magneto and radio condenser films. India also supplies green muscovite, which is produced in Madras.

"Vermiculite, a variety of mica which has the unique property of swelling enormously into exceedingly light-weight, accordion-like form when heated, is used extensively for thermal and acoustic insulation. The expanded product, also termed "Zonolite", has a specific gravity of only 6 to 8 pounds per cubic foot, is comparatively refractory, and has low thermal and sound conductivity. In the form of loose-fill, it is a valuable insulator in the walls and roofs of dwellings, industrial buildings, furnaces, ovens, and refrigerators, in which fields it competes with rock and glass wool. Combined with various bonding materials, it is fabricated into pipe covering, insulating blocks, plasters, tiles, and structural roof slabs, and it is also widely employed as a light-weight aggregate in concrete, including cast slabs for pre-fabricated houses. Such slabs are also being used for the decks, roofs, and fire-walls of ships and buildings subject to bombing attack. Plastic insulation made with vermiculite is used as a heat insulator on the outside of boilers and refinery columns, and as a sound-proofing agent in automobiles and aircraft.

"Of technical interest was the development in 1943 of improved instruments for readily determining the power factor and the electrical conductivity of sheet mica. Appraisal solely by visual means caused the rejection of important amounts of sound mica. The new instruments are, respectively, the direct-reading Q-meter and the point-electrode conductivity tester, both developed by the Bell Telephone Laboratories. They are not intended to supplant visual inspection, but by their use it is expected that important amounts of mica of a quality hitherto rejected on account of appearance will become available for capacitor and other more exacting electrical needs. Instruments of the above type are now available in the Bureau of Mines, Ottawa, for the testing of mica samples.

DIRECTORY OF OPERATORS IN THE CANADIAN MICA MINING INDUSTRY, 1945

Name of Operator	Head Office Address	Location of Mine or Plant
<u>Quebec -</u>		
Asbestos Crude & Fibre Mines Ltd.	1410 Stanley St., Montreal	Courte
Blackburn Bros. Ltd.	85 Sparks St., Ottawa, Ont.	Cantley and Perkins
Charbonneau, Hector	Perkins	Perkins
Cross, S. and B.	Cascades	Cascades
Cross, W. C.	209 Bridge St., Hull	Hull Tp.
Delisle, Jos.	Mistassini	Lac St. Jean
Gagné, Louis	St. Michel de Wentworth	Argenteuil Co.
Glover, J. W.	13 Lakeview Terrace, Ottawa, Ont.	Papineau Co.
Jainnis, Dessureault	31 Graham St., Hull	Argenteuil Co.
Laurin, Ernest	Buckingham	Buckingham
Lawler, Patrick	Wilson's Corners	
Mica Co. of Canada Ltd.	2 Lois St., Hull	
Mineault, Aime	Perkins	Perkins
Perkins Mills Mica Co. Ltd.	360 St. James St. W., Montreal	
Perriault, Arsine	39 rue Champlain, Shawinigan Falls	St. Mathieu
Pink Lake Mica Mines Ltd.	74 King St., Toronto	Hull Co.
Poirier, Adélard	Wilson's Corners	
Rainville, Paul de	Perkins	Perkins
Renaud, Adélard	Perkins	Perkins
Renaud, Josaphat	Perkins Mills	Perkins
Renaud, Yvon	Notre Dame de Sallette	
Rousseau, Lorne	St. Rémi	Argenteuil
Shawinigan Mica Ltd.	Shawinigan Falls	Pallette
Siscoe Metals Ltd.	907 Dominion Square Bldg., Montreal	Suzor
Sparks, W. J.	Kazabazua	
Trudeau, W.	Old Chelsea	
Trudeau, Victor	Ottawa, Ont.	Pontiac Co.
Wallingford, W. M.	Gatineau Point	Lake Gerard
Wallingford, E. Ltd.	Perkins	Templeton
<u>Ontario -</u>		
Green, W. E. & Bro.	Perth Road	Ottie Lake
Kingston Mica Mining Co. Ltd.	Godfrey	Godfrey
Lee, W. W.	Westport	Bedford
Loughborough Mining Co. Ltd.	Sydenham	Frontenac
Micaspar Industries Ltd.	16 James St., Hamilton	Frontenac
Orser & Smith	Cataraqui	Bedford Tp.
Purdy Mica Mines Ltd.	184 Bay St., Toronto	Eau Claire
Sydenham Mining Co. Ltd.	Box 252, Kingston	Loughboro
Watts, R. W.	21 Isabella St., Perth	Perth
<u>British Columbia -</u>		
Fairey & Co.	661 Taylor St., Vancouver	Vancouver

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