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*Abrasives*

*Canada*



CANADA 1935  
DEPARTMENT OF TRADE AND COMMERCE  
DOMINION BUREAU OF STATISTICS  
CENSUS OF INDUSTRY  
MINING, METALLURGICAL & CHEMICAL BRANCH

THE ABRASIVES INDUSTRY  
IN  
CANADA  
1935

including: 1. Natural Abrasives  
2. Artificial Abrasives  
and Abrasive Products.

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DEPARTMENT OF TRADE AND COMMERCE  
DOMINION BUREAU OF STATISTICS  
MINING, METALLURGICAL AND CHEMICAL BRANCH  
OTTAWA - CANADA

Dominion Statistician: R. H. Coats, LL.D., F.R.S.C., F.S.S. (Hon.)  
Chief - Mining, Metallurgical and Chemical Branch: W. H. Losee, B. Sc.

THE ABRASIVES INDUSTRY IN CANADA, 1935.

A report just issued by the Mining, Metallurgical and Chemical Branch of the Dominion Bureau of Statistics at Ottawa contains the following information concerning the abrasives industry.

The Abrasives Industry in Canada is classified into two main divisions: (1) The Natural Abrasives Industry, covering the production of natural abrasives such as grindstones, pulpstones and scythestones, corundum, diatomite, volcanic dust, etc., and (2) The Artificial Abrasives and Abrasive Products Industry, which includes the manufacture of silicon carbide, fused alumina, abrasive wheels, abrasive paper, etc.

1. NATURAL ABRASIVES

The number of firms reporting shipments in the natural abrasives industry in 1935 totalled 9 as compared with 11 in the preceding year. Shipments during 1935 were reported from two properties in Nova Scotia, three in New Brunswick, one in Ontario and three in British Columbia.

The industry during 1935 provided employment to 42 persons and disbursed \$25,135 in salaries and wages. Of the total number of employees recorded for 1935, twenty-three, receiving \$11,821, were engaged in New Brunswick plants.

CORUNDUM - Corundum mining practically ceased in Canada with the commercial production of artificial abrasives by the electric furnace. The last recorded output of the mineral in the Dominion was in 1921 when grain corundum amounting to 403 tons valued at \$55,965 was exported to the United States. Corundum crystals are found in an area including several townships in Renfrew and Hastings counties in the province of Ontario. The commercial production of corundum began in this part of Ontario about 1900 with shipments reaching a maximum in 1906.

Production of corundum is now almost entirely confined to the Transvaal, in the Union of South Africa, where the output totalled 4,775 tons valued at £36,562 in 1935 as compared with 3,202 tons worth £23,844 in 1934. The 1935 annual report of the Department of Mines for the Union of South Africa contains the following particulars: "A large number of small scale tests on concentration methods in connection with the treatment of plumasite have been carried out, the results of which confirm the view that careful gravity concentration is the only method so far available for the treatment of this material. However, varieties from different localities have been found to vary considerably in amenability to treatment, and in some cases, notwithstanding the occurrence of large crystals of corundum, it is only possible to recover a small percentage as "crystal," owing to the impossibility of detaching feldspar from corundum simply by coarse crushing. In such cases, the necessity for fine crushing removes the concentrate from the category of "crystal" into that of "grain" of lower value. "Boulder" corundum has hitherto been exported as such, the preparation for market by crushing and grading having been done overseas. In order to test the possibility of exporting graded products, samples aggregating over half a ton in weight have been prepared and forwarded oversea for use of the Union's special representative. In connection with the preparation of non-slipping step treads, a number of cement steps in the University grounds have been constructed of mixtures incorporating several grades

of crushed corundum in order to observe the behaviour in service. Certain tests of crushed corundum as refractory material have also been made." Apparently the only regular established market of any consequence is that for crystal corundum in the United States.

The greater portion of the corundum mined is used normally in the manufacture of abrasive wheels. The lens and optical grinding trades also utilize some of the mineral in the form of fine flour or grain.

The higher grades of emery, a mixture of magnetite and corundum, comes largely from Asiatic Turkey and Greece; emery powder is consumed chiefly in the surfacing of plate glass and in the manufacture of abrasive cloth, grinding compounds and polishing and grinding wheels.

No imports or exports of corundum were reported in Canada during either 1934 or 1935. Imports of emery in bulk, crushed or ground, totalled \$42,102 in 1935 as compared with \$40,709 in 1934. Imports of sandpaper, glass, flint and emery paper or emery cloth amounted to \$114,617 in 1935 as against \$92,046 in the preceding year.

"Metal and Mineral Markets," New York, quoted emery, October, 1936 - per ton, f.o.b. New York, domestic crude ore, first grade, \$10. Other American ore, delivered to grinders, per gross ton, \$16; Turkish and Naxos ore, \$30 to \$40. F. O. B. Pennsylvania, in 350 pound kegs, Turkish and Naxos grain emery, 6½ cents per pound; Khasia, 6 cents; American, 4 cents.

DIATOMITE - Diatomite or diatomaceous earth was produced during 1935 in the provinces of Nova Scotia, Ontario and British Columbia. Production in the Dominion for the year totalled 823 tons valued at \$33,140 as compared with 1,372 tons valued at \$54,910 in 1934. In Nova Scotia the International Diatomite Industries Ltd. conducted continuous operations throughout the year; the deposits of this company are located at New Annan and Digby neck; the crude material was calcined in 1935 at the New Annan plant of the company.

The Department of Mines, Ottawa, reported that prospecting in Southern New Brunswick revealed more diatomite ponds, some of which contain muds capable of producing high quality calcined diatomite.

In Ontario several companies were active in the Muskoka district during 1935 and a new treatment plant was erected at a bog south of Gravenhurst.

The diatomite deposit located at Quesnel in British Columbia and formerly operated by B. C. Refractories was not worked in 1935, and production for this province in 1935 represented shipments from stock. During the year a small quantity of diatomite mud from the Burnaby Lake deposit was treated in an experimental plant located in Vancouver.

The Department of Mines, Ottawa, also reports that more Canadian diatomite was used in the home industries during 1935 and the demand as a filter-aid, both for sugar and for use in cleaning establishments, increased; approximately 90 per cent of the diatomite now being consumed in Canada is in the form of filter-aids, while about 8 per cent is used for insulation purposes and the remainder is absorbed as a filler, concrete admixture, silver polish base, and in chemicals. Deposits containing medium quality diatomite are very common in some parts of Canada; owing, however, to foreign competition and, at present, to the comparatively small Canadian demand, only the properly prepared diatomite of the highest quality can be successfully marketed on a scale sufficiently large to warrant the operation of a property and the erection of a plant. The present price in Canada varies from \$35 to \$40 per ton for concrete admixture; \$35 to \$75 for insulation and filtration; up to \$200 in small lots for material suitable for polishes; imported insulation bricks vary from \$85 to \$140 per 1,000 according to grade and density. "Metal and Mineral Markets," New York, quote

diatomite in United States, October, 1936; per long ton, f.o.b. Nevada, dried crude, in bags, \$12; 40 mesh, \$18; 200 mesh, \$30; low temperature insulation, \$20; high temperature, \$38.

Imports of diatomaceous earth or infusorial earth (Kieselguhr), ground or unground, into Canada during 1935 totalled 38,470 cwt. valued at \$56,832 as compared with 24,832 cwt. worth \$39,315 in 1934; of the 1935 imports 37,853 cwt. came from the United States. Statistics pertaining to exports are not available.

Table 1 - PRODUCTION OF DIATOMITE IN CANADA, 1926 - 1935.

Year	Tons	\$	Year	Tons	\$
1926 .....	...	...	1931 .....	1,610	32,789
1927 .....	266	6,650	1932 .....	1,496	29,509
1928 .....	368	8,960	1933 .....	1,789	36,648
1929 .....	429	10,330	1934 .....	1,372	54,912
1930 .....	554	13,247	1935 .....	823	33,140

Production of diatomite in Canada during the first six months of 1936 totalled 175 tons valued at \$3,500 as compared with 293 tons worth \$5,682 for the corresponding period of 1935.

Table 2  
WORLD PRODUCTION OF DIATOMACEOUS EARTH  
(Taken from the Imperial Institute's Publication "The Mineral Industry of the British Empire and Foreign Countries") (Long tons)

Producing Country	1932	1933	1934
<u>BRITISH EMPIRE</u>			
Northern Ireland .....	3,731	3,998	5,269
Canada .....	1,336	1,597	1,225
Barbados .....	10	10	2
Australia .....	1,484	2,849	(f) 2,672
<u>FOREIGN COUNTRIES</u>			
Denmark (moler) (estimated) .....	29,000	21,000	40,000
Finland .....	451	620	626
France .....	9,000	3,000	2,233
Germany .....	(d) 3,945	(d) 4,483	(e) 4,255
Hungary (exports) .....	1,017	1,246	1,394
Italy .....	758	1,919	2,264
Norway (exports) .....	113	221	84
Portugal .....	...	...	228
Spain (estimated) .....	2,200	3,300	2,200
Sweden .....	702	640	1,102
Algeria .....	10,285	10,826	9,772
United States .....	(c) 73,891	(b) 80,300	(b) 98,200
Chile .....	49	1	(a).
Japan .....	7,032	14,371	(a)
Korea .....	1,761	2,994	(a)
Netherlands East Indies .....	40	40	95

Diatomaceous earth is also produced in U. S. S. R. (Russia).

(a) Information not available.

(b) Estimated.

(c) Average of 3 years' production, 1930 - 1932.

(d) Exports.

(e) Production of Hessen only.

(f) Excluding the production of Victoria, which amounted to 884 long tons during 1933.

Table 3 - WORLD IMPORTS OF DIATOMACEOUS EARTH (Less Re-exports)  
(Taken from the Imperial Institute's publication "The Mineral Industry of the British Empire and Foreign Countries") (Long tons)

Importing Country	1932	1933	1934
<u>BRITISH EMPIRE</u>			
United Kingdom .....	19,075	20,587	27,394
Union of South Africa .....	45	149	152
Canada(b) .....	90	2,170	1,109
<u>FOREIGN COUNTRIES</u>			
Denmark .....	658	345	214
Estonia .....	18	28	28
Finland (total imports) .....	143	56	60
France .....	4,932	5,509	5,442
Germany .....	7,616	4,590	14,007
Hungary .....	649	702	857
Italy -- Crude .....	433	425	406
Calcined, etc. ....	49	51	94
Latvia .....	12	68	2
Norway .....	499	1,766	1,182
Poland .....	597	923	(a)
Portugal .....	206	126	189
U. S. S. R. (Russia) .....	2	...	...
Yugoslavia .....	178	216	359
Algeria .....	32	37	30
Egypt .....	61	100	86
Tunis .....	58	95	8
Cuba (total imports) .....	744	1,052	(a)
Mexico .....	(a)	(a)	664
Peru .....	2,399	1,880	1,872

(a) Information not available.

(b) Figures incomplete, as diatomaceous earth is also imported under trade names.  
Estimated imports were:--

1932 .....	3,393 long tons
1933 .....	3,571 " "

GARNETS - Garnets have not been commercially produced in Canada for some years. During 1935 a garnetiferous rock, crushed and screened at a mill near Labelle, Quebec, was marketed for sandblasting. Garnet is employed chiefly in the manufacture of abrasive paper and cloth while small quantities are utilized in the grinding of plate glass and other products. It was reported in the United States in 1934 that several of the coated abrasive manufacturers were heat treating the garnet grain to increase its efficiency.

No imports of garnet described as such were recorded in Canada during 1935, the mineral, however, may enter in the form of abrasive paper, etc.

Abrasive garnet sold or used by producers in the United States totalled 2,591 short tons valued at \$214,815 in 1934.

"Metal and Mineral Markets," New York, quoted garnet, October, 1936: per ton f.o.b. New Hampshire mines; concentrate, \$30; grain, \$80 to \$140. New York: Adirondack garnet concentrates, \$85. Spanish grades, \$60, C. I. F. port of entry.

**GRINDING PEBBLES** - No shipments of Canadian pebbles suitable for use as grinding material have been reported since 1926; during that year 64 tons were shipped from deposits occurring on the north shore of Lake Superior near Jackfish. In the United States, cut cubes and tube mill liners are made from quartzite at Jasper, Minn. One of the principal consumers of flint pebbles is the ceramic industry where products, usually of a minimum iron content, are desired.

Imports of flint and flint stones into Canada totalled 45,549 cwt. valued at \$24,014 in 1935 as compared with 46,802 cwt. worth \$28,427 in 1934. Of the 1935 imports 35,900 cwt. valued at \$15,741 came from France.

**GRINDSTONES, PULPSTONES AND SCYTHESTONES** - Shipments of grindstones, pulpstones and scythestones from Canadian quarries in 1935 totalled 708 tons valued at \$34,010 as compared with 987 tons worth \$46,478 in 1934.

The only operator producing finished grindstones in Canada during 1935 was the Read Stone Company, Sackville, N. B.; crude stone employed by this company was obtained from Quarry Island, Pictou county, Nova Scotia, and from the vicinity of Stonehaven, New Brunswick.

Crude sandstone quarried by E. A. Smith at Shediac, Westmorland county, New Brunswick, was exported to the United States and pulpstones were shipped in New Brunswick from the property formerly operated by the Miramichi Quarry Company; in British Columbia pulpstones were produced by the J. A. and C. H. McDonald Co., Vancouver from stone obtained at a new quarry located on the northwest end of Gabriola Island, near Nanaimo. Scythe or sharpening stones were produced in New Brunswick by the Read Stone Co. and E. A. Smith.

According to a report (No. 773) issued by the Mines Branch, Department of Mines, Ottawa, the large size Canadian grindstones are mainly used for sharpening pulp-mill and tobacco knives, and in the United States are used in the file, machine-knife, granite tool, and shear manufacturing industries. The small stones are used for scythe and axe grinding; there is a demand for good pulpstones, particularly for use in the large magazine grinders, but as known deposits containing thick beds of the proper quality sandstone are very scarce in Canada, only about 1 per cent of the stones used in Canadian pulp mills is being produced in the Dominion; the artificial pulpstones made of silicon carbide segments and also more recently of fused alumina segments are gradually but surely replacing the natural stone.

**Table 4. PRODUCTION OF GRINDSTONES, PULPSTONES AND SCYTHESTONES IN CANADA, 1926-1935.**

Year	Tons	\$	Year	Tons	\$
1926 .....	2,695	151,227	1931 .....	621	38,105
1927 .....	2,251	125,017	1932 .....	328	15,735
1928 .....	1,855	100,960	1933 .....	498	21,919
1929 .....	1,947	106,354	1934 .....	987	46,478
1930 .....	830	62,021	1935 .....	708	34,010

Imports and exports of grindstones and other abrasives are shown in Table No. 21.

VOLCANIC DUST (PUMICITE) - Shipments of volcanic dust in Canada totalled 31 tons valued at \$620 in 1934 as compared with 118 tons worth \$2,360 in 1933. Most of the production during 1934 came from Williams Lake, British Columbia and was for use as an oil filtering medium. There was no production of volcanic dust in the Dominion during 1935. The material was also mined for some years from deposits occurring near Waldeck, situated a few miles east of Swift Current, Saskatchewan.

Volcanic dust has been successfully used as a cold water calcimine, as a cleanser, as a glass and metal polish, as a hand cleanser, and as a sweeping compound.

No imports of volcanic dust, described as such, were reported during recent years, however, imports of pumice and pumice stone, lava and calcareous tufa, not further manufactured than ground, were valued at \$30,971 in 1935 as compared with \$25,142 in 1934.

Table 5 - PRODUCTION OF VOLCANIC DUST IN CANADA, 1926 - 1935.

Year	Tons	\$	Years	Tons	\$
1926 .....	90	630	1931 .....	128	2,560
1927 .....	105	735	1932 .....	180	3,600
1928 .....	485	9,795	1933 .....	118	2,360
1929 .....	300	6,000	1934 .....	31	620
1930 .....	242	4,840	1935 .....	...	...

Table 6 - PRINCIPAL STATISTICS OF THE NATURAL ABRASIVES INDUSTRY IN CANADA, 1933, 1934 and 1935.

	1933	1934	1935
Number of firms .....	9	11	9
Capital employed .....	\$ 58,556	234,776	114,114
Number of employees - On salary ....	1	6	7
On wages .....	18	28	35
Total ..	19	34	42
Salaries and wages - Salaries .....	\$ 1,500	5,208	6,740
Wages .....	6,296	15,372	18,395
Total ..	7,796	20,580	25,135
Cost of fuel and electricity .....	\$ 1,034	2,616	4,120
Cost of process supplies used .....	(a)	(a)	2,206
Selling value of products .....	\$ 60,927	102,008	67,150

(a) Information not available.

Table 7 - WAGE-EARNERS, BY MONTHS, IN THE NATURAL ABRASIVES INDUSTRY, 1934 and 1935.

Month	1934	1935	Month	1934	1935
January .....	5	6	July .....	49	51
February .....	10	2	August .....	44	58
March .....	12	3	September .....	61	59
April .....	13	27	October .....	29	57
May .....	45	49	November .....	21	40
June .....	41	51	December .....	5	22

Table 8 - FUEL AND ELECTRICITY USED IN THE NATURAL ABRASIVES INDUSTRY, 1934 and 1935.

Unit	1 9 3 4				1 9 3 5			
	Quantity	Value			Quantity	Value		
		\$				\$		
Bituminous coal - Canadian, short ton	248	1,653			295	2,061		
Gasoline .....	Imp. gal.	3,500	850		947	223		
Fuel oil & Diesel oil.....	Imp. gal.	...	...		7,500	900		
Wood .....	cord	40	113		146	638		
Electricity purchased .....	K. W. H.	...	...		14,900	298		
TOTAL .....	xxx	...	2,616		...	4,120		
Electricity generated for own use- K. W. H. ...			...		40,000	...		

Table 9 - INSTALLATION OF POWER EQUIPMENT IN NATURAL ABRASIVES INDUSTRY, 1935.

	Number of Units	Total Horse Power
Steam engines and steam turbines .....	4	182
Gasoline, gas and oil engines .....	1	4
Electric motors operated by purchased power ..	4	80
Electric motors operated by own power .....	32	270
Boilers .....	3	180

Table 10 - PRODUCTION (SALES) OF NATURAL ABRASIVES IN CANADA, 1934 and 1935.

Province	DIATOMITE		GRINDSTONES, PULP-STONES AND SCYTHESTONES		VOLCANIC DUST	
	Tons	\$	Tons	\$	Tons	\$
<b>1 9 3 4</b>						
Nova Scotia .....	1,320	52,800	50	1,762	...	...
New Brunswick .....	...	...	535	27,091	...	...
Ontario .....	46	1,920	...	...	...	...
Saskatchewan .....	...	...	...	...	1	20
British Columbia ..	6	190	402	17,625	30	600
TOTAL .....	1,372	54,910	987	46,478	31	620
<b>1 9 3 5</b>						
Nova Scotia .....	666	26,660	50	2,006	...	...
New Brunswick .....	...	...	456	21,175	...	...
Ontario .....	100	4,600	...	...	...	...
Saskatchewan .....	...	...	...	...	...	...
British Columbia ..	57	1,880	202	10,829	...	...
TOTAL .....	823	33,140	708	34,010	...	...

Table 11 - CONSUMPTION OF PULPSTONES BY THE CANADIAN PULP AND PAPER INDUSTRY, 1931 - 1935

Year	Number for 2 ft. wood		Number for 2.5 ft. wood		Number for 4 ft. wood	
	Value		Value		Value	
	\$		\$		\$	
1931 .....	226	72,588	225	71,760	285	337,580
1932 .....	210	65,450	139	46,436	222	249,373
1933 .....	321	98,475	95	31,945	199	223,635
1934 .....	378	103,811	84	29,680	268	292,359
1935 .....	417	116,501	52	20,297	237	243,805

LIST OF FIRMS IN THE CANADIAN NATURAL ABRASIVES INDUSTRY, 1935.

<u>Name of Firm</u>	<u>Head Office Address</u>	<u>Location of Plant</u>
<u>DIATOMITE</u>		
<u>NOVA SCOTIA -</u> International Diatomite Industries, Ltd.	206 Patriot Bldg., Concord, New Hampshire, U.S.A.	Little River, East New Annan
<u>ONTARIO -</u> Muskoka Diatomite Ltd. Diatomite Refiners Co. Canadian Multi-Cell Ltd.	701 Central Bldg., Toronto 45 Richmond St. W., Toronto 507 Harbour Commission Bldg., Toronto	Gravenhurst Novar, Muskoka Martin's Siding
<u>BRITISH COLUMBIA -</u> B. C. Refractories Ltd. (a) March, R. L.	660 Taylor St., Vancouver Quesnel	Quesnel Quesnel
<u>GARNETS</u>		
<u>QUEBEC -</u> McLean-McNicoll Ltd. (x)	607 Confederation Life Bldg., Montreal	Joly Tp., Labelle Co.
<u>GRINDSTONES, PULPSTONES AND SCYTHESTONES</u>		
<u>NOVA SCOTIA -</u> The Read Stone Co. Ltd.	Box 549, Sackville, N. B.	Quarry Island
<u>NEW BRUNSWICK -</u> Boyle, Robin (Miramichi Quarry Co. Ltd.) The Read Stone Co. Ltd. Smith, E. A.	54 Atlas Ave., Toronto Box 549, Sackville Shediac	Quarryville Stonehaven Shediac
<u>BRITISH COLUMBIA -</u> J. A. and C. H. McDonald, Ltd.	1571 Main St., Vancouver	Gabriola Island and Vancouver
(x) Produces "garno-grit."		
(a) Present name of firm "Fairey and Cuncliffe."		

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## 2. THE ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS INDUSTRY, 1935.

The value of artificial abrasives and abrasive products manufactured in Canada during 1935 was 17 per cent greater than in 1934 and higher than in any other year on record except 1929. The gross factory value in 1935 was \$8,643,930 compared with \$7,414,853 in 1934, \$3,550,456 in 1933 and \$8,961,951 in 1929.

Fifteen establishments were in operation in 1935, 14 being in Ontario and 1 in Quebec. The average number of employees was 976 and payments in salaries and wages totalled \$1,314,272. Expenditures for manufacturing materials amounted to \$2,684,406 and a further \$782,553 was paid out for fuel and electricity. Capital employed totalled \$5,281,916 of which \$2,766,689 represented the present value of plants and equipment.

Artificial abrasives were made in 6 works located near the power centres of Niagara Falls and Shawinigan Falls; 3 of these establishments made only fused alumina 1 made only silicon carbide and 2 made both fused alumina and silicon carbide. The output of these works was valued at \$7,188,672 including 18,475 tons of silicon carbide and 51,194 tons of fused alumina worth \$6,523,676 and other products and by-products such as ferrosilicon, firesand, fused magnesite, refractory brick and cements, boron carbide and boron carbide shapes, artificial graphite, fused silica, etc.

Abrasive products such as wheels, paper, cloth, pulpstones and sharpening stones were manufactured in 10 different plants in 1935; 8 of these made wheels, segments, files, etc. and 2 made abrasive cloth and paper. The production of wheels and segments was valued at \$785,777 in 1935.

Imports of abrasives of all kinds advanced to \$2,577,540 in 1935 from \$2,208,791 in 1934, and exports increased to \$3,992,615 from \$3,951,910 in the previous year. The chief import item was black diamonds and diamond dust for borers which amounted to \$1,578,503 in 1935. Imports of crushed or ground artificial abrasives were valued at \$454,818 in the same year. Exports consisted almost entirely of crude silicon carbide and fused alumina as these materials are not further prepared in Canada but are shipped to the United States for grinding and grading.

Table 12 - PRINCIPAL STATISTICS OF THE ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS INDUSTRY, 1934 and 1935.

	1934	1935
Number of firms .....	14	15
Capital employed ..... \$	5,109,861	5,281,916
Number of employees - On salary .....	183	203
On wages .....	678	773
TOTAL .....	861	976
Salaries and wages - Salaries .....	343,316	421,020
Wages .....	748,676	893,252
TOTAL .....	1,091,992	1,314,272
Cost of fuel and electricity .....	697,028	782,553
Cost of materials at works .....	2,317,552	2,684,406
Selling value of products at works .....	7,414,853	8,643,930

Table 13 - CAPITAL EMPLOYED, 1934 and 1935.

	1934	1935
	\$	\$
Present value of lands, buildings, machinery and equipment .	2,765,418	2,766,689
Inventory value of materials on hand, stocks in process, fuel and other supplies .....	982,830	965,380
Inventory value of finished products on hand .....	883,212	942,220
Operating capital (cash, bills and accounts receivable, etc.)	478,401	607,627
TOTAL .....	5,109,861	5,281,916

Table 14 - WAGE-EARNERS, BY MONTHS, 1934 and 1935 (on the 15th of each month)

Months	1934	1935
January .....	575	719
February .....	601	737
March .....	626	748
April .....	651	773
May .....	647	754
June .....	697	783
July .....	702	779
August .....	740	789
September .....	742	798
October .....	721	820
November .....	712	821
December .....	711	815
AVERAGE .....	678	773

Table 15 - FUEL AND ELECTRICITY USED, 1934 and 1935.

Kinds	Unit of measure	1934		1935	
		Quantity	Cost at works \$	Quantity	Cost at works \$
Bituminous coal - Canadian ...	short ton	87	571	150	986
Imported ...	short ton	4,010	25,235	4,431	29,261
Anthracite coal (for fuel only)	short ton	283	2,992	314	3,329
Coke (for fuel only) .....	short ton	76	675	77	686
Fuel oil .....	Imp. gal.	106,276	7,721	132,930	9,571
Gas - Manufactured .....	M cu. ft.	1,392	1,008	1,118	776
Natural .....	M cu. ft.	177	141	777	666
Other fuel .....	xxx	...	222	...	208
Electricity purchased .....	K. W. H.	254,540,628	658,463	286,388,172	737,070
TOTAL .....	xxx	...	697,028	...	782,553

Table 16 - POWER EQUIPMENT, 1934 and 1935.

	1934		1935	
	Number of units	Total rated horse power	Number of units	Total rated horse power
Electric motors run by purchased power-				
Ordinarily in use .....	623	5,271	648	6,582
In reserve or idle .....	55	677	84	861
Boilers .....	8	700	7	450

Table 17 - MATERIALS USED IN MANUFACTURING, 1934 and 1935.

Materials	1954		1955	
	1	9	1	9
	Quantity Tons of 2,000 lb.	Cost at works \$	Quantity Tons of 2,000 lb.	Cost at works \$
Bauxite and pure alumina .....	51,143	1,108,239	57,606	1,230,427
Coal (not for fuel) - For fused alumina) .....	67	366	580	3,015
For silicon carbide) .....	5,285	27,378	5,497	33,981
Coke (not for fuel) - For fused alumina .....	1,969	11,520	1,892	10,748
For silicon carbide .....	16,423	219,990	20,093	260,008
Electrodes .....	790	105,419	915	120,076
Feldspar .....	25	688	34	939
Iron borings .....	5,941	51,084	5,679	41,000
Salt .....	159	1,347	257	2,212
Sawdust .....	5,392	16,624	6,644	20,972
Silica sand .....	29,991	150,870	32,626	165,764
Artificial abrasive grains .....	1,432	214,121	2,291	338,144
Natural abrasive grains .....	209	23,928	271	30,808
Bonding and bushing materials -				
(a) Clay bonds .....	245	19,560	217	13,949
(b) Elastic mixture .....	7	2,975	10	4,769
(c) Bakelite and synthetic resins .....	6	6,221	19	17,896
(d) Lead for bushings .....	20	1,657	23	2,235
Cotton cloth .....	...	89,125	...	93,450
Kraft paper .....	...	31,161	...	29,354
Containers, boxes, packages, etc. ....	...	24,395	...	27,704
All other materials .....	...	210,884	...	236,955
TOTAL .....	...	2,317,552	...	2,684,406

Table 18 - PRODUCTS MANUFACTURED, 1934 and 1935.

Products	Unit of measure	1	9	3	4	1	9	3	5
		Quantity	Selling value			Quantity	Selling value		
			at works				at works		
			\$				\$		
Crude silicon carbide ...	short ton	16,398	1,858,746			18,475	1,788,657		
Fused alumina .....	short ton	44,596	3,955,837			51,194	4,735,019		
Silicon carbide firesand, etc.	short ton	1,383	33,515			2,249	42,703		
Abrasive wheels and segments.	xx	...	569,764			...	785,777		
Sharpening stones and files .	xx	...	62,929			...	83,013		
Other products (x) .....	xx	...	934,062			...	1,208,761		
TOTAL .....	xx	...	7,414,853			...	8,643,930		

(x) Includes ferrosilicon, abrasive cloth, abrasive paper, tiles, artificial pulpstones, artificial graphite, boron carbide, boron carbide shapes, fused magnesite, refractory cements, firebrick, adhesive tape, fused silica, periclase, etc.

Table 19 - PRODUCTION OF ARTIFICIAL ABRASIVES IN CANADA, 1923 - 1935.

SILICON CARBIDE			FUSED ALUMINA		T O T A L			
Years	Selling value		Quantity	Selling value		Quantity	Selling value	
	Quantity	at works		at works	at works			
	Tons	\$		Tons	\$		Tons	\$
1923 .....	12,660	1,382,747	32,201	3,620,497	44,861	5,003,244		
1924 .....	15,207	1,773,864	29,822	3,170,205	45,029	4,944,069		
1925 .....	16,945	1,864,009	30,337	3,281,708	47,282	5,145,717		
1926 .....	17,958	1,732,042	34,649	3,423,526	52,607	5,156,468		
1927 .....	17,333	1,961,910	35,086	3,230,928	52,419	5,192,838		
1928 .....	19,008	2,098,199	39,413	3,786,113	58,421	5,884,312		
1929 .....	21,592	2,577,033	53,857	4,974,789	75,449	7,551,822		
1930 .....	22,778	2,111,476	42,894	3,376,908	65,672	5,488,384		
1931 .....	10,754	1,060,712	35,781	3,007,307	46,535	4,068,019		
1932 .....	3,164	269,405	6,658	427,628	9,822	697,033		
1933 .....	7,887	765,192	20,967	1,726,191	28,854	2,491,383		
1934 .....	16,398	1,858,746	44,596	3,955,837	60,994	5,814,583		
1935 .....	18,475	1,788,657	51,194	4,735,019	69,669	6,523,676		

Table 20 - PRODUCTION OF ARTIFICIAL ABRASIVE WHEELS AND SEGMENTS(x) IN CANADA, 1923 - 1935.

Selling value		Selling value	
Years	at works	Years	at works
	\$		\$
1923 .....	566,426	1929 .....	819,884
1924 .....	425,384	1930 .....	546,276
1925 .....	426,341	1931 .....	347,345
1926 .....	619,124	1932 .....	293,528
1927 .....	634,007	1933 .....	336,647
1928 .....	847,489	1934 .....	569,764
		1935 .....	785,777

(x) Sharpening stones and artificial pulpstones not included.

DIRECTORY OF FIRMS IN THE ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS INDUSTRY,  
1935.

<u>Names</u>	<u>Addresses</u>	<u>Products</u>
(a) ARTIFICIAL ABRASIVES		
Abrasive Co. of Canada, Ltd., The	858 Burlington St. E., Hamilton, Ont.	Fused alumina; ferrosilicon.
Canadian Carborundum Co. Ltd.	H. O. - P. O. Box 65, Niagara Falls, Ont. Plants - Shawinigan Falls, P. Q. Niagara Falls, Ont.	Crude silicon carbide; fused alumina; ferro silicon; fire-brick; refractory cement.
Exolon Company, The	H. O. - Blasdell, N. Y., U. S. A. Plant - Thorold, Ont.	Crude silicon carbide; fused alumina; re- factories; ferro silicon; graphite; fused magnesite; fused silica
Lionite Abrasives, Ltd.	H. O. - P.O. Box 3, Niagara Falls, Ont. Plant - Stanley St., Niagara Falls, Ont.	Fused alumina; ferrosilicon.

DIRECTORY OF FIRMS IN THE ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS INDUSTRY, 1935.

(concluded)

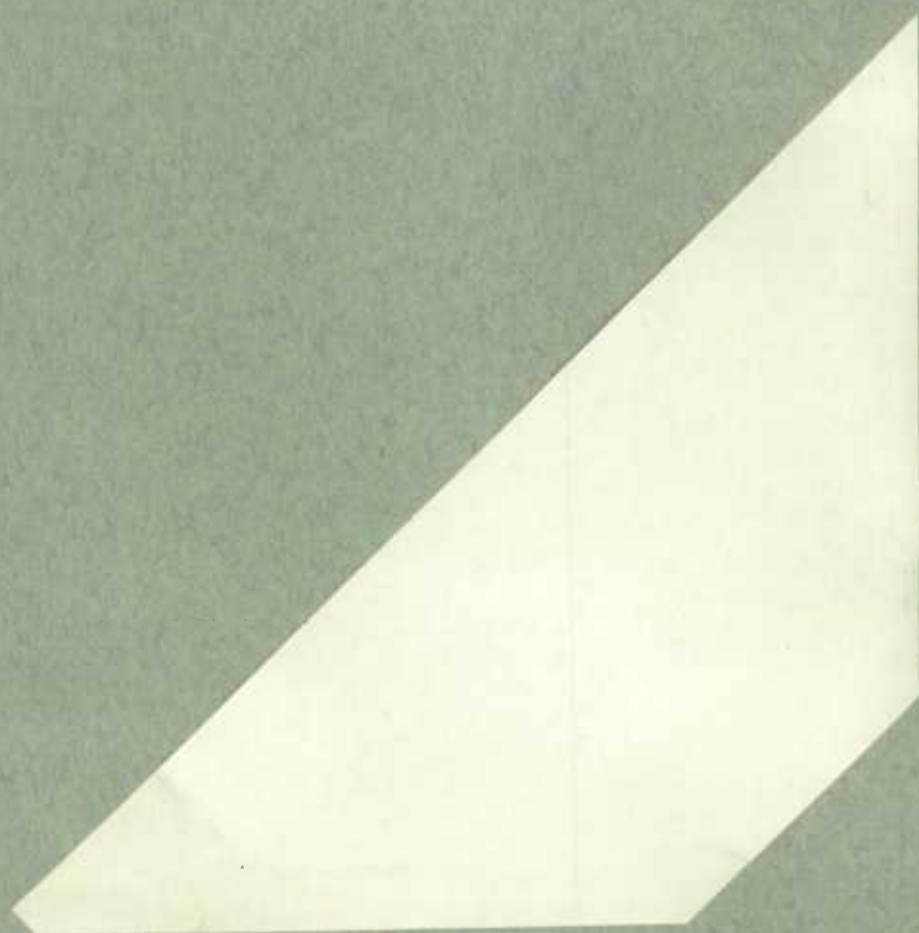
<u>Names</u>	<u>Addresses</u>	<u>Products</u>
(a) <u>ARTIFICIAL ABRASIVES</u> - concluded.		
Norton Company	H. O. - Worcester, Mass., U. S. A. Plant - Chippawa, Ont.	Fused alumina; crude silicon carbide; crude boron carbide; boron carbide shapes: periclase.
(b) <u>ABRASIVE PRODUCTS</u>		
Brantford Grinding Wheel Co. Ltd.	186 Pearl St., Brantford, Ont.	Abrasive wheels.
Canada Sand Papers Limited	H. O. - Box 260, Preston, Ont. Plant - Plattsville, Ont.	Abrasive cloth; abrasive paper.
Canadian Carborundum Co. Ltd.	Niagara Falls, Ont.	Abrasive wheels; sharpening stones, and files.
Canadian Hart Grinding Wheel Co.	491 Dundas St., Galt, Ont.	Abrasive wheels and segments; sharpening stones and files.
Dominion Abrasive Wheel Co. Ltd.	49 Main St., Mimico, Ont.	Abrasive wheels and segments; sharpening stones and files.
Empire Abrasives, The	24 Lewis St., Brantford, Ont.	Abrasive wheels and segments; sharpening stones and files.
Lion Grinding Wheels, Ltd.	192 Pearl St., Brockville, Ont.	Abrasive wheels and segments; sharpening files and stones.
Norton Company of Canada, Ltd.	3 Beach Road, Hamilton, Ont.	Abrasive wheels; artificial pulp- stones; tiles; sharpening stones and files.
Ontario Abrasive Wheels Limited	Prescott, Ont.	Abrasive wheels; sharpening stones and files.
Canadian Durex Abrasives Limited	H. O. - 154 Pearl St., Toronto, Ont. Plant - Brantford, Ontario.	Abrasive cloth; abrasive paper; adhesive tape and processed materials.

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Table 21 - IMPORTS INTO CANADA AND EXPORTS OF ABRASIVES IN 1934 and 1935.

	1934		1935	
	Quantity	Value \$	Quantity	Value \$
<b>IMPORTS</b>				
Artificial abrasives in bulk, crushed or ground, when imported for use in the manufacture of abrasive wheels and polishing composition .....	...	308,377	...	454,818
Diamond dust or bort, and black diamonds for borers .....	...	1,395,404	...	1,578,503
Emery in bulk, crushed or ground .....	...	40,709	...	42,102
Grinding wheels, manufactured by the bonding together of either natural or artificial abrasives .....	...	103,630	...	76,246
Grinding stones or blocks manufactured by the bonding together of either natural or artificial abrasives .....	...	10,366	...	9,253
Grindstones, not mounted, and not less than 36 inches in diameter .....No.	1,024	140,327	1,089	140,208
Grindstones, n.o.p. ....No.	4,056	4,491	3,683	4,015
Pumice and pumice stone, lava and calcareous tufa, not further manufactured than ground .....	...	25,142	...	30,971
Sand paper, glass, flint and emery paper or emery cloth .....	...	92,046	...	114,617
Iron, sand or globules, or iron shot, and dry putty, adapted for polishing glass or granite or for sawing stone .....	...	12,642	...	26,359
Manufactures of emery or of artificial abrasives, n.o.p. ....	...	38,342	...	43,616
Diatomaceous earth or infusorial earth (kieselguhr), ground or unground ..... Cwt.	24,832	39,515	38,470	56,832
TOTAL .....	...	2,208,791	...	2,577,540
<b>EXPORTS</b>				
Grindstones, manufactured .....	...	4,947	...	74
Abrasives -				
Natural, n.o.p., in ore or bulk, crushed or ground (x) .....Cwt.	26,434	33,512	11,128	15,501
Artificial, crude, including silicon carbide .....Cwt.	1,267,651	3,869,613	1,401,635	3,925,364
Artificial, made up into wheels, stones, etc. ....	...	43,838	...	51,676
TOTAL .....	...	3,951,910	...	3,992,615

(x) Including infusorial earth, rotten stone, tripoli, etc.



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