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Albion, Canada

~~Ministry of~~
CANADA D.B.

DEPARTMENT OF TRADE AND COMMERCE

DOMINION BUREAU OF STATISTICS



THE

ABRASIVES INDUSTRY

IN

CANADA

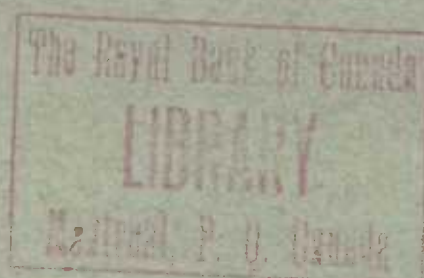
1933

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

Published by Authority of the Minister of Trade and Commerce.

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

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THE ABRASIVES INDUSTRY IN CANADA, 1933.

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 includes 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 covers the manufacture of silicon carbide, fused alumina, abrasive wheels, abrasive paper, etc.

1. NATURAL ABRASIVES

CORUNDUM -- Corundum crystals are found in an area embracing several townships in Renfrew and Hastings counties in the province of Ontario. The corundum mining industry made its appearance in this area in 1900 and production reached a maximum in 1906. Corundum mining practically ceased with the perfection and production of artificial abrasives by the electric furnace. In 1921 grain corundum amounting to 403 tons valued at \$55,965 was exported to the United States; since that time no shipments of corundum have been reported.

For some years the principal sources of supply have been, and still are, the Zoutpansberg and Pietersberg districts of Northern Transvaal, South Africa. The mineral occurs in these areas largely as loose crystals in a disintegrated corundum-bearing rock. In 1933 the South African shipments of corundum totalled 1,303.8 tons valued at £9,531 as compared with an output of 361.8 tons worth £2,621 in 1932.

About one-half of the corundum mined is used normally in the manufacture of abrasive wheels. The lens and optical grinding trades also consume a considerable percentage in the form of flour or fine grains.

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

No imports or exports of corundum were reported in Canada during either 1932 or 1933; imports of crude corundum into the United States in 1932 amounted to 168 tons valued at \$8,258.

Emery prices were quoted in the United States at the close of the year as follows:- 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 \$35. F.O.B. Pennsylvania, in 350 pound kegs, Turkish, Khasia and Naxos grain emery, 6½ cents per pound; American, 4 cents.

DIATOMITE - Production of diatomaceous earth in Canada during 1933 totalled 1,789 tons valued at \$36,648 compared with an output of 1,496 tons at \$29,509 in 1932. The material in 1933 came from the provinces of Nova Scotia, Ontario and British Columbia. In Nova Scotia, International Diatomite Industries Limited operate two plants, one at New Annan, Colchester county, and the other near Little River village on Digby Neck. Both plants worked continuously during 1933; the Little River plant was remodelled by making an addition to the length of the rotary kiln preparatory to removing part of the moisture from the crude material before kiln treatment. It was reported that a new market exists in England for this company's products and that shipments might commence to Europe sometime in 1934.

The Department of Mines, Ottawa, reports that there was considerable activity in the Muskoka region of Ontario. Diatomite Products Limited completed its large plant which is equipped with a vertical 8-hearth furnace, air flotation system, filter, etc. This company made a trial shipment of the processed diatomite obtained from the Slocombe Lake mud. The Dominion Diatomite Company made some alterations in the mill near Novar and small shipments of diatomite were made to Toronto.

The B. C. Refractories Limited continued operations and shipped a few cars of diatomite to their Vancouver plant from Quesnel in the Cariboo district, British Columbia, where the largest known deposits in the Dominion occur.

V. L. Eardley-Wilmot of the Department of Mines, Ottawa, states that deposits containing diatomite (minute silicious skeletons of aquatic plants of marine or fresh water origin) are very common in some parts of Canada, particularly in the Muskoka district of Ontario and in Nova Scotia. When properly prepared the best quality Canadian diatomite can, for any of its varied uses, hold its own against the imported material from any source.

The demand for battery box diatomite has increased and diatomite as a filter-aid for use in large cleaning establishments is becoming popular. Some companies in Toronto and vicinity are manufacturing diatomite insulating bricks and insulating pads, while other firms are contemplating in the near future the manufacture of diatomite insulation, refractory and building products. The largest individual use for diatomite in Canada is as a filter-aid in sugar refineries.

The original particles of diatomite, owing to their fragile structure, break down easily under pressure and for this reason the material is suitable for fine metal polishes, buffing compounds and tooth paste, where a mild but hard abrasive is required.

The price for diatomite in Canada varies from \$25 to \$35 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 brick vary from \$110 to \$140 per 1,000, according to grade and density.

Tripoli is a form of silica which closely resembles diatomite but is of entirely different origin, being generally regarded as a chalcedonic variety of silica; no production of this mineral is reported in Canada. It is used to a considerable extent as a mechanical cleanser, in admixture with soap and other detergents; it is also employed interchangeably with pulverized silica for use as a filler or inert extender in paints and transparent wood fillers. The material is usually sold by

sample, the governing factors being the quantity of free quartz grains or "grit", colour and fineness.

WORLD PRODUCTION OF DIATOMACEOUS EARTH, 1931 and 1932.

(This statement taken from the Imperial Institute's publication "The Mineral Industry of the British Empire and Foreign Countries)

(Long tons)

Producing country	1931	1932
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BRITISH EMPIRE

Great Britain
Northern Ireland	3,401	3,731
Canada	1,437	1,336
Barbados	10	10
Australia	1,067	1,334

FOREIGN COUNTRIES

Denmark (moler) (estimated)	34,000	7,000
France	10,600	(a)
Germany (exports) (b)	4,908	3,945
Hungary (exports)	1,392	1,018
Italy	857	758
Norway (exports)	84	113
Portugal .....	...	...
Spain (estimated)	2,200	2,200
Sweden	621	740
Algeria	10,984	10,285
Mexico	3	...
United States (c)	73,891	73,891
Chile	(a)	(a)
Japan	(a)	(a)
Korea	700	(a)

NOTE - 12,027 long tons of Diatomaceous earth were recorded as produced in U.S.S.R. (Russia) during year ended September, 1928 - later figures are not available.

(a) Information not available.

(b) Department of Mines, Canada, estimated production at 40,000 long tons during 1929.

(c) Annual average of 3 years' production.

WORLD IMPORTS OF DIATOMACEOUS EARTH, 1931 and 1932.

(Less Re-exports)

(Taken from the Imperial Institute's publication "The Mineral Industry of the British Empire and Foreign Countries)

(Long tons)

Importing Country	1931	1932
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BRITISH EMPIRE

United Kingdom	17,060	19,075
Union of South Africa	54	45
Canada	759	90

WORLD IMPORTS OF DIATOMACEOUS EARTH, 1931 and 1932. (concluded)
(Less Re-Exports)
(Long tons)

Importing Country	1931	1932
<u>FOREIGN COUNTRIES</u>		
Denmark - Diatomaceous earth	646	658
Moler bricks	48	...
Estonia	44	18
Finland	323	143
France	5,122	4,932
Germany	7,750	7,616
Hungary	752	584
Italy - Crude	380	433
Calcined, etc.	62	49
Latvia	148	12
Norway	64	499
Poland	855	597
Portugal	86	206
U.S.S.R. (Russia)	86	2
Yugoslavia	333	178
Egypt	34	61
Tunis	22	58
Cuba (total imports)	1,270	(a)
Colombia	(a)	(a)
Peru	1,315	2,399

(a) Information not available.

GARNETS - There has been no commercial production of garnets in Canada during recent years. In 1933 some prospecting work was conducted on garnet deposits occurring in the vicinity of Labelle, Quebec, and northwest of North Bay, Ontario; small trial shipments of the mineral were made from both areas during the year. According to the Department of Mines, Ottawa, about 85 per cent of the world's garnet production is used for making abrasive coated papers and cloths and almost all the balance for glass surfacing. During recent years the artificial abrasive coated papers have increasingly made inroads into the garnet paper production.

Owing to the relatively small demand for garnet and because of the large potential supply in the United States, only the highest quality Canadian abrasive garnet deposits with good transportation facilities should be considered. Garnets for industrial purposes should be clear, deep red, walnut or larger in size and should break into sharp and angular grains free of embedded impurities.

It is estimated that the normal consumption of garnet in Canada amounts to approximately 65 tons per year.

Garnet was quoted in the United States, September, 1934, as follows:-
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 from Canadian deposits of pebbles suitable for use as grinding material have been reported since 1926; during that year 64 tons were produced from deposits occurring on the north shore of Lake Superior near Jackfish, Ontario. Pebbles are now cut in the United States from solid blocks of quartzite and

later rounded smooth in tube mills; this product is claimed to last longer and is superior to the imported Danish pebbles.

The Mines Branch, Ottawa, reports that a considerable deposit of pebbles suitable for grinding purposes occurs on the north shore of Gabarus Bay, Cape Breton county, Nova Scotia

GRINDSTONES, PULPSTONES AND SCYTHESTONES - Shipments of grindstones, pulpstones and scythestones from Canadian quarries in 1933 amounted to 499 tons valued at \$21,919 as compared with 328 tons at \$15,735 in 1932, an increase of 36.9 per cent in quantity and 39.3 per cent in value.

In Eastern Canada shipments of abrasive stones were made from Stonehaven and Woodpoint, New Brunswick, and from Quarry Island, Pictou county, Nova Scotia. The balance of the Canadian production in 1933 comprised shipments of pulpstones fabricated from stone quarried on Newcastle Island, opposite Nanaimo, British Columbia.

The demand for all but the largest sized grindstones is very limited, owing to the increasing use of artificial stones and to foreign competition. The price of Canadian grindstones is \$44 per ton and about \$66 per ton for pulpstones. The stones for the modern pulpmills are now mainly of the large magazine type. The new artificial pulpstone made of silica carbide segments is gradually but surely replacing the natural stone. (Mines Branch report No. 673).

Consumption of pulpstones by the Canadian pulp and paper industry, 1931-1933, was as follows:-

	1 9 3 1		1 9 3 2		1 9 3 3	
	Number	Value	Number	Value	Number	Value
		\$		\$		\$
For 2 foot wood	226	72,588	210	65,450	321	98,475
For 2.5 foot wood	225	71,760	139	46,436	95	31,945
For 4 foot wood	285	337,580	222	249,373	199	223,635

VOLCANIC DUST (PUMICITE) - No volcanic dust was mined in Canada in 1933 although 118 tons valued at \$2,360 were reported as being shipped in Saskatchewan, the material coming from the deposits located near Swift Current.

Volcanic dust beds up to 30 feet thick and situated near Waldeck, a few miles east of Swift Current, Saskatchewan, have, for the past few years, been worked by the Van Kel Cleansers Ltd.; the product 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. Some producers of lump pumice, mainly in California, are successfully utilizing their fines, particularly in cement and acoustic plasters. The University of Saskatchewan has been experimenting with volcanic dust as a ceramic glaze and results so far have been very successful.

Powdered pumice stone in barrels was quoted September, 1934, at 2½ to 4½ cents per pound f.o.b. New York or Chicago; lump, 5 to 7½ cents.

Table 1 - PRINCIPAL STATISTICS OF THE NATURAL ABRASIVES INDUSTRY IN CANADA, 1933.

	1	9	3	3
Number of firms				9
Capital employed	\$		58,556	
Number of employees - On salary			1	
On wages			18	
Total			19	
Salaries and wages - Salaries	\$		1,500	
Wages	\$		6,296	
Total	\$		7,796	
Cost of fuel and electricity	\$		1,034	
Selling value of products	\$		60,927	

Table 2 - WAGE-EARNERS, BY MONTHS, IN THE NATURAL ABRASIVES INDUSTRY, 1933.

Month	1933	Month	1933
January	4	July	26
February	4	August	21
March	6	September	34
April	6	October	34
May	15	November	39
June	27	December	3

Table 3 - PRODUCTION (SALES) OF NATURAL ABRASIVES IN CANADA, 1932 and 1933.

Province	DIATOMITE		GRINDSTONES, PULP-STONES AND SCYTHESTONES		VOLCANIC DUST	
	Tons	\$	Tons	\$	Tons	\$
1 9 3 2						
Nova Scotia	1,438	28,760	12	433	...	...
New Brunswick ...	...	...	256	11,802	...	...
Ontario	11	309	...	...	...	...
Saskatchewan .....	...	...	...	...	180	3,600
British Columbia.	47	440	60	3,500	...	...
TOTAL	1,496	29,509	328	15,735	180	3,600
1 9 3 3						
Nova Scotia	1,747	34,940	22	868	...	...
New Brunswick ...	...	...	277	12,051	...	...
Ontario	28	1,298	...	...	...	...
Saskatchewan .....	...	...	...	...	118	2,360
British Columbia.	14	410	200	9,000	...	...
TOTAL	1,789	36,648	499	21,919	118	2,360

LIST OF CANADIAN FIRMS IN THE NATURAL ABRASIVES INDUSTRY, 1933.

<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.	60 E. 42nd Street, New York City. U.S.A.	Little River East New Annan
<u>ONTARIO -</u>		
Diatomite Products Ltd.	Room 215, 159 Bay St., Toronto	Martin Siding, Muskoka.
Dominion Diatomite Ltd.	642 King St. W., Toronto	Novar
<u>BRITISH COLUMBIA -</u>		
B. C. Refractories Ltd.	660 Taylor St., Vancouver	Quesnel
<u>GARNETS</u>		
<u>QUEBEC -</u>		
Labelle Nickel & Garnet Co. Ltd.	354 St.Catherine St.E., Montreal	Labelle county
<u>GRINDSTONES, PULPSTONES AND SCYTHESTONES</u>		
<u>NOVA SCOTIA -</u>		
The Read Stone Co.	Sackville, N.B.	Quarry Island
<u>NEW BRUNSWICK -</u>		
The Read Stone Co. Smith, E. A.	Sackville Shediac	Stonehaven Shediac
<u>BRITISH COLUMBIA -</u>		
McDonald, J.A., and C.H., & Co.	1271 Main St., Vancouver	Newcastle Island
<u>VOLCANIC DUST</u>		
<u>SASKATCHEWAN -</u>		
Van Kel Cleansers Ltd.	c-o Canada Permanent Trust Co., Regina	Waldeck

2. ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS

In 1933 the value of output by firms which made artificial abrasives and abrasive products was \$3,550,456 compared with \$1,489,555 in 1932 and \$4,857,914 in 1931. The same 14 plants were in operation as in 1932 but the number of employees increased to 572 from 386 and disbursements for salaries and wages to \$705,729 from \$519,013. The cost of materials for manufacturing was \$1,338,879 in 1933 compared with \$449,624 in the previous year and the amount paid for fuel and electricity was \$481,152 as against \$480,601 in 1932. Capital employed was reported to be slightly lower in 1933 at \$5,176,927 as against \$5,865,031 in the preceding year.

Artificial abrasives were made in 6 plants located near the power centres of Niagara Falls and Shawinigan Falls; fused alumina was made in 5 works and silicon carbide in 3 establishments. Output totalled 28,854 tons at \$2,491,383 in 1933 compared with 9,822 tons at \$697,033 in 1932. Corresponding figures for earlier years were: 1931 - 46,535 tons at \$4,068,019; 1930 - 65,672 tons at \$5,488,384; 1929 - 75,449 tons at \$7,551,822. Practically all of the crude abrasives were shipped to parent plants in the United States for crushing, cleaning and grading.

Abrasive wheels were manufactured in 7 factories, all in Ontario. Output of wheels was valued at \$336,647 in 1933 compared with \$293,523 in 1932 and \$347,345 in 1931.

Abrasive cloth and paper were made in two factories in 1933.

Table 4 - PRINCIPAL STATISTICS OF THE ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS INDUSTRY IN CANADA, 1932 and 1933.

	1932	1933
Number of firms	14	14
Capital employed	\$ 5,865,031	\$ 5,176,927
Number of employees - On salary	136	145
On wages	250	427
Total	386	572
Salaries and wages - Salaries	\$ 261,190	\$ 266,755
Wages	\$ 257,823	\$ 438,974
Total	\$ 519,013	\$ 705,729
Cost of fuel and electricity	\$ 480,601	\$ 481,152
Cost of materials at works	\$ 449,624	\$ 1,338,879
Selling value of products at works	\$ 1,489,555	\$ 3,550,456

Table 5 - CAPITAL EMPLOYED, 1932 and 1933.

	1932	1933
	\$	\$
Present value of lands, buildings, machinery and equipment ..	3,106,639	2,862,091
Inventory value of materials on hand, stocks in process, fuel and other supplies	783,536	641,796
Inventory value of finished products on hand	1,349,081	1,206,837
Operating capital (cash, bills and accounts receivable, etc.) ..	625,775	466,153
TOTAL	5,865,031	5,176,927

Table 6 WAGE-EARNERS, BY MONTHS, 1932 and 1933.

Months	1	9	3	2	1	9	3	3
	Male	Female		TOTAL	Male	Female		TOTAL
January	327	1		328	269	...		269
February	291	1		292	282	...		282
March	257	1		258	270	...		270
April	247	1		248	281	...		281
May	183	1		184	379	...		379
June	175	1		176	424	...		424
July	210	1		211	509	...		509
August	216	1		217	504	...		504
September	225	1		226	530	...		530
October	277	1		278	545	...		545
November	298	1		299	552	...		552
December	273	1		274	568	...		568
AVERAGE	249	1		250	427	...		427

Table 7 - NUMBER OF WAGE-EARNERS IN MONTH OF HIGHEST EMPLOYMENT, CLASSED ACCORDING TO REGULAR HOURS WORKED PER WEEK, 1932 and 1933. (Overtime not included)

Regular hours per week	Number of wage-earners		Regular hours per week	Number of wage-earners	
	1932	1933		1932	1933
40 hours or less	93	94	51 - 53 hours	3	19
41 - 43 hours	35	21	54 hours	81	7
44 hours	19	24	55 hours .....	...	13
45 - 47 hours	18	44	56 - 59 hours	66	96
48 hours	4	16	60 hours	1	2
49 - 50 hours	94	237	Over 60 hours	24	20

Table 8 - FUEL AND ELECTRICITY USED, 1932 and 1933.

		1	9	3	2	1	9	3	3
Kinds	Unit of measure	Quantity		Cost at works		Quantity		Cost at works	
					\$				\$
Bituminous coal - Canadian	short ton		776		3,867		29		245
Imported	short ton		1,908		11,323		2,986		16,567
Anthracite coal (for fuel only)	short ton		280		2,739		165		1,771
Coke (for fuel only)	short ton		8		26		15		66
Fuel oil	Imp. gal.		20		3		1,008		101
Gas - Manufactured	M cu.ft.		442		366		613		458
Natural	M cu.ft.		429		330		487		383
Other fuel	xxx		...		31		...		56
Electricity purchased	K.W.H.		186,812		496		176,776		840
TOTAL	xxx		...		480,601		....		481,152

Table 9 - POWER EQUIPMENT, 1932 and 1933.

	1	9	3	2	1	9	3	3
	Number of units				Number of units			
	Total rated horse power				Total rated horse power			
Primary equipment .....	...			...	...			...
Electric motors run by purchased power	579			6,183	613			6,277
TOTAL	579			6,183	613			6,277
Boilers		8		708		8		708

Table 10 - MATERIALS USED IN MANUFACTURING, 1932 and 1933.

Materials	Unit of measure	1 9 3 2		1 9 3 3	
		Quantity		Quantity	
		Cost at works		Cost at works	
			\$		\$
Anthracite coal (not for fuel)	ton	1,179	6,185	2,476	13,251
Bauxite and aluminium oxide	ton	8,075	159,164	24,041	631,122
Coke (not for fuel) - For fused alumina	ton	679	3,322	2,087	10,339
For silicon carbide ..	ton	3,518	41,589	7,060	92,817
Electrodes	ton	164	20,798	536	71,371
Feldspar	ton	6	173	6	115
Iron - For artificial abrasives	ton	1,169	6,945	4,449	32,559
For ferrosilicon	ton	73	440	...	...
Salt	ton	32	297	95	874
Sawdust	ton	1,338	3,434	2,888	9,270
Silica sand	ton	5,207	27,588	13,577	68,186
Artificial abrasive grains	ton	385	56,157	688	113,535
Natural abrasive grains	ton	138	19,329	137	17,269
Bonding and bushing materials	xx	...	15,330	...	47,888
Cotton cloth	sq. yd.	276,744	30,067	280,744	31,259
Kraft paper	ton	24	2,885	75	14,231
Containers, boxes, packages, etc.	xx	...	4,223	...	7,445
All other materials	xx	...	51,698	...	177,348
TOTAL	xx	...	449,624	...	1,338,879

Table 11 - PRODUCTS MADE, 1932 and 1933.

Products	Unit of measure	1 9 3 2		1 9 3 3	
		Quantity		Quantity	
		Selling value at works		Selling value at works	
			\$		\$
Crude silicon carbide	ton	3,164	269,405	7,887	765,192
Fused alumina	ton	6,658	427,628	20,967	1,726,191
Abrasive wheels	xx	...	293,528	...	336,647
Sharpening stones and files ...	xx	...	36,902	...	43,386
Other products (x)	xx	...	462,092	...	679,540
TOTAL	xx	...	1,489,555	...	3,550,456

(x) Includes ferrosilicon, abrasive cloth, abrasive paper, refractories, tiles, artificial pulpstones, graphite, boron carbide and magnesia.

Table 12 - PRODUCTION OF ARTIFICIAL ABRASIVES IN CANADA, 1923 - 1933.

Years	SILICON CARBIDE		FUSED ALUMINA		T O T A L	
	Selling value		Selling value		Selling value	
	Quantity	at works	Quantity	at works	Quantity	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	1,732,942	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	4,974,739	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

Table 13 - PRODUCTION OF ARTIFICIAL ABRASIVE WHEELS(x) IN CANADA, 1923 - 1933.

Years	Selling value	Years	Selling value
	at works		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		

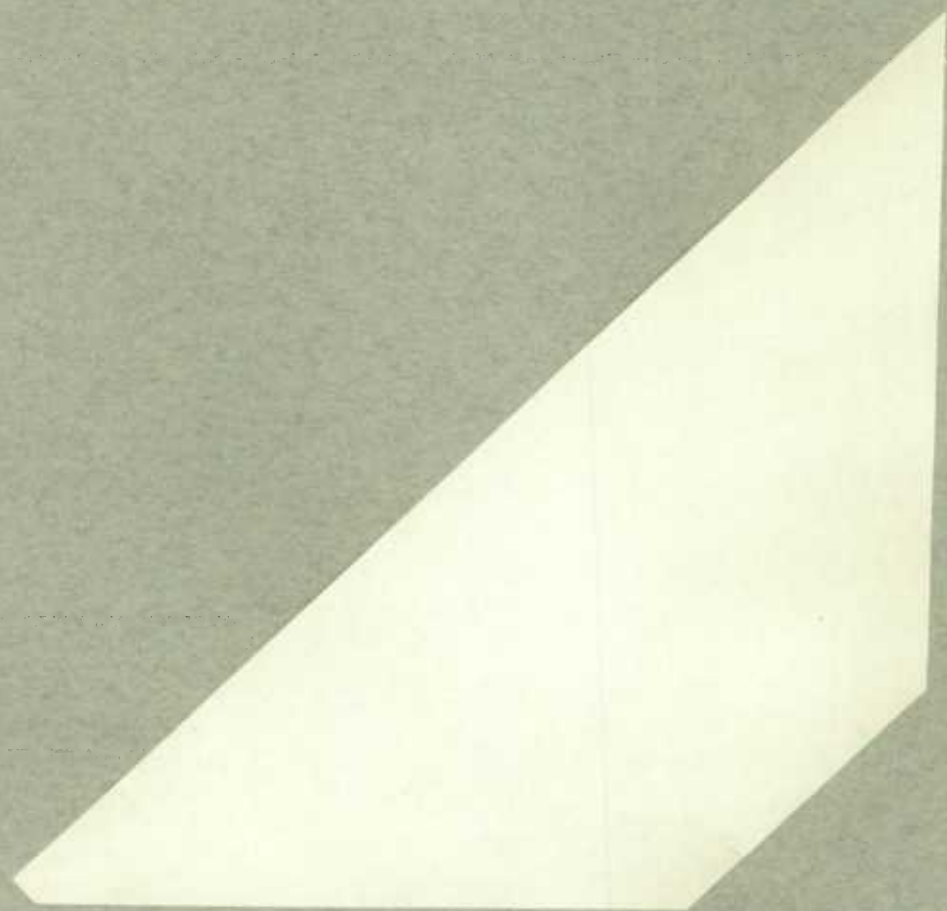
(x) Sharpening stones and artificial pulpstones not included.

DIRECTORY OF FIRMS IN THE ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS INDUSTRY, 1933.

<u>Names</u>	<u>Addresses</u>	<u>Products</u>
(a) <u>ARTIFICIAL ABRASIVES</u>		
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; ferrosilicon; refractory cement.
Exolon Company, The	H.O. - Blasdell, N.Y., U.S.A. Plant - Thorold, Ont.	Crude silicon carbide fused alumina; re- fractories; ferro- silicon; graphite; al- uminous refractories.
Lionite Abrasives Ltd.	H.O.- P.O. Box 3, Niagara Falls, Ont. Plant-Stanley St., Niagara Falls, Ont.	Fused alumina; ferro- silicon.
Norton Company	H.O. - Worcester, Mass., U.S.A. Plant - Chippawa, Ont.	Fused alumina; crude silicon carbide; ferrosilicon; boron carbide; magnesia.
(b) <u>ABRASIVE PRODUCTS</u>		
Brantford Grinding Wheel Co. Limited	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 Durex Abrasives Limited	154 Pearl St., Toronto, Ont.	Abrasive cloth; abrasive paper.
Canadian Hart Grinding Wheel Company	491 Dundas St., Galt, Ont.	Abrasive wheels.
Dominion Abrasive Wheel Co. Limited	49 Main St., Mimico, Ont.	Abrasive wheels; sharpening stones and sticks.
Lion Grinding Wheels Limited	192 Pearl St., Brockville, Ont.	Abrasive wheels; sharpening files and stones.
Norton Company of Canada,	3 Beach Road, Hamilton, Ont.	Abrasive wheels; artificial pulpstones; tiles.
Ontario Abrasive Wheels Limited	Prescott, Ont.	Abrasive wheels; mower files.

Table 14 - IMPORTS INTO CANADA AND EXPORTS OF ABRASIVES IN 1932 and 1933.

	1	9	3	2		1	9	3	3	
	Quantity				Value	Quantity				Value
					\$					\$
IMPORTS -										
Artificial abrasives in bulk, crushed or ground, when imported for use in the manufacture of abrasive wheels and polishing composition .....	...				154,419	...			194,618
Diamond dust or bort, and black diamonds for borers .....	...				129,703	...			354,999
Emery in bulk, crushed or ground .....	...				31,252	...			26,371
Grinding wheels, manufactured by the bonding together of either natural or artificial abrasives .....	...				132,373	...			47,965
Grinding stones or blocks manufactured by the bonding together of either natural or artificial abrasives .....	...				30,010	...			5,141
Grindstones, not mounted, and not less than 36 inches in diameter .....	...				83,896	...			76,615
Grindstones, n.o.p. ....	...				3,587	...			2,516
Pumice and pumice stone, lava and calcareous tufa, not further manufactured than ground .....	...				22,391	...			18,113
Sand paper, glass, flint and emery paper or emery cloth .....	...				91,485	...			81,559
Iron, sand or globules, or iron short, and dry putty, adapted for polishing glass or granite or for sawing stone .....	...				8,142	...			...
Manufactures of emery or of artificial abrasives, n.o.p. ....	...				38,778	...			24,717
Diatomaceous earth or infusorial earth (kieselguhr), ground or unground	2,009				2,944	44,120			71,166	
TOTAL .....	...				728,980	...			903,780
EXPORTS -										
Grindstones, manufactured .....	...				7,541	...			2,840
Abrasives -										
Natural, n.o.p., in ore or bulk, crushed or ground (x)	22,419				27,169	36,096			43,906	
Artificial, crude, including silicon carbide	246,177				953,422	628,958			2,121,681	
Artificial, made up into wheels, stones, etc.				24,221	...			35,933	
TOTAL				1,012,353	...			2,204,360	



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