CANADA

DEPARTMENT OF TRADE AND COMMERCE

DOMINION BUREAU OF STATISTICS

THE ABRASIVES INDUSTRY IN CANADA 1931

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

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DOMINION BUREAU OF STATISTICS - CANADA
Dominion Statistician: R. H. Coats, B.A., F.S.S. (Hon.), F.R.S.C.

Mining, Metallurgical and Chemical Branch
Chief: W. H. Losee, B.Sc.

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THE ABRASIVES INDUSTRY IN CANADA, 1931.

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.

DIATOMITE - Diatomite shipments in 1931 made from deposits at East New Annan and Little River, Digby county, Nova Scotia; Baysville, Ontario; and Quesnel, British Columbia, totalled 1,610 tons valued at $32,789 as compared with a total Canadian production of 554 tons worth $13,247 in 1930.

V. L. Eardley-Wilmot of the Department of Mines, Ottawa, describes diatomite as prepared for the market as fluffy, white powder, remarkably light in weight - it weighs only 10 to 15 pounds per cubic foot, or one-tenth as much as sand. Being extremely porous and inert, it is in large and increasing demand for insulation and filtration purposes, as a general filler and for many other uses. Diatomite is composed of silicious shells of aquatic plants and may be either of marine or fresh water origin; no marine deposits are known in Canada. The present day chief use of diatomite is not as an abrasive but mainly as a filtering and clarifying agent, as an insulating medium, a filler, as an admixture in concrete and an absorbent. Diatomite should contain for most purposes at least 80 per cent diatom silica and be free from grit and non-diatom silica, low in iron, lime and alumina and contain a large proportion of clean, unbroken diatoms.

The Ontario Bureau of Mines statesthat Diatomite Products Ltd. advanced construction work and machinery installation on a diatomite plant in Draper township, Ontario. This company plans to produce 20 tons of finished product daily. Dominion Diatomite Limited was incorporated in August 1931 to operate a dry diatomite deposit west of Novar, Perry township, Ontario. Production from this property is expected early in 1932. Imports into Canada of diatomaceous or infusorial earth (kieselguhr) ground or unground amounted to 17,000 cwt. valued at $25,788 in 1931 as compared with

6,582 tons worth $12,004 during 1930. 1931 closing prices in the United States for diatomite were: per ton, f.o.b. Nevada, crude, dried in bags, $10; minus mesh, $15; 300 mesh, $20; high temperature insulation, $30.

GARNETS - There was no production of garnets in Canada in 1931. The Labelle Nickel and Garnet Co. Ltd. conducted development and construction work at a garnet property at Labell, Canton de Joly, in the province of Quebec. About 90 per cent of the garnet mined throughout the world is used for the manufacture of abrasive papers and cloths which have a higher cutting efficiency than sandpaper. Powdered garnet is used for grinding purposes, particularly for grinding plate glass. 1931 closing prices in the United States for garnet were: per ton, f.o.b. New Hampshire mines, concentrate, $40; washed grades, $125. New York Adirondack garnet concentrates, $85.

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.

Imports of flint and ground flint stones in 1931 totalled 52,330 cwt. valued at $23,653. Of these 16,428 cwt. valued at $9,248 came from the United States and 34,220 cwt. worth $13,869 from Denmark.

GRINDSTONES, PULPSTONES AND SCYTHESTONES - The production of grindstones, pulpstones and scythestones from Canadian quarries during 1931 amounted to 621 tons valued at $38,103 as compared with 830 tons worth $62,021 in 1930. Grindstones were produced at Stonehaven, New Brunswick; scythestones at Shediac and Stonehaven, New Brunswick, and pulpstones in British Columbia and New Brunswick. The United States Bureau of Mines statesthat the tonnage of grindstones produced has gradually declined, undoubtedly because of the substitution of manufactured abrasive wheels for natural stones. Segmental pulpstones, which are constructed of artificial abrasives and attached to a core of concrete or metal are finding increasing use as substitutes for natural pulpstones. The manufacture of artificial grindstones from crushed sandstone, sand, and cement, shaped in moulds of desired size, is also being considered.

Imports into Canada in 1931 of grinding wheels manufactured by the bonding together of either natural or artificial abrasives amounted in value to $125,673; imports of grinding stones or blocks, manufactured by bonding together of either natural or artificial abrasives were appraised at $28,969; grindstones, n.o.p., $7,228. Imports of grindstones, not mounted and not less than 36 inches in diameter totalled $111,770 in value as against a valuation of $229,436 in 1930. Exports of manufactured grindstones totalled $10,776 in value during 1931 as against $11,674 during 1930.

VOLCANIC DUST (Pumicite) - Volcanic dust is used in manufacturing, cleansing and scouring compounds, abrasive hand soaps, and, to a limited extent, metal polishes. It is used in construction as an admixture in concrete and to a less extent as an insulating material for packing steam and water pipes, lagging boilers; lining cold storage rooms, in filter cells, and as a filler in paints and sweeping compounds. Volcanic ash is mined from an ash bed occurring in the bed of Swift Current creek near Waldeck, Saskatchewan. Volcanic ash rock occurring at Williams Lake in British Columbia was mined during 1930. The total Canadian production of volcanic dust for 1931 came from the province of Saskatchewan and amounted to 128 tons valued at $2,560. The total sales of pumice and pumicite in the United States during 1930 totalled 56,843 tons valued at $336,099. Imports of pumice and pumice stone, lava and calcareous tufa not further manufactured than ground, in 1931 were valued at $34,542. Imports of soap, n.o.p., including pumice, silver and mineral soaps, sapolio and like articles amounted to $54,260 as against $88,289 in 1930.

Table 1 - PRODUCTION OF NATURAL ABRASIVES IN CANADA, 1931.

Province	Diatomite		Grindstones, pulpstones and scythestones		Volcanic dust	
	Tons	$	Tons	$	Tons	$
Nova Scotia	1,484	29,679	...	...	...	...
New Brunswick ..	...	...	299	12,308	...	...
Ontario	60	840	...	...	...	...
Saskatchewan ...	...	...	...	...	128	2,560
British Columbia	66	2,270	322	25,795	...	...
CANADA	1,610	32,789	621	38,103	128	2,560

Table 2 - PRINCIPAL STATISTICS OF THE NATURAL ABRASIVES INDUSTRY IN CANADA, 1930 and 1931.

	1930	1931
Number of firms	10	8
Capital employed .....$	345,302	1,310,108
Number of employees: - On salary	11	9
On wages	34	22
Total	45	31
Salaries and wages: - Salaries .....$	18,090	11,856
Wages .....$	24,777	13,981
Total .....$	42,867	25,837
Cost of fuel and electricity .....$	4,305	3,906
Selling value of products .....$	80,108	73,452

2. ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS.

Manufactures of artificial abrasives and abrasive products in Canada during 1931 were valued at $4,857,914, a decline of 25 per cent from the total of $6,450,351 reported for the previous year. In 1929 the corresponding selling value amounted to $8,961,951. The principal products in this industry were: fused alumina, 35,781 tons at $3,007,307; crude silicon carbide, 10,754 tons at $1,060,712; and abrasive wheels worth $347,345. Other products of lesser value included refractories, ferrosilicon, abrasive cloths and papers, sharpening stones and files, artificial pulpstones, tiles and magnesia.

For 1931 reports were received from 14 plants of which 13 were located in Ontario and 1 in Quebec. Capital employed by these firms amounted to $6,070,652 of which over one-half represented the value of land, buildings, machinery, tools and other equipment. An average of 691 people were given work the year round and were paid $982,820 in salaries and wages. Purchased materials for manufacturing, exclusive of fuel and electricity, cost $1,709,983 and the value added to these materials by manufacturing processes was $3,147,931.

Note:- Prices given for the different NATURAL ABRASIVES were taken from the "Engineering and Mining Journal" and "Metal and Mineral Markets."

Table 3 - PRINCIPAL STATISTICS OF THE ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS INDUSTRY IN CANADA, 1930 and 1931.

	1930	1931
Number of firms	13	14
Capital employed $	6,251,425	6,070,652
Number of employees:- On salary	106	138
On wages	693	553
Total	799	691
Salaries and wages:- Salaries $	244,054	315,654
Wages $	912,587	667,166
Total $	1,156,641	982,820
Cost of fuel and electricity $	815,901	640,815
Cost of materials used $	2,313,310	1,709,983
Selling value of products $	6,450,351	4,857,914

Table 4 - CAPITAL EMPLOYED, 1930 and 1931.

	1930	1931
Value of lands, buildings, machinery and equipment	3,331,763	3,141,070
Inventory value of materials on hand, stocks in process, fuel and other supplies	2,114,862	845,768
Inventory value of finished products on hand		1,458,093
Operating capital (cash, bills and accounts receiveable, etc)	804,800	625,721
TOTAL	6,251,425	6,070,652

Table 5 - WAGE-EARNERS, BY MONTHS, 1930 and 1931.

Months	1930 Male	1930 Female	1930 TOTAL	1931 Male	1931 Female	1931 TOTAL
January	730	16	746	624	7	631
February	706	16	722	595	7	602
March	697	16	713	598	6	604
April	689	17	706	602	7	609
May	653	18	671	571	7	578
June	680	19	699	542	7	549
July	670	19	689	543	6	549
August	684	19	703	550	7	557
September	685	18	703	546	7	553
October	625	18	643	472	7	479
November	599	17	616	470	5	475
December	595	17	612	456	5	461
AVERAGE	676	17	693	546	7	553

Table 6 - NUMBER OF WAGE-EARNERS IN MONTH OF HIGHEST EMPLOYMENT, CLASSED ACCORDING TO REGULAR HOURS WORKED PER WEEK, 1931 (Overtime not included)

Regular hours per week	Number of wage-earners	Regular hours per week	Number of wage-earners
40 hours or less	165	51 - 53 hours	74
41 - 43 hours	51	54 hours	55
44 hours	13	55 hours	..
45 - 47 hours	22	56 - 59 hours	84
48 hours	3	60 hours	4
49 - 50 hours	220	Over 60 hours	20

Table 7 - FUEL AND ELECTRICITY USED, 1930 and 1931.

	Unit of measure	1930 Quantity	1930 Cost at works	1931 Quantity	1931 Cost at works
			$		$
Bituminous coal - Canadian	short ton	85	576	25	164
Imported	short ton	3,461	19,320	2,991	16,741
Anthracite coal (for fuel only)	short ton	455	4,841	435	4,076
Coke (for fuel only)	short ton	156	1,566	54	440
Kerosene	Imp. gal.	25	6	20	4
Fuel oil	Imp. gal.	...	...	650	66
Gas - Manufactured	M cu.ft.	324	300	325	276
Natural	M cu.ft.	462	352	372	304
Other fuel	-	...	...	...	300
Electricity purchased	K.W.H.	307,138,760	788,940	248,958,711	618,444
TOTAL	-	...	815,901	...	640,815

Table 8 - POWER EMPLOYED, 1930 and 1931.

	1930 Number of units	1930 Total horse power	1931 Number of units	1931 Total horse power
Primary power	...	...	...	...
Electric motors run by purchased power	414	6,150	470	6,123
Boilers	6	600	7	690

Table 9 - MATERIALS USED, 1930 and 1931.

Materials	Unit of measure	1930 Quantity	1930 Cost at works	1931 Quantity	1931 Cost at works
			$		$
Aluminum oxide	ton	2,683	86,726	4,596	267,398
Anthracite coal (not for fuel)	ton	7,400	42,121	2,093	13,640
Bauxite	ton	46,177	930,139	34,081	654,484
Coke (not for fuel) - For fused alumina	ton	3,652	20,728	2,209	10,950
For silicon carbide	ton	21,694	290,057	11,031	136,122
Electrodes	ton	884	124,478	609	83,834
Feldspar	ton	19	370	8	190
Iron - For artificial abrasives	ton	6,641	74,049	3,733	28,910
For ferrosilicon	ton	246	2,854	...	...
Salt	ton	250	1,915	134	1,159
Sawdust	ton	8,626	33,028	4,266	12,616
Silica sand	ton	45,595	223,499	19,358	98,371
Artificial abrasive grains	ton	2,959	126,144	1,780	82,175
Natural abrasive grains	ton	102	8,482	260	22,144
Bonding and bushing materials	-	...	28,619	...	43,868
Cotton cloth	sq. yd.	90,777	13,091	243,978	22,663
Kraft paper	ton	23	2,887	196	28,122
Containers, boxes, packages, etc.	-	...	9,961	...	3,671
All other materials	-	...	294,162	...	199,666
TOTAL	-	...	2,313,310	...	1,709,983

Table 10 - PRODUCTS MADE, 1930 and 1931.

Products	Unit of measure	1930 Quantity	1930 Selling value at works	1931 Quantity	1931 Selling value at works
			$		$
Crude silicon carbide	ton	22,778	2,111,476	10,754	1,060,712
Fused alumina	ton	42,894	3,376,908	35,781	3,007,307
Abrasive wheels	-	...	546,276	...	347,345
Sharpening stones and files	-	...	...	...	20,779
Other products (x)	-	...	415,691	...	421,771
TOTAL	-	...	6,450,351	...	4,857,914

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

Table 11 - PRODUCTION OF ARTIFICIAL ABRASIVES IN CANADA, 1923 - 1931.

Years	Silicon carbide Quantity	Silicon carbide Selling value at works	Fused alumina Quantity	Fused alumina Selling value at works	TOTAL Quantity	TOTAL Selling value 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	4,974,789	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

Table 12 - PRODUCTION OF ARTIFICIAL ABRASIVE WHEELS(x) IN CANADA, 1923 - 1931.

Years	Selling value at works
	$
1923	566,426
1924	425,384
1925	426,341
1926	619,124
1927	634,007
1928	847,489
1929	819,884
1930	546,276
1931	347,345

(x) Sharpening stones and artificial pulpstones not included.

DIRECTORY OF FIRMS IN THE ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS INDUSTRY, 1931.

Name	Address	Products
	(a) Artificial Abrasives	
Abrasive Co. of Canada, Ltd.	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; abrasive wheels; ferrosilicon; sharpening stones and files; refractories.
Exolon Company	H. O. - Blasdell, N.Y., U.S.A. Plant - Thorold, Ont.	Crude silicon carbide; fused alumina; refractories; ferrosilicon.
Lionite Abrasives Ltd.	H.O. - College Ave., Niagara Falls, N.Y.,U.S.A. - Plant - Stamford,Ont.	Fused alumina; ferrosilicon
Norton Company	H.O. - Worcester, Mass., U.S.A. Plant - Chippawa, Ont.	Fused alumina; crude silicon carbide; ferrosilicon; magesia.
	(b) Abrasive Products	
Brantford Grinding Wheel Co.Ltd.	186 Pearl St., Brantford, Ont.	Abrasive wheels.
Canada Sand Papers Ltd.	H.O. - Box 260, Preston, Ont. Plant - Plattsville, Ont.	Abrasive cloth; abrasive paper.
Canadian Durex Abrasives Ltd.	H.O. - 154 Pearl St., Toronto, Ont. Plant - Brantford, Ont.	Abrasive cloth; abrasive paper.
Canadian Hart Wheels Co. Ltd.	491 Dundas St., Galt, Ont.	Abrasive wheels.
Dominion Abrasive Wheel Co.Ltd.	H.O. - 137 Wellington St. W., Toronto, Ont.- Plant - Mimico, Ont.	Abrasive wheels.
Lion Grinding Wheels Ltd.	192 Pearl St., Brockville, Ont.	Abrasive wheels; mower files and blocks.
Norton Company of Canada, Ltd.	3 Beach Road, Hamilton, Ont.	Abrasive wheels; artificial pulp-stones; tiles.
Ontario Abrasive Wheels Ltd.	Prescott, Ont.	Abrasive wheels.

3. IMPORTS AND EXPORTS OF ABRASIVES.

Imports of abrasives and abrasive products into Canada during 1931 were valued at $1,221,274, a decrease of 55 per cent from the 1930 total of $2,694,494. Diamond dust or bort and black diamonds accounted for 26.8 per cent of the total imports of abrasives; United States firms supplied 86 per cent of these diamonds. Importations of grindstones were valued at $118,998; these came mainly from the United States although minor shipments were received from the United Kingdom. Sand paper and other abrasive paper or cloth imported into Canada reached a value of $201,277, a decline of 41.3 per cent below the imports in 1930.

Exports of abrasives in 1931 declined 30 per cent to a total of $2,026,250. Artificial abrasives, crude, including carborundum, made up 97.8 per cent of the total exports.

Table 13 - IMPORTS INTO CANADA AND EXPORTS OF ABRASIVES IN 1931.

	Quantity	Value
		$
IMPORTS -		
Abrasives -		
Artificial abrasives in bulk, crushed or ground, when imported for use in the manufacture of abrasive wheels and polishing composition	...	184,280
Carborundum wheels or stones not further manufactured than moulded and burned	...	...
Diamond dust or bort, and black diamonds for borers	...	450,148
Emery in bulk, crushed or ground	...	26.280
Grinding wheels, manufactured by the bonding together of either natural or artificial abrasives	...	125,673
Grinding stones or blocks manufactured by the bonding together of either natural or artificial abrasives	...	28,969
Grindstones, not mounted, and not less than 36 inches in diameter	...	111,770
Grindstones, n.o.p.	...	7,228
Pumice and pumice stone, lava and calcareous tufa, not further manufactured than ground	...	34,542
Sand paper, glass, flint and emery paper or emery cloth	...	201,277
Iron, sand or globules, or iron short, and dry putty, adapted for polishing glass or granite or for sawing stone	...	25,319
Burrstones in blocks, rough or unmanufactured, not bound up or prepared for binding into millstones ..... No.	...	...
Diatomaceous earth or infusorial earth (kieselguhr), ground or unground ..... Cwt.	17,000	25,788
TOTAL	...	1,221,274
EXPORTS -		
Grindstones, manufactured	...	10,776
Stone for the manufacture of grindstones, rough ..... tons	...	...
Abrasives -		
Natural, n.o.p., in ore or bulk, crushed or ground(x) ... cwt.	14,372	14,185
Artificial, crude, including carborundum ..... cwt.	851,206	1,981,713
Artificial, made up into wheels, stones, etc.	...	19,576
TOTAL	...	2,026,250

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