CANADA

DEPARTMENT OF TRADE AND COMMERCE

DOMINION BUREAU OF STATISTICS

THE

ABRASIVES INDUSTRY

IN

CANADA

1932

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

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THE ABRASIVES INDUSTRY IN CANADA, 1932.

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.

There has been a considerable consumption of South African corundum in the United States during recent years. Exports from South Africa have amounted to between 3,000 and 4,000 tons annually. The lens and optical grinding trades consume about 30 per cent and the remainder is used in the manufacture of special fused alumina abrasive. The average price of imports of "crystal" corundum in 1931 was $58 per long ton, f.o.b. United States ports, but high grade natural material containing 97-98 per cent aluminium oxide was about $75.00. Imports into the United States of corundum ore in 1929 totalled 3,378 long tons valued at $200,739; 1930 - 2,794 long tons, $160,559, and 1931 - 639 tons at $37,039.

In February, 1933, two electrical furnaces were put into operation in the artificial corundum works at Tscheljabinsk, Russia; for 1933 it is intended to produce about 3,800 tons of artificial corundum for abrasive purposes.

DIATOMITE - Diatomaceous earth was shipped in 1932 from deposits in Nova Scotia, Ontario and British Columbia. International Diatomite Industries Ltd. operated at New Annan, Colchester county, and Little River, Digby county, Nova Scotia. Orders from the United States kept both plants working continuously during 1932. The plant of this company at Little River was remodelled in 1931 by making an addition to the length of the rotary kiln; machinery in this plant is electrically operated.

In Ontario, Diatomite Products Ltd., were reported active during 1932 at Martin's Siding, Muskoka; no shipments were reported from this property and the

diatomite output recorded for Ontario in 1932 came entirely from the Novar deposit of Dominion Diatomite Ltd.

The British Columbia production in 1932 was reported by B. C. Refractories Ltd. as coming from their property at Quesnel. This company employs air flotation in the preparation of diatomite for the Canadian market.

V. L. Eardley-Wilmot of the Department of Mines, Ottawa, describes diatomite (tripolite, kieselguhr, diatomaceous earth, etc.) as being composed of myriads of minute silicious skeletons of aquatic plants of marine or fresh water origin called diatoms. It has the appearance of chalk when dry, but is extremely light in weight, and when pure contains up to 96 per cent silica in the form of diatom skeletons. It has a great many uses, the most important of which are for filtration and for insulation against heat, cold and sound. As an abrasive it is used in paste and liquid metal polishes, in dental powders and for polishing nails, etc. The largest deposits so far found in Canada are in British Columbia where, in the vicinity of Quesnel, it occurs over many square miles in compact beds 40 feet thick.

Tripoli is a form of silica which closely resembles diatomite but is of entirely different origin. It is generally regarded as a chalcedonic variety of silica. It is soft, friable, porous, and double refracting. The once and double-ground types are made into general compositions for polishing brass, copper, nickel, bronze, etc., while the air-float variety lends itself particularly for liquid polishes. There is also a large trade in the manufacture of foundry parting and in concrete mixing.

Production of true diatomite in Canada during 1932 totalled 1,496 tons valued at $29,509 as compared with 1,610 tons worth $32,769 in 1931 and 554 tons at $13,247 in 1930.

Diatomite prices for September, 1933, United States, were: per ton, f.o.b. Nevada crude, dried, in bags, $7.50; 40 mesh, $20; 300 mesh, $22.50; high temperature, insulation, $30.

WORLD PRODUCTION OF DIATOMACEOUS EARTH, 1930 and 1931.

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

Producing Country	1930	1931
BRITISH EMPIRE		
Great Britain	3,150	...
Northern Ireland	3,604	3,401
Canada	495	1,450
Barbados	10	10
Australia	1,240	1,087
FOREIGN COUNTRIES		
Denmark (moler) (b)	38,000	34,000
France	7,300	8,200
Germany (exports)	6,519	4,908
Hungary (exports)	2,774	1,392
Italy	1,136	857
Norway (exports)	82	(a)
Portugal	12	(a)
Spain (estimated)	2,700	2,200
Sweden	570	(a)
Algeria	10,000	11,000

WORLD PRODUCTION OF DIATOMACEOUS EARTH, 1930 and 1931. continued.

(Long tons)

Producing Country	1930	1931
FOREIGN COUNTRIES - continued		
United States (estimated)	110,000	78,000
Chile	180	(a)
Japan	5,548	(a)
Korea	900	700
Netherlands East Indies	(a)	(a)

NOTE - 12,027 long tons of Diatomaceous Earth were recorded as produced in Russia during year ended September, 1928 - later figures are not available.

(a) Information not available.

(b) Estimated.

Data for 1932 not yet available.

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WORLD IMPORTS OF DIATOMACEOUS EARTH, 1930 and 1931.

(Less Re-Exports)

(Taken from the Imperial Institute's Publication "The Mineral Industry of the British Empire and Foreign Countries.") (Long tons)

Importing Country	1930	1931
BRITISH EMPIRE		
United Kingdom	8,760	17,060
Union of South Africa	80	54
Canada	294	759
FOREIGN COUNTRIES		
Denmark - Moler	718	646
Moler bricks	60	48
Estonia	21	44
Finland	402	323
France	5,059	5,122
Germany	1,619	7,750
Hungary	579	759
Italy - Crude	497	380
Calcined, etc.	107	62
Jugoslavia	372	333
Latvia	320	148
Norway	(b) 27	(a)
Poland	2,302	855
Portugal	107	86
Russia	922	86
Cuba (total imports)	(a)	(a)
Colombia	97	(a)
Peru	1,186	1,315

(a) Information not available.

(b) Total imports.

Data for 1932 not yet available.

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GARNETS - There was no commercial production of garnets in Canada during 1932. The Labelle Nickel & Garnet Co. Ltd., however, conducted development work on a garnet deposit in Labelle county, Quebec. This consisted of surface stripping and shaft sinking; some machinery was installed and 100 tons of rock mined. This was shipped to the United States for experimental purposes. The greater proportion of garnet sold

is used for abrasive-coated papers and cloths; considerable quantities are also employed in the plate glass surfacing industry. Several varieties of the mineral of which almandite, an iron aluminium silicate, is generally considered as being the best quality abrasive.

Garnet prices in the United States in September, 1933, were: per ton, f.o.b. New Hampshire mines; concentrate, $40; washed grades, $125. 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 - The production of grindstones, pulpstones and scythestones from Canadian quarries during 1932 amounted to 328 tons valued at $15,735 as compared with 621 tons worth $38,103 in 1931 and 830 tons at $62,021 in 1930. In Nova Scotia the Read Stone Co. Ltd. carried out work at Quarry Island in Merigomish Harbour. Blocks up to six feet in diameter and weighing one ton were shipped to their property at Stonehaven, New Brunswick. This company produced grindstones and scythestones at the Stonehaven plant from rock obtained at Quarry Island, Woodpoint, Miramichi, Clifton, etc. At Shediac, New Brunswick, crude block scythestones were produced by E. A. Smith. These were exported to the United States. In British Columbia the J. A. McDonald Company of Vancouver produced pulpstones; the quarry of this company located on Newcastle Island was closed down early in 1932. "Mineral Industry" remarks that the demand in the United States for grindstones is mainly confined to the large 6 and 7 foot diameter stones used for file, saw, granite-tool and machine-knife grinding. Inroads have been made in the last named trade by artificial wheels. There has been some increase in the use of the artificial pulp-stone made up of bonded silicon-carbide segments. These stones now have cement instead of iron centres. Recently, another large manufacturer of artificial abrasives has put a somewhat similar stone on the market with the segments made up of bonded fused alumina instead of silicon-carbide abrasive grain.

Consumption of pulpstones by the Canadian pulp and paper industry for 1930 and 1931 was as follows:-

	1930		1931	
	Number	Value	Number	Value
		$		$
For 2 foot wood	310	98,484	226	72,588
For 2 - 5 foot wood	218	78,288	225	71,760
For 4 foot wood	355	400,187	235	537,580

VOLCANIC DUST (PUMICITE) - The total production of volcanic ash in Canada during 1932 amounted to 180 tons valued at $3,600 as compared with an output of 128 tons valued at $2,560 in 1931. Canadian production of this material comes entirely from deposits located near Swift Current, Saskatchewan. The deposit consists of

loosely compacted finely divided material, the greater part of which is light buff in colour. Volcanic dust is used for similar purposes as ground pumice, for scouring, cleansing and insulating, etc. In the United States there is a growing demand for both the gravel or pea-sized granules as well as for the sand for sound-deadening purposes, such as acoustic plasters; among the newer uses there appears to be a fair demand as an ingredient in concrete; pumice powder was spread and rolled on several hundred miles of oiled roads in Kansas and it is claimed that a good surface was obtained at low cost.

Table 1 - PRINCIPAL STATISTICS OF THE NATURAL ABRASIVES INDUSTRY IN CANADA, 1931 and 1932.

		1931	1932
Number of firms		8	10
Capital employed	$	569,772	679,865
Number of employees -	On salary	9	9
	On wages	22	27
	Total	31	36
Salaries and wages -	Salaries $	11,856	11,671
	Wages $	13,981	14,800
	Total $	25,837	26,471
Cost of fuel and electricity	$	3,906	2,422
Selling value of products	$	73,452	48,844

Table 2 - PRODUCTION OF NATURAL ABRASIVES IN CANADA, 1932.

Provinces	DIATOMITE		GRINDSTONES, PULPSTONES AND SCYTHESTONES		VOLCANIC DUST	
	Tons	$	Tons	$	Tons	$
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

LIST OF CANADIAN FIRMS IN THE NATURAL ABRASIVES INDUSTRY, 1932.

Name of Firm	Head Office Address	Location of Plant
DIATOMITE		
NOVA SCOTIA		
International Diatomite Industries, Ltd.	Haverstraw, N.Y.	Little River, East New Annan.
ONTARIO		
Diatomite Products Ltd	9906 Central Bldg., 45 Richmond St W Toronto	Martin's Siding, Muskoka.
Dominion Diatomite Ltd	642 King St W Toronto	Novar
BRITISH COLUMBIA		
B. C. Refractories Ltd.	680 Taylor St., Vancouver	Quesnel
GARNETS		
QUEBEC		
Labelle Nickel & Garnet Co Ltd	354 St Catherine St E., Montreal	Labelle county

LIST OF FIRMS IN THE NATURAL ABRASIVES INDUSTRY, 1932. concluded.

Name of Firm	Head Office Address	Location of Plant
	GRINDSTONES	
NOVA SCOTIA -		
The Read Stone Co.	Sackville, N.B.	Quarry Island
NEW BRUNSWICK -		
The Read Stone Co.	Sackville	Stonehaven
Smith, E. A.	Shediac	Shediac
BRITISH COLUMBIA -		
McDonald & Co., J.A.	1271 Main St., Vancouver	Newcastle Island
	VOLCANIC DUST	
SASKATCHEWAN -		
Van Kel Cleansers Ltd.	Box 1180, Swift Current	Waldeck.

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2. ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS.

Production of artificial abrasives and abrasive products declined 69 per cent in 1932 when the output value was reported at $1,489,555 compared with $4,857,914 in 1931. The same 14 plants were in operation, 13 in Ontario and 1 in Quebec, but the number of employees dropped to 386 from 691 in 1931. Capital employed was only slightly lower at $5,865,031 of which $3,106,639 represented the value of lands, buildings, machinery and equipment. Materials for manufacturing cost $449,624 in 1932 compared with $1,709,983 in 1931.

The cost of fuel and electricity was given at $480,601 in 1932 compared with $640,815 in 1931. Considering the severe decline in production the 1932 figure for fuel and power seems excessively high but this is because the furnace operators purchase power on contract and had to pay on this basis although they did not require all of the power under the reduced scale of operations.

Artificial abrasives were made by 5 companies in 6 different plants; fused alumina was produced in 5 works and crude silicon carbide in 3 works. The output of fused alumina was 6,658 tons in 1932 compared with 35,781 in 1931 and the tonnage of silicon carbide was 3,164 tons against 10,754 tons in the preceding year. Grinding wheels were made in 7 works and the output was valued at $293,528 compared with $347,345 in 1931. Abrasive cloth and paper were manufactured in 2 plants, the same as in 1931.

Table 3 - PRINCIPAL STATISTICS OF THE ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS INDUSTRY IN CANADA, 1931 and 1932.

		1931	1932
Number of firms		14	14
Capital employed	$	6,070,652	5,865,031
Number of employees -	On salary	138	136
	On wages	553	250
	Total	691	386
Salaries and wages -	Salaries $	315,654	261,190
	Wages $	667,166	257,823
	Total $	982,820	519,013
Cost of fuel and electricity	$	640,815	480,601
Cost of materials used	$	1,709,983	449,624
Selling value of products	$	4,857,914	1,489,555

Table 4 - CAPITAL EMPLOYED, 1931 and 1932.

	1931	1932
	$	$
Value of lands, buildings, machinery and equipment	3,141,070	3,106,639
Inventory value of materials on hand, stocks in process, fuel and other supplies	845,768	783,536
Inventory value of finished products on hand	1,458,093	1,349,081
Operating capital (cash, bills and accounts receivable, etc.)	625,721	625,775
TOTAL	6,070,652	5,865,031

Table 5 - WAGE-EARNERS, BY MONTHS, 1931 and 1932.

Months	1931 Male	1931 Female	1931 TOTAL	1932 Male	1932 Female	1932 TOTAL
January	624	7	631	327	1	328
February	595	7	602	291	1	292
March	598	6	604	257	1	258
April	602	7	609	247	1	248
May	571	7	578	183	1	184
June	542	7	549	175	1	176
July	543	6	549	210	1	211
August	550	7	557	216	1	217
September	546	7	553	225	1	226
October	472	7	479	277	1	278
November	470	5	475	298	1	299
December	456	5	461	273	1	274
AVERAGE	546	7	553	249	1	250

Table 6 - NUMBER OF WAGE-EARNERS IN MONTH OF HIGHEST EMPLOYMENT, CLASSED ACCORDING TO REGULAR HOURS WORKED PER WEEK, 1932. (Overtime not included)

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

Table 7 - FUEL AND ELECTRICITY USED, 1931 and 1932.

Kinds	Unit of measure	1931 Quantity	1931 Cost at works	1932 Quantity	1932 Cost at works
			$		$
Bituminous coal - Canadian	short ton	25	164	776	3,867
Imported	short ton	2,991	16,741	1,908	11,323
Anthracite coal (for fuel only)	short ton	435	4,076	280	2,739
Coke (for fuel only)	short ton	54	440	8	26
Kerosene	Imp. gal.	20	4	...	...
Fuel oil	Imp. gal.	650	66	20	3
Gas - Manufactured	M cu.ft.	325	276	442	366
Natural	M cu.ft.	372	304	429	330
Other fiel	xx	...	300	...	31
Electricity purchased	K.W.H.	248,958,711	618,444	132,812,496	461,916
TOTAL	xxx	...	640,815	...	480,601

Table 8 - POWER EMPLOYED, 1931 and 1932.

	1931 Number of units	1931 Total rated horse power	1932 Number of units	1932 Total rated horse power
Primary power	...	...	...	...
Electric motors run by purchased power	470	6,123	579	6,183
Total Power Employed	470	6,123	579	6,183
Boilers	7	690	8	708

Table 9 - MATERIALS USED, 1931 and 1932.

Materials	Unit of measure	1931 Quantity	1931 Cost at works	1932 Quantity	1932 Cost at works
			$		$
Anthracite coal (not for fuel)	ton	2,093	13,640	1,179	6,185
Bauxite and aluminium oxide	ton	38,677	921,882	8,075	159,164
Coke (not for fuel) - For fused alumina	ton	2,209	10,950	679	3,322
For silicon carbide	ton	11,031	136,122	3,518	41,589
Electrodes	ton	609	83,834	164	20,798
Feldspar	ton	8	190	6	175
Iron - For artificial abrasives	ton	3,733	28,910	1,169	6,945
For ferrosilicon	ton	...	...	73	440
Salt	ton	154	1,159	32	297
Sawdust	ton	4,266	12,616	1,338	3,434
Silica sand	ton	19,358	98,371	5,207	27,588
Artificial abrasive grains	ton	1,780	82,175	385	56,157
Natural abrasive grains	ton	260	22,144	138	19,329
Bonding and bushing materials	xx	...	43,868	...	15,330
Cotton cloth	sq. yd.	243,978	22,663	276,744	30,067
Kraft paper	ton	196	28,122	24	2,885
Containers, boxes, packages, etc.	xx	...	3,671	...	4,223
All other materials	xx	...	193,666	...	51,698
TOTAL	xx	...	1,709,983	...	449,624

Table 10 - PRODUCTS MADE, 1931 and 1932.

Products	Unit of measure	1931 Quantity	1931 Selling value at works	1932 Quantity	1932 Selling value at works
			$		$
Crude silicon carbide	ton	10,754	1,060,712	3,164	269,405
Fused alumina	ton	35,781	3,007,307	6,658	427,628
Abrasive wheels	xx	...	347,345	...	293,528
Sharpening stones and files	xx	...	20,779	...	36,902
Other products (x)	xx	...	421,771	...	462,092
TOTAL	xx	...	4,857,914	...	1,489,559

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

Table 11 - PRODUCTION OF ARTIFICIAL ABRASIVES IN CANADA, 1923 - 1932.

Years	Silicon carbide		Fused alumina		TOTAL	
	Quantity	Selling value at works	Quantity	Selling value at works	Quantity	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
1932	3,164	269,405	6,658	427,628	9,822	697,033

Table 12 - PRODUCTION OF ARTIFICIAL ABRASIVE WHEELS(x) IN CANADA, 1923 - 1932.

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
1932	293,528

(x) Sharpening stones and artificial pulpstones not included.

DIRECTORY OF FIRMS IN THE ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS INDUSTRY, 1932.

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.	Crude silicon carbide.
	Niagara Falls, Ont.	Fused alumina; ferrosilicon; 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; boron carbide.

DIRECTORY OF FIRMS IN THE ARTIFICIAL ABRASIVES AND ABRASIVE PRODUCTS INDUSTRY, 1932 concluded.

Name	Address	Products
	(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 Carborundum Co. Ltd.	Niagara Falls, Ont.	Abrasive wheels; sharpening stones and files.
Canadian Durex Abrasives Ltd.	154 Pearl St., Toronto, Ont.	Abrasive cloth; abrasive paper.
Canadian Hart Wheels Co. Ltd.	491 Dundas St., Galt, Ont.	Abrasive wheels.
Dominion Abrasive Wheel Co. Ltd.	49 Main St., 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 pulpstones; tiles.
Ontario Abrasive Wheels Ltd.	Prescott, Ont.	Abrasive wheels.

Table 13 - IMPORTS INTO CANADA AND EXPORTS OF ABRASIVES IN 1932.

		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
Diamond dust or bort, and black diamonds for borers		...	129,703
Emery in bulk, crushed or ground		...	31,258
Grinding wheels, manufactured by the bonding together of either natural or artificial abrasives		...	132,373
Grinding stones or blocks manufactured by the bonding together of either natural or artificial abrasives		...	30,010
Grindstones, not mounted, and not less than 36 inches in diameter		...	83,896
Grindstones, n.o.p.		...	3,587
Pumice and pumice stone, lava and calcareous tufa, not further manufactured than ground		...	22,391
Sand paper, glass, flint and emery paper or emery cloth		...	91,485
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
Diatomaceous earth or infusorial earth (kieselguhr), ground or unground	Cwt.	2,009	2,944
TOTAL		...	728,480
EXPORTS -			
Grindstones, manufactured		...	7,341
Abrasives -			
Natural, n.o.p., in ore or bulk, crushed or ground(x)	Cwt.	22,419	27,169
Artificial, crude, including silicon carbide	Cwt.	246,177	953,422
Artificial, made up into wheels, stones, etc.		...	24,221
TOTAL		...	1,012,353

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