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Annual Industry ReportManufactures of the Non-metallic Minerals GroupTHE ARTIFICIAL ABRASIVES INDUSTRY - 1947

The factory selling value of all products made during 1947 by the manufacturers in Canada of artificial abrasives and artificial abrasive products amounted to \$31,809,897. This value represented an increase of 25 per cent over the total of \$25,444,396 for 1946.

There were 16 firms engaged in manufacturing artificial abrasives and their products during the year, and of these, 14 were located in Ontario and 2 in Quebec.

The average number of employees in the industry was 2,675 and payments in salaries and wages totalled \$6,467,320. Expenditures for manufacturing materials amounted to \$10,736,224, and \$2,382,798 were paid out for fuel and electricity.

Artificial abrasives were made by 4 plants in Ontario and 2 in Quebec. The output of these 6 works was valued at \$23,922,210 and included 146,433 tons of crude fused alumina at \$15,253,482; 51,704 tons of crude silicon carbide at \$6,359,937 and other products and by-products, such as ferrosilicon, firesand, refractory brick, refractory cements, calcium boride and boron carbide. One of these concerns also made abrasive wheels, stones, files, etc.. An average of 1,953 people were employed and salaries and wages totalled \$4,790,857.

Ten other plants were occupied chiefly in making abrasive products, such as wheels, paper, pulpstones and sharpening stones; 7 made abrasive wheels and segments; 4 made sharpening stones and files, and 2 made abrasive cloth and paper. The value of all products made in these establishments was \$7,887,687. The number of employees was 722 and payments for salaries and wages amounted to \$1,676,463. The total value of Canada's output of abrasive wheels and segments was \$3,574,477.

Table 1 - PRINCIPAL STATISTICS FOR THE ARTIFICIAL ABRASIVES INDUSTRY IN CANADA, 1945-1947

	1945	1946	1947
Number of firms	15	15	16
Number of employees -			
Supervisory and office	418	438	415
Wage-earners	1,935	1,971	2,260
Total	2,353	2,409	2,675
Salaries and wages - Salaries \$	1,116,441	988,241	1,179,702
Wages \$	3,654,785	3,941,207	5,287,618
Total \$	4,771,226	4,929,448	6,467,320
Cost of fuel and electricity \$	2,189,405	2,106,329	2,382,798
Cost of materials at works \$	8,223,797	8,425,629	10,736,224
Selling value of products at works \$	25,492,686	25,444,396	31,809,897

Note: Profits or losses cannot be calculated from the above figures as data are not available for general expense items, such as interest, rent, depreciation, taxes, insurance, advertising, etc.

Table 2 - WAGE-EARNERS, BY MONTHS, 1946 and 1947 (Number on pay-roll on the last work day of each month)

Month	1946			1947		
	Male	Female	TOTAL	Male	Female	TOTAL
January	1,643	124	1,767	2,112	163	2,275
February	1,599	136	1,735	2,129	156	2,285
March	1,685	128	1,813	2,150	161	2,311
April	1,747	126	1,873	2,174	168	2,342
May	1,771	135	1,906	2,201	170	2,371
June	1,799	138	1,937	2,162	178	2,340
July	1,935	137	2,072	2,168	177	2,345
August	1,963	129	2,092	2,100	183	2,283
September	1,940	141	2,081	2,094	170	2,264
October	1,979	147	2,126	2,023	145	2,168
November	1,996	142	2,138	1,922	143	2,065
December	1,987	149	2,136	1,921	149	2,070
AVERAGE	1,836	135	1,971	2,096	164	2,260

Table 3 - FUEL AND ELECTRICITY USED, 1946 and 1947

Kind	Unit of measure	1946		1947	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Bituminous coal--Canadian	ton	2,755	24,313	2,961	26,558
Imported	ton	7,000	64,147	7,653	74,846
Anthracite coal (for fuel only)	ton	283	3,386	277	3,719
Coke (for fuel only)	ton	96	1,062	152	2,926
Gasoline	Imp.gal.	14,175	4,169	16,526	5,248
Kerosene	Imp.gal.	1,786	338	3,750	820
Fuel oil	Imp.gal.	418,816	35,742	521,812	53,171
Gas - Manufactured	M cu.ft.	1,810	1,786	3,092	2,779
Natural	M cu.ft.	4,346	4,235	4,154	3,616
Other fuel .....	...	...	512	...	171
Electricity purchased ...	K.W.H.	740,666,080	1,966,609	831,993,046	2,208,944
TOTAL .....	...	...	2,106,329	...	2,382,798

Table 4 - POWER EQUIPMENT, 1946 and 1947

	1 9 4 6		1 9 4 7	
	Number of units	Total rated horse power	Number of units	Total rated horse power
Diesel engines: Ordinarily in use	1	41	2	85
Gasoline engines -				
Ordinarily in use	6	249	9	2,495
In reserve or idle	2	130	3	155
Electric motors run by purchased power - Ordinarily in use	1,789	11,930	1,933	13,255
In reserve or idle	211	2,567	301	2,689
Stationary boilers -				
Ordinarily in use	6	1,000	9	1,060
In reserve or idle	1	60	2	75
Motor-generator sets -				
Ordinarily in use	19	545	18	515
In reserve or idle	4	102	3	93

Table 5 - MATERIALS USED IN MANUFACTURING, 1946 and 1947

Material	Unit of measure	1 9 4 6		1 9 4 7	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Bauxite and pure alumina	ton	134,708	3,111,606	173,054	4,124,152
Coal (not for fuel) -					
For fused alumina	ton	793	5,377	43	293
For silicon carbide	ton	1,552	11,248	4	80
Coke (not for fuel) -					
For fused alumina:					
Petroleum coke	ton	594	8,983	722	12,506
Other coke	ton	5,956	38,044	10,207	67,443
For silicon carbide:					
Petroleum coke	ton	40,959	610,430	42,743	795,487
Other coke	ton	17,258	301,687	19,567	374,152
For other uses: Other coke	ton	...	...	10	200
Electrodes	ton	3,034	385,931	3,455	480,875
Feldspar	ton	15	318	23	530
Iron borings	ton	12,367	179,600	14,312	204,482
Salt	ton	332	4,517	555	4,722
Sawdust	ton	13,550	44,058	13,195	42,694
Silica sand	ton	83,636	504,873	90,527	556,181
Artificial abrasive grains -					
For re-treatment only:					
Fused alumina	ton	10,424	331,565	4,826	140,192
Silicon carbide	ton	73	13,945	138	10,775
For wheels, paper, etc.:					
Fused alumina	ton	2,051	490,068	3,103	660,163
Silicon carbide	ton	1,338	295,557	1,270	351,713
Natural abrasive grains -					
Garnet	lb.	752,069	70,793	810,072	73,343
Emery	lb.	209,074	11,960	160,219	9,296
Quartz or flint	lb.	547,866	7,342	378,907	4,740
Other	lb.	86,984	8,564	69,687	8,068

Table 5 - MATERIALS USED IN MANUFACTURING, 1946 and 1947 (Concluded)

Material	Unit of measure	1 9 4 6		1 9 4 7	
		Quantity	Cost at works \$	Quantity	Cost at works \$
Bonding and bushing materials:					
Clay bonds	lb.	709,022	31,186	757,904	32,826
Silicate (quantity in equivalent solid form)	lb.	211,236	8,978	205,787	9,311
Elastic mixture	lb.	13,821	4,460	5,183	2,674
Bakelite and synthetic resins	lb.	347,968	99,619	386,936	142,501
Lead for bushings	lb.	100,797	5,560	109,007	13,919
Glue, animal and hide	lb.	...	...	1,126,225	304,111
Cotton cloth .....	...	...	224,288	...	472,098
Kraft paper and other paper ...	...	...	115,962	...	268,516
Containers and packing material	...	...	117,620	...	179,165
All other materials .....	...	...	1,381,490	...	1,389,016
TOTAL .....	...	...	8,425,629	...	10,736,224

Table 6 - PRODUCTS MANUFACTURED, 1946 and 1947

Product	1 9 4 6		1 9 4 7	
	Short tons	Selling value at works \$	Short tons	Selling value at works \$
Crude silicon carbide	49,953	5,961,490	51,704	6,359,937
Crude fused alumina	119,223	12,310,247	146,433	15,253,482
Silicon carbide firesand, etc.	2,408	60,212	2,671	66,773
Abrasive wheels and segments .	...	2,922,089	...	3,574,477
Sharpening stones and files ..	...	245,731	...	233,747
Ferrosilicon	10,993	166,720	9,157	124,630
Other products (x) .....	...	3,777,907	...	6,196,851
TOTAL .....	...	25,444,396	...	31,809,897

(x) Includes abrasive cloth, abrasive paper, tiles, artificial pulpstones, artificial graphite, boron carbide, boron carbide shapes, calcium boride, fused magnesia, refractory cements, firebrick, etc., each of which was reported by only one or two companies.

Table 7 - PRODUCTION OF CRUDE ARTIFICIAL ABRASIVES IN CANADA, 1937-1947

Year	Crude Silicon Carbide		Crude Fused Alumina		T O T A L	
	Quantity	Selling value at works	Quantity	Selling value at works	Quantity	Selling value at works
	tons	\$	tons	\$	tons	\$
1937	25,644	2,808,016	86,604	8,435,371	112,248	11,243,387
1938	19,094	2,002,041	50,515	5,165,920	69,609	7,167,961
1939	17,225	1,865,604	51,118	4,565,569	68,343	6,431,173
1940	24,562	3,053,047	85,336	8,249,815	109,898	11,302,862
1941	32,258	3,661,868	130,881	13,665,811	163,139	17,327,679
1942	44,410	5,494,257	160,935	17,750,623	205,345	23,244,880
1943	51,281	6,846,087	190,727	20,543,657	242,008	27,389,744
1944	47,100	5,499,628	166,098	17,768,484	213,198	23,268,112
1945	45,419	5,361,279	133,192	13,573,311	178,611	18,934,590
1946	49,953	5,961,490	119,223	12,310,247	169,176	18,271,737
1947	51,704	6,359,937	146,433	15,253,482	198,137	21,613,419

Table 8 - PRODUCTION OF ARTIFICIAL ABRASIVE WHEELS AND SEGMENTS (x) IN CANADA,
1936-1947

Year	Selling value at works \$	Year	Selling value at works \$
1936	862,283	1942	5,075,258
1937	1,165,406	1943	5,114,962
1938	916,695	1944	3,321,873
1939	1,117,689	1945	3,131,289
1940	1,838,558	1946	2,922,089
1941	3,713,303	1947	3,574,477

(x) Does not include artificial pulpstones or sharpening stones.

Table 9 - IMPORTS INTO CANADA OF ABRASIVES AND ABRASIVE PRODUCTS, 1946 and 1947

		1 9 4 6	1 9 4 7
Artificial abrasive grains, crushed or ground, for use in Canadian manufactures	\$	1,582,112	1,598,451
Diamond dust or bort and black diamonds for borers	\$	4,002,457	2,997,101
Diatomaceous earth or infusorial earth (Kiesel- guhr) ground or unground	cwt. \$	341,262 469,968	301,472 431,125
Emery in bulk, crushed or ground	\$	114,029	123,661
Grinding wheels, manufactured by the bonding together of either natural or artificial abrasives	\$	366,116	502,949
Grinding stones or blocks, manufactured by the bonding together of either natural or arti- ficial abrasives	\$	106,647	77,566
Manufactures of emery or of artificial abrasives, n.o.p.	\$	102,296	103,246
Grindstones, not mounted, and not less than 36 inches in diameter	No. \$	675 65,814	667 65,150
Grindstones, n.o.p.	No. \$	2,304 6,500	905 5,120
Pumice and pumice stone, lava and calcareous tufa, not further manufactured than ground ...	\$	71,607	62,063
Sandpaper, glass, flint and emery paper or emery cloth	\$	111,321	101,518
TOTAL	\$	6,998,867	6,067,960



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Abrasives

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Table 10 - EXPORTS FROM CANADA AND RE-EXPORTS OF ABRASIVES AND ABRASIVE PRODUCTS,
1946 and 1947

		1946	1947
Abrasives, natural, n.o.p. in ore or bulk, crushed or ground, including infusorial earth, rotten stone, tripoli, etc.	cwt. \$	162 1,755	1,208 6,334
Abrasives, artificial, crude, including carborundum	cwt. \$	3,488,207 11,728,868	3,936,016 13,109,614
Abrasives, artificial, made up into wheels and stones	\$	87,992	297,225
Sandpaper, glass, flint and emery paper, and emery cloth	\$	332,193	1,187,190
Grindstones, manufactured	\$	35,526	24,884
TOTAL	\$	12,186,334	14,625,247

LIST OF FIRMS IN THE ARTIFICIAL ABRASIVES INDUSTRY - 1947

Name of Firm	Address
(a) Artificial Abrasives	
Simonds Canada Abrasive Company Limited	Arvida, Que.
Canadian Carborundum Company, Limited	P.O. Box 57, Niagara Falls, Ont. Plants at Shawinigan Falls, Que. and Niagara Falls, Ont.
The Exolon Company	H.O. Commercial Ave. and Erie R.R., Blasdell, New York, U.S.A. Plant at Thorold, Ont.
Lionite Abrasives Ltd.	Niagara Falls, Ont.
Norton Company	H.O. 1 New Bond St., Worcester, Mass., U.S.A. Plant at Chippawa, Ont.
(b) Abrasive Products	
Bay State Abrasive Products Co. (Canada) Ltd.	188 Pearl St., Brantford, Ont.
Canadian Durex Abrasives Limited	Brantford, Ont.
Canadian Carborundum Company, Limited	Niagara Falls, Ont.
Canadian Grinding Wheel Co.	245 Kenilworth Ave. S., Hamilton, Ont.
Canada Sand Papers Limited	H.O. King and Argyle Sts., Preston, Ont., Plant at Plattsville, Ont.
Dominion Abrasive Wheel Co. Limited	49 Main St., Mimico, Ont.
Lion Grinding Wheels Ltd.	192 Pearl St. E., Brockville, Ont.
Micromatic Hone Limited	55 George St., Brantford, Ont.
Norton Company of Canada Limited	3 Beach Road, Hamilton, Ont.
Ontario Abrasive Wheels Limited	41 George St., Prescott, Ont.
The Wright Abrasives Co.	2 Adam St., Hamilton, Ont.