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Annual Industry Report

Manufactures of the Non-metallic Minerals Group

THE ARTIFICIAL ABRASIVES INDUSTRY, 1945

The factory selling value of all products made during 1945 by the manufacturers in Canada of artificial abrasives and artificial abrasive products amounted to \$25,492,686. This value represented a decrease of 15 per cent from the total of \$30,065,113 for 1944.

There were 15 firms engaged in manufacturing artificial abrasives and their products during the year, and of these, 13 were located in Ontario and 2 in Quebec.

The average number of employees in the industry was 2,353 and payments in salaries and wages totalled \$4,771,226. Expenditures for manufacturing materials amounted to \$8,223,797 and \$2,189,405 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 \$20,910,735 and included 133,192 tons of crude fused alumina at \$13,573,311; 45,419 tons of crude silicon carbide at \$5,361,279, and other products and by-products, such as ferrosilicon, firesand, refractory brick, refractory cements, calcium boride, boron carbide and abrasive wheels. An average of 1,831 people were employed and salaries and wages totalled \$3,742,744.

Nine 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 \$4,581,951. The number of employees was 522 and payments for salaries and wages amounted to \$1,028,482.

Table 1 - PRINCIPAL STATISTICS FOR THE ARTIFICIAL ABRASIVES INDUSTRY IN CANADA,
1943-1945

	1943	1944	1945
Number of firms	15	15	15
Number of employees - On salaries.	486	418	418
On wages ...	2,850	2,355	1,935
Total ...	3,336	2,773	2,353
Salaries and wages - Salaries \$	1,083,113	1,131,044	1,116,441
Wages \$	5,370,656	4,379,986	3,654,785
Total ... \$	6,453,769	5,511,030	4,771,226
Cost of fuel and electricity \$	2,988,814	2,580,192	2,189,405
Cost of materials at works \$	11,581,923	9,926,243	8,223,797
Selling value of products at works \$	36,609,928	30,065,113	25,492,686

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, 1944 and 1945 (Number on pay-roll on the last
work day of each month)

Month	1944			1945		
	Male	Female	TOTAL	Male	Female	TOTAL
January	2,596	306	2,902	1,787	150	1,937
February	2,526	289	2,815	1,831	148	1,979
March	2,430	275	2,705	1,877	153	2,030
April	2,370	255	2,625	1,854	158	2,012
May	2,318	242	2,560	1,848	165	2,013
June	2,208	229	2,437	1,853	172	2,025
July	2,102	213	2,315	1,873	177	2,050
August	1,964	205	2,169	1,834	170	2,004
September	1,821	166	1,987	1,661	155	1,816
October	1,778	161	1,939	1,634	148	1,782
November	1,761	158	1,919	1,654	144	1,798
December	1,748	150	1,898	1,611	146	1,757
AVERAGE	2,135	220	2,355	1,778	157	1,935

Table 3 - HOURS WORKED PER WEEK BY WAGE-EARNERS, 1944 and 1945 (In one week of month
of highest employment; overtime included)

Hours Worked per Week	1944		1945	
	Male	Female	Male	Female
30 hours or less	145	11	134	8
31-43 hours	252	47	280	17
44 hours	64	6	13	...
45-47 hours	78	7	112	9
48 hours	1,360	109	1,025	139
49-50 hours	72	1	63	9
51-54 hours	446	139	193	1
55 hours	24	...	11	...
56-64 hours	138	...	108	...
65 hours or over	25	...	19	...
Total	2,604	320	1,958	183
Total wages paid during week \$	100,307	7,690	74,496	4,740

Table 4 - FUEL AND ELECTRICITY USED, 1944 and 1945

Kind	Unit of measure	1 9 4 4		1 9 4 5	
		Quantity	Cost at works \$	Quantity	Cost at works \$
Bituminous coal--Canadian	ton	650	6,271	4,577	28,916
Imported	ton	10,056	83,649	6,531	58,100
Anthracite coal (for fuel only)	ton	369	4,912	349	4,424
Coke (for fuel only)	ton	138	1,695	29	345
Gasoline	Imp.gal.	9,221	2,949	9,672	2,863
Kerosene	Imp.gal.	590	118	3,255	593
Fuel oil	Imp.gal.	338,163	28,216	430,252	34,354
Gas--Manufactured	M cu.ft.	1,100	1,073	1,505	1,478
Natural	M cu.ft.	3,660	2,734	3,564	3,046
Other fuel .....	...	...	173	...	94
Electricity purchased ...	K.W.H.	804,714,911	2,448,402	711,926,908	2,055,192
TOTAL .....	...	...	2,580,192	...	2,189,405

Table 5 - POWER EQUIPMENT, 1944 and 1945

	1 9 4 4		1 9 4 5	
	Number of units	Total rated horse power	Number of units	Total rated horse power
Diesel engines: Ordinarily in use ...	...	...	1	41
Gasoline engines: In reserve or idle.	1	50	2	130
Ordinarily in use..	1	50	3	85
Electric motors run by purchased power: Ordinarily in use	1,749	13,396	1,761	11,657
In reserve or idle	94	755	177	1,883
Stationary boilers: Ordinarily in use	11	1,210	6	1,000
In reserve or idle	...	...	1	60
Motor-generator sets -				
Ordinarily in use	18	503	23	744
In reserve or idle	4	131	4	154

Table 6 - MATERIALS USED IN MANUFACTURING, 1944 and 1945

Material	Unit of measure	1 9 4 4		1 9 4 5	
		Quantity	Cost at works \$	Quantity	Cost at works \$
Bauxite and pure alumina ..	ton	194,348	4,992,034	138,789	3,145,934
Coal (not for fuel) -					
For fused alumina	ton	308	2,247	378	2,130
For silicon carbide	ton	5,303	41,771	3,185	23,130
Coke (not for fuel) -					
For fused alumina:					
Petroleum coke	ton	2,054	13,785	2,365	18,178
Other coke	ton	2,707	15,445	6,048	37,654
For silicon carbide:					
Petroleum coke	ton	34,722	514,057	34,696	495,958
Other coke	ton	14,738	208,236	15,401	235,871
For other uses: Other coke	ton	2,395	30,460	16	239
Electrodes	ton	3,318	403,660	2,964	379,963
Feldspar	ton	75	2,260	11	240

Artificial Abrasives

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Table 6 - MATERIALS USED IN MANUFACTURING, 1944 and 1945 (Concluded)

Material	Unit of measure	1 9 4 4		1 9 4 5	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Iron borings	ton	19,991	269,409	17,799	223,808
Salt	ton	343	3,858	256	3,426
Sawdust	ton	12,706	44,836	12,107	41,044
Silica sand	ton	73,771	428,317	74,406	442,164
Artificial abrasive grains:					
For re-treatment only -					
Fused alumina	ton	6,286	198,381	19,167	559,197
Silicon carbide	ton	207	12,600	32	5,954
For wheels, paper, etc. -					
Fused alumina	ton	3,300	660,168	2,611	538,770
Silicon carbide	ton	1,069	250,132	1,194	244,868
Natural abrasive grains:					
Garnet	lb.	393,572	34,546	463,303	41,513
Emery	lb.	312,458	17,904	216,590	12,005
Quartz or flint	lb.	536,373	8,046	550,947	8,267
Other	lb.	65,357	6,535	40,343	4,405
Bonding and bushing materials:					
Clay bonds	lb.	986,308	41,919	860,402	37,859
Silicate (quantity in equivalent solid form)	lb.	7,793	934	10,623	779
Elastic mixture	lb.	11,047	3,095	10,581	3,958
Bakelite and synthetic resins	lb.	285,491	80,768	276,523	83,996
Lead for bushings	lb.	103,567	5,647	98,543	5,573
Cotton cloth .....	...	...	317,201	...	281,504
Kraft paper .....	...	...	15,717	...	27,087
Containers and packing material .....	...	...	84,692	...	94,586
All other materials .....	...	...	1,217,583	...	1,223,737
TOTAL .....	...	...	9,926,243	...	8,223,797

Table 7 - PRODUCTS MANUFACTURED, 1944 and 1945

Product	1 9 4 4		1 9 4 5	
	Short tons	Selling value at works	Short tons	Selling value at works
		\$		\$
Crude silicon carbide	47,100	5,499,628	45,419	5,361,279
Crude fused alumina	166,098	17,768,484	133,192	13,573,311
Silicon carbide firesand, etc.	167	10,135	120	7,295
Abrasive wheels and segments..	...	3,321,873	...	3,131,289
Sharpening stones and files ..	...	197,186	...	218,940
Ferrosilicon	14,585	223,473	3,755	62,380
Other products (x) .....	...	3,044,334	...	3,138,192
TOTAL .....	...	30,065,113	...	25,492,686

(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 one or two companies.

Table 8 - PRODUCTION OF CRUDE ARTIFICIAL ABRASIVES IN CANADA, 1935-1945

Year	Crude Silicon Carbide		Crude Fused Alumina		T O T A L	
	Quantity	Selling	Quantity	Selling	Quantity	Selling
		value at works		value at works		value at works
	Tons	\$		\$	Tons	\$
1935	18,475	1,788,657	51,194	4,735,019	69,669	6,523,676
1936	23,805	2,299,602	59,533	5,762,217	83,338	8,061,819
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

Table 9 - PRODUCTION OF ARTIFICIAL ABRASIVE WHEELS AND SEGMENTS* IN CANADA, 1935-1945

Year	Selling value	Year	Selling value
	at works		at works
	\$		\$
1935	785,777	1941	3,713,303
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		

* Does not include artificial pulpstones or sharpening stones.

Table 10 - IMPORTS INTO CANADA OF ABRASIVES AND ABRASIVE PRODUCTS, 1944 and 1945

	1944	1945
Artificial abrasive grains, crushed or ground, for use in Canadian manufactures	\$ 1,843,350	1,615,623
Diamond dust or bort and black diamonds for borers	\$ 1,721,416	1,985,299
Diatomaceous earth or infusorial earth (Kieselguhr) ground or unground	cwt. 233,282	264,330
	\$ 335,939	262,882
Emery in bulk, crushed or ground	\$ 73,616	80,829
Grinding wheels, manufactured by the bonding together of either natural or artificial abrasives	\$ 389,818	350,161
Grinding stones or blocks, manufactured by the bonding together of either natural or arti- ficial abrasives	\$ 69,682	79,195
Manufactures of emery or of artificial abrasives, n.o.p.	\$ 105,483	88,837
Grindstones, not mounted, and not less than 36 inches in diameter	No. 578	466
	\$ 59,211	45,494
Grindstones, n.o.p.	No. 672	549
	\$ 2,098	2,381

Artificial Abrasives

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Table 10 - IMPORTS INTO CANADA OF ABRASIVES AND ABRASIVE PRODUCTS, 1944 and 1945
(Concluded)

		1 9 4 4	1 9 4 5
Pumice and pumice stone, lava and calcareous tufa, not further manufactured than ground	\$	27,880	45,041
Sandpaper, glass, flint and emery paper or emery cloth	\$	82,713	68,067
TOTAL	\$	4,711,206	4,623,809

Table 11 - EXPORTS FROM CANADA AND RE-EXPORTS OF ABRASIVES AND ABRASIVE PRODUCTS, 1944 and 1945

		1 9 4 4	1 9 4 5
Abrasives, natural, n.o.p. in ore or bulk, crushed or ground, including infusorial earth, rotten stone, tripoli, etc.	cwt. \$	302 7,269	248 3,285
Abrasives, artificial, crude, including carborundum	cwt. \$	4,303,439 14,298,940	3,560,829 11,741,112
Abrasives, artificial, made up into wheels and stones	\$	256,188	153,909
Sandpaper, glass, flint and emery paper, and emery cloth	\$	242,768	235,361
Grindstones, manufactured	\$	251	19,646
TOTAL	\$	14,805,416	12,153,313

LIST OF FIRMS IN THE ABRASIVES INDUSTRY, 1945

Name of Firm	Address
(a) Artificial Abrasives	
Abrasive Company of Canada, Arvida, Ltd.	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.C. Commercial Ave. and Erie R.R., Blasdell, N.Y., 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	H.O. 154 Pearl St., Toronto, Ont. Plant at Brantford, Ont.

LIST OF FIRMS IN THE ABRASIVES INDUSTRY, 1945
(Concluded)

Name of Firm	Address
(b) <u>Abrasive Products--Con.</u>	
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.
The Empire Abrasives	24 Lewis St., Brantford, Ont.
Lion Grinding Wheels Ltd.	192 Pearl St. E., Brockville, 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.

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