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Annual Industry Report

Manufactures of the Non-metallic Minerals Group

THE ARTIFICIAL ABRASIVES INDUSTRY, 1944

The factory selling value of all products made during 1944 by the manufacturers in Canada of artificial abrasives and artificial abrasive products amounted to \$30,065,113. This value represented a decrease of 18 per cent from the total of \$36,609,928 for 1943.

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 2,773 and payments in salaries and wages totalled \$5,511,030. Expenditures for manufacturing materials amounted to \$9,926,243 and \$2,580,192 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 \$25,536,166 and included 166,098 tons of crude fused alumina at \$17,768,484; 47,100 tons of crude silicon carbide at \$5,499,628, and other products and by-products, such as ferrosilicon, firesand, refractory brick, refractory cements, calcium boride, boron carbide and abrasive wheels. An average of 2,251 people were employed and salaries and wages totalled \$4,419,286.

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 3 made abrasive cloth and paper. The value of all products made in these establishments was \$4,528,947. The number of employees was 522 and payments for salaries and wages amounted to \$1,091,744.

Table 1 - PRINCIPAL STATISTICS FOR THE ARTIFICIAL ABRASIVES INDUSTRY IN CANADA, 1942-1944

	1942	1943	1944
Number of firms	15	15	15
Number of employees - On salaries.	409	486	418
On wages ...	2,457	2,850	2,355
Total ...	2,866	3,336	2,773
Salaries and wages - Salaries \$	1,056,487	1,083,113	1,131,044
Wages \$	4,050,165	5,370,656	4,379,986
Total ... \$	5,106,652	6,453,769	5,511,030
Cost of fuel and electricity \$	2,469,824	2,988,814	2,580,192
Cost of materials at works \$	10,245,679	11,581,923	9,926,243
Selling value of products at works \$	31,516,161	36,609,928	30,065,113

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, 1943 and 1944 (Number on pay-roll on the last work day of each month)

Month	1943			1944		
	Male	Female	TOTAL	Male	Female	TOTAL
January	2,533	275	2,808	2,596	306	2,902
February	2,483	265	2,748	2,526	289	2,815
March	2,485	261	2,746	2,430	275	2,705
April	2,439	287	2,726	2,370	255	2,625
May	2,413	293	2,706	2,318	242	2,560
June	2,574	310	2,884	2,208	229	2,437
July	2,615	320	2,935	2,102	213	2,315
August	2,506	355	2,861	1,964	205	2,169
September	2,585	338	2,923	1,821	166	1,987
October	2,615	328	2,943	1,778	161	1,939
November	2,637	327	2,964	1,761	158	1,919
December	2,627	341	2,968	1,748	150	1,898
AVERAGE	2,542	308	2,850	2,135	220	2,355

Table 3 - HOURS WORKED PER WEEK BY WAGE-EARNERS, 1943 and 1944 (In one week of month of highest employment; overtime included)

Hours Worked per Week	1943		1944	
	Male	Female	Male	Female
30 hours or less	219	15	145	11
31-43 hours	294	48	252	47
44 hours	42	3	64	6
45-47 hours	61	12	78	7
48 hours	1,119	115	1,360	109
49-50 hours	30	1	72	1
51-54 hours	535	134	446	139
55 hours	119	9	24	...
56-64 hours	290	1	138	...
65 hours or over	34	...	25	...
Total	2,743	338	2,604	320
Total wages paid during week \$	98,715	7,958	100,307	7,690

Table 4 - FUEL AND ELECTRICITY USED, 1943 and 1944

Kind	Unit of measure	1 9 4 3	Cost at works	1 9 4 4	Cost at works
		Quantity		Quantity	
			\$		\$
Bituminous coal--Canadian	ton	220	1,887	650	6,271
Imported	ton	10,856	89,376	10,056	83,649
Anthracite coal (for fuel only)	ton	687	8,931	369	4,912
Coke (for fuel only)	ton	172	2,176	138	1,695
Gasoline	Imp.gal.	2,035	661	9,221	2,949
Kerosene	Imp.gal.	630	126	590	118
Fuel oil	Imp.gal.	405,302	35,567	338,163	28,216
Gas--Manufactured	M cu.ft.	600	626	1,100	1,073
Natural	M cu.ft.	4,327	3,612	3,660	2,734
Other fuel .....	...	...	6	...	173
Electricity purchased ...	K.W.H.	916,911,625	2,845,846	804,714,911	2,448,402
TOTAL .....	...	...	2,988,814	...	2,580,192

Table 5 - POWER EQUIPMENT, 1943 and 1944

	1 9 4 3	Total rated horse power	1 9 4 4	Total rated horse power
	Number of units		Number of units	
Gasoline engines--In reserve or idle.	1	50	1	50
Ordinarily in use..	1	50	1	50
Electric motors run by purchased power--Ordinarily in use	1,607	12,746	1,749	13,396
In reserve or idle	132	1,125	94	755
Stationary boilers--Ordinarily in use	13	1,410	11	1,210
In reserve or idle	1	75	...	...
Motor generator sets -				
Ordinarily in use	17	491	18	503
In reserve or idle	4	131	4	131

Table 6 - MATERIALS USED IN MANUFACTURING, 1943 and 1944

Material	Unit of measure	1 9 4 3	Cost at works	1 9 4 4	Cost at works
		Quantity		Quantity	
			\$		\$
Bauxite and pure alumina	ton	227,662	5,902,898	194,348	4,992,034
Coal (not for fuel) -					
For fused alumina	ton	245	1,614	308	2,247
For silicon carbide	ton	8,019	60,343	5,303	41,771
Coke (not for fuel) -					
For fused alumina:					
Petroleum coke	ton	2,303	17,631	2,054	13,785
Other coke	ton	12,140	71,914	2,707	15,445
For silicon carbide:					
Petroleum coke	ton	37,008	606,044	34,722	514,057
Other coke	ton	21,138	298,513	14,738	208,236
For other uses: Other coke..	ton	...	...	2,395	30,460
Electrodes	ton	4,279	520,236	3,318	403,660
Feldspar	ton	117	5,776	75	2,260
Iron borings	ton	20,889	283,311	19,991	269,409
Salt	ton	410	4,793	343	3,858

Artificial Abrasives

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Table 6 - MATERIALS USED IN MANUFACTURING, 1943 and 1944 (Concluded)

Material	Unit of measure	1 9 4 3		1 9 4 4	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Sawdust	ton	12,766	44,223	12,706	44,836
Silica sand	ton	89,022	511,649	73,771	428,317
Artificial abrasive grains -					
For re-treatment only:					
Fused alumina	ton	7,296	224,056	6,286	198,381
Silicon carbide	ton	209	6,442	207	12,600
For wheels, paper, etc. -					
Fused alumina	ton	4,106	826,967	3,300	660,168
Silicon carbide	ton	1,543	298,675	1,069	250,132
Natural abrasive grains -					
Garnet	lb.	343,929	29,768	393,572	34,546
Emery	lb.	308,548	19,982	312,458	17,904
Quartz or flint	lb.	349,340	5,410	536,373	8,046
Other	lb.	76,545	5,608	65,357	6,535
Bonding and bushing materials-					
Clay bonds	lb.	1,152,171	55,907	986,308	41,919
Silicate (quantity in equivalent solid form) ..	lb.	...	2,799	7,793	934
Elastic mixture	lb.	12,291	3,221	11,047	3,095
Bakelite and synthetic resins	lb.	365,704	123,057	285,491	80,768
Lead for bushings	lb.	107,341	5,978	103,567	5,647
Cotton cloth .....	...	...	340,709	...	317,201
Kraft paper .....	...	...	21,425	...	15,717
Containers and packing material .....	...	...	114,823	...	84,692
All other materials .....	...	...	1,168,151	...	1,217,583
TOTAL .....	...	...	11,581,923	...	9,926,243

Table 7 - PRODUCTS MANUFACTURED, 1943 and 1944

Product	1 9 4 3		1 9 4 4	
	Short tons	Selling value at works	Short tons	Selling value at works
		\$		\$
Crude silicon carbide	51,281	6,846,087	47,100	5,499,628
Crude fused alumina	190,727	20,543,657	166,098	17,768,484
Silicon carbide firesand, etc. .	229	14,336	167	10,135
Abrasive wheels and segments ...	...	5,114,962	...	3,321,873
Sharpening stones and files ....	...	303,913	...	197,186
Ferrosilicon	15,860	240,430	14,585	223,473
Other products (x) .....	...	3,546,543	...	3,044,334
TOTAL .....	...	36,609,928	...	30,065,113

(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, 1934-1944

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	\$	tons	\$
1934 ...	16,398	1,858,746	44,596	3,955,837	60,994	5,814,583
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	8,249,315	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

Table 9 - PRODUCTION OF ARTIFICIAL ABRASIVE WHEELS AND SEGMENTS(x) IN CANADA, 1934-1944

Year	Selling value	Year	Selling value
	at works		at works
	\$		\$
1934	569,764	1940	1,838,558
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		

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

Table 10 - IMPORTS INTO CANADA OF ABRASIVES AND ABRASIVE PRODUCTS, 1943 and 1944

	1943	1944
Artificial abrasive grains, crushed or ground, for use in Canadian manufactures	\$ 1,915,715	1,843,350
Diamond dust or bort and black diamonds for borers	\$ 1,631,019	1,721,416
Diatomaceous earth or infusorial earth (Kieselguhr) cwt.	112,468	233,282
ground or unground	\$ 184,010	335,939
Emery in bulk, crushed or ground	\$ 78,303	73,616
Grinding wheels, manufactured by the bonding together of either natural or artificial abrasives	\$ 493,247	389,818
Grinding stones or blocks, manufactured by the bonding together of either natural or artificial abrasives	\$ 115,561	69,682
Manufactures of emery or of artificial abrasives, n.o.p.	\$ 81,984	105,483
Grindstones, not mounted, and not less than 36 inches in diameter	No. 612	578
Grindstones, n.o.p.	\$ 64,731	59,211
	No. 1,068	672
	\$ 2,266	2,098

Artificial Abrasives

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Table 10 - IMPORTS INTO CANADA OF ABRASIVES AND ABRASIVE PRODUCTS, 1943 and 1944
(Concluded)

	1943	1944
Pumice and pumice stone, lava and calcareous tufa, not further manufactured than ground	\$ 19,479	27,880
Sandpaper, glass, flint and emery paper or emery cloth	\$ 102,303	82,713
TOTAL	\$ 4,688,618	4,711,206

Table 11 - EXPORTS FROM CANADA AND RE-EXPORTS OF ABRASIVES AND ABRASIVE PRODUCTS,
1943 and 1944

	1943	1944
Abrasives, natural, n.o.p. in ore or bulk, crushed or ground, including infusorial earth, cwt.	194	302
rotten stone, tripoli, etc.	\$ 1,425	7,269
Abrasives, artificial, crude, including car- cwt.	4,830,466	4,303,439
borundum	\$ 16,894,102	14,298,940
Abrasives, artificial, made up into wheels and stones	\$ 676,130	256,188
Sandpaper, glass, flint and emery paper, and emery cloth	\$ 218,125	242,768
Grindstones, manufactured	\$ 5,032	251
TOTAL	\$ 17,794,814	14,805,416

LIST OF FIRMS IN THE ABRASIVES INDUSTRY, 1944

Name of Firm	Address
(a) <u>Artificial Abrasives</u>	
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.O. 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.

LIST OF FIRMS IN THE ABRASIVES INDUSTRY, 1944
(Concluded)

Name of Firm	Address
<hr/>	
(b) <u>Abrasive Products</u>	
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.
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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