

C1 44-203

14-2-11-58

Published by Authority of the HON. W. D. EULER, M.P.  
Minister of Trade and Commerce.

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DOMINION BUREAU OF STATISTICS  
MINING, METALLURGICAL AND CHEMICAL BRANCH  
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THE ASBESTOS MINING INDUSTRY, 1937, and THE ASBESTOS PRODUCTS INDUSTRY, 1937.

A - THE ASBESTOS MINING INDUSTRY

Canadian asbestos production during 1937 totalled 410,026 short tons valued at \$14,505,791 compared with 301,287 short tons and \$9,958,183 in the preceding year. The output of the mineral in 1937 was the greatest ever recorded in the history of the Canadian asbestos mining industry and, as in former years, came almost entirely from the Eastern Townships in the Province of Quebec. An interesting feature of the industry in 1937 was the recording of a relatively small production of asbestos in Northern Ontario; this was the first commercial output of the mineral to be credited to this province in several years.

World production of asbestos has realized a continuous increase from 203,000 metric tons in 1932 to 503,000 metric tons in 1936, the most recent year for which complete data are made available by the League of Nations. As an asbestos producer Canada retains a premier world position, the output of the three principal producing countries in 1936 being - Canada, 273,300 metric tons; Russia, 125,100 metric tons, and Southern Rhodesia, 51,100 metric tons.

The average value for all grades of asbestos shipped from Canadian mines in 1937 was \$35.38 per ton compared with \$33.05 in 1936. The average value for fibres increased from \$48.65 per ton in 1936 to \$51.11 in 1937; the average value of shorts at \$16.13 was practically the same as in 1936 while the average value per ton of the relatively small tonnage of crudes sold declined from \$299.93 in 1936 to \$246.47 in 1937.

Exports of asbestos, including manufactures thereof, from Canada in 1937 were valued at \$14,545,370, or an increase of 43.53 per cent over 1936; of the 1937 shipments those consigned to the United States were appraised at \$8,262,550 and those to the United Kingdom at \$1,183,740, lesser quantities going to Australia, Belgium, France, Germany, and various other countries.

The number of Canadian asbestos mining companies reported as active in 1937 totalled 10; capital employed in the industry amounted to \$21,249,676; employees numbered 3,842 against 2,647 in 1936, and salaries and wages distributed aggregated \$4,232,507 compared with \$2,642,924 in the preceding year.

The Bureau of Mines of the province of Quebec reported that asbestos mining in 1937 had not only recovered its past activity but had a year of unprecedented prosperity. This is very gratifying, particularly in that the Quebec asbestos industry is now in its sixtieth year of production, the first shipment of the mineral from Thetford Mines having been made in 1878 from a mine which is still prominent and in full production. All asbestos mines in Quebec were particularly active during the whole of 1937. The general trend of asbestos mining, in the Thetford-Black Lake region, is to replace the open cast and cable derrick methods by underground mining, the hoisting of the rock being done through vertical shafts equipped with electric hoists. This is a consequence of the success achieved by the Asbestos Corporation in the introduction of the "block caving" method of mining at the King mine, inaugurated in 1932.

In Bannockburn township of the Matachewan district in Northern Ontario the construction of an asbestos mill was commenced by the Rahn Lake Mines Corporation, Ltd.. The property of this company was active throughout the year and a small shipment of crude asbestos was reported.

Canadian asbestos as produced commercially in Quebec is of the chrysotile or serpentine variety and is of a high quality. Reserves of milling grade asbestos rock have been reported as sufficient for many years of commercial fibre production.

A review of the industry in 1937 by "Asbestos", Philadelphia, contains the following information - "New products placed on the market during the year included various types of asbestos cement shingles and sidings, noteworthy among which are the white siding shingles and clapboards, an insulated sheathing roof deck of asbestos-cement construction and a new type of industrial siding; a new type of asbestos paper, remarkable for its strength and designed particularly for the wrapping of warm air pipes and air conditioning ducts."

A paper "Asbestos and Its Utilization" prepared by D. Wolochow, National Research Laboratories, Ottawa, contains the following information - "... Preparation of asbestos fibre for the market consists in the separation of the fibre from the rock by mechanical means. These milling operations consist of crushing, drying, and further crushing of the rock, followed by screening and air separation. The value of the fibre depends largely on its length and the grading of the milled fibre is based on fibre length as measured by a screen test. The manufacture of automobile brake linings and clutch facings is the largest single outlet for asbestos textiles ..."

"The market price of asbestos fibre depends on the grade and variety, however, it is not possible to make a true comparison of the price of apparently corresponding grades from different sources, because methods and standards differ in the several producing countries. The following figures show there is a very wide range between the best "crude" and the lowest grade "shorts". Rhodesian prices are for spinning grade fibres only -

Price Range - 1937

Canada .....	\$ 550 to \$ 11 per ton
Rhodesia .....	\$ 210 to \$180 per ton
Russia .....	\$ 475 to \$ 55 per ton
Vermont .....	\$ 47.50 to \$ 11 per ton

"Considerable work has been done with a view to finding new uses for asbestos, especially for the lower grades and for the waste rock, which among other things, is a potential source of magnesium metal and magnesium salts. In addition, some fundamental studies are being carried on. Microscopic investigation has shown that asbestos fibre is very probably the finest fibre in existence, a property which, when better understood, may lead to valuable new applications of this material. Knowledge of the physical nature of fibre aggregates, and thereby of the effects of milling processes on asbestos, is being definitely increased and put on a sound basis by this investigation."

Table 1 - SALES AND SHIPMENTS (x) OF CANADIAN ASBESTOS, 1935, 1936 and 1937.

	1 9 3 5		1 9 3 6		1 9 3 7	
	Tons	\$	Tons	\$	Tons	\$
Crudes .....	2,278	539,558	3,440	790,971	3,846(b)	947,917
Fibres .....	102,270	4,873,255	133,298	6,483,946	200,247	10,235,820
Shorts .....	105,919	1,641,301	164,559	2,683,266	205,933	3,322,054
TOTAL .....	210,467	7,054,614	301,287	9,958,183	410,026	14,505,791
Sand, gravel, and stone (waste rock only) (a) .....	3,025	2,053	3,103	2,356	3,980	3,301

(x) All from the province of Quebec in 1935 and 1936.

(a) This production is included under the sand and gravel industry.

(b) Includes 1 ton valued at \$250 produced in Ontario.

	1 9 3 5	1 9 3 6	1 9 3 7
	Tons	Tons	Tons
Quantity of rock mined .....	2,852,118	4,692,004	6,477,805
Quantity of rock milled .....	2,256,994	3,568,992	5,440,607

Table 2 - SALES AND SHIPMENTS OF ASBESTOS, 1926 - 1937.

Year	Tons	\$	Year	Tons	\$
1926 .....	279,403	10,099,423	1932 .....	122,977	3,039,721
1927 .....	274,778	10,621,013	1933 .....	158,367	5,211,177
1928 .....	273,033	11,238,360	1934 .....	155,980	4,936,326
1929 .....	306,055	13,172,581	1935 .....	210,467	7,054,614
1930 .....	242,114	8,390,163	1936 .....	301,287	9,958,183
1931 .....	164,296	4,812,886	1937 .....	410,026	14,505,791



Table 3 - IMPORTS INTO CANADA and EXPORTS OF ASBESTOS, 1936 and 1937.

	1 9 3 6		1 9 3 7	
	Tons	\$	Tons	\$
<u>IMPORTS</u>				
Asbestos brake and clutch lining .....	...	321,163	...	365,033
Asbestos packing .....	84	60,978	76	65,963
Asbestos in any form other than crude, and all manu- factures of, n.o.p. ....	...	506,646	...	718,061
TOTAL IMPORTS .....	...	888,787	...	1,149,057
<u>EXPORTS</u>				
Asbestos - TOTAL EXPORTS .....	136,547	7,391,517	196,511	10,972,852
To - United Kingdom .....	6,817	405,712	14,093	919,350
United States .....	77,691	4,052,187	98,196	5,347,488
Australia .....	2,055	103,271	3,042	150,919
Belgium .....	8,058	455,928	15,743	926,061
France .....	6,968	473,406	9,376	614,979
Germany .....	12,811	987,125	17,699	1,361,571
Italy .....	136	11,444	2,683	205,627
Japan .....	21,200	856,167	33,934	1,344,561
Netherlands .....	148	5,634	522	20,741
Spain .....	201	11,182	...	...
Poland and Danzig .....	302	21,684	238	21,795
Sweden .....	...	...	768	46,547
Asbestos sand and waste - TOTAL EXPORTS .....	157,678	2,567,343	194,530	3,242,457
To - United Kingdom .....	4,566	84,711	6,357	119,605
United States .....	146,081	2,350,527	176,708	2,913,183
Belgium .....	1,606	27,364	3,009	52,722
France .....	967	18,747	857	16,757
Germany .....	3,547	71,365	5,205	95,718
Netherlands .....	110	2,233	451	8,118
Japan .....	181	3,496	1,017	21,487
Asbestos manufactures, including asbestos roofing - TOTAL EXPORTS .....	...	175,038	...	350,061
To - United Kingdom .....	...	86,589	...	144,785
United States .....	...	935	...	1,879
Newfoundland .....	...	6,918	...	16,069
Australia .....	...	30,106	...	90,995
Argentina .....	...	6,536	...	9,047
Brazil .....	...	11,511	...	18,613
Chile .....	...	2,331	...	1,424
Colombia .....	...	2,372	...	2,855
Mexico .....	...	9,857	...	8,252
Peru .....	...	2,949	...	2,869
TOTAL ASBESTOS EXPORTS .....	...	10,133,898	...	14,545,370
To - United Kingdom .....	...	577,012	...	1,133,740
United States .....	...	6,403,649	...	8,262,550

Table 4 - SALES OF ASBESTOS IN CANADA, IMPORTS and EXPORTS, JANUARY 1 to JUNE 30, 1937 and 1938.

	1 9 3 7		1 9 3 8	
	Tons	Sales value at mill \$	Tons	Sales value at mill \$
<b>PRODUCTION(x) - By grades</b>				
Crudes .....	1,974	464,258	1,266	389,470
Fibres .....	90,517	4,483,226	81,039	4,478,540
Shorts .....	105,309	1,730,599	49,986	889,443
TOTAL .....	197,800	6,678,083	132,291	5,757,453
Sand, gravel and stone (waste rock only) .....	1,709	1,582	1,030	782
Rock mined .....	2,994,545	...	2,885,146	...
Rock milled .....	2,410,531	...	2,399,275	...
<b>IMPORTS -</b>				
Asbestos brake and clutch lining .....	...	191,239	...	93,470(/)
Asbestos brake and clutch facings, n.o.p. ....	...	...	...	6,796(a)
Asbestos brake linings for automobiles .....	...	...	...	62,784(a)
Asbestos clutch facings for automobiles .....	...	...	...	12,318(a)
Asbestos in any form other than crude and all manufactures of, n.o.p. ....	...	296,160	...	127,881(/)
Asbestos packing .....	32	28,758	27	26,386
<b>EXPORTS -</b>				
Asbestos .....	82,305	4,431,103	77,151	4,666,573
Asbestos and waste .....	99,613	1,691,207	49,425	880,824
Asbestos manufactures, including asbestos roofing .	...	167,356	...	72,065

(a) All from the province of Quebec.

(/) January to March.

(a) April to June.

Table 5 - PRINCIPAL STATISTICS OF THE ASBESTOS MINING INDUSTRY IN CANADA, 1935, 1936 and 1937.

	1 9 3 5	1 9 3 6	1 9 3 7
Number of firms .....	8	10	10
Capital employed .....	\$ 16,805,583	18,877,326	21,249,676
Number of employees - On salaries .....	152	195	321
On wages .....	1,920	2,452	3,521
Total .....	2,072	2,647	3,842
Salaries and wages - Salaries .....	\$ 302,151	330,565	522,213
Wages .....	\$ 1,801,902	2,312,359	3,710,294
Total .....	\$ 1,904,053	2,642,924	4,232,507
Selling value of products (a) .....	\$ 7,056,667	9,960,539	14,509,092
Cost of fuel and electricity (purchased) .....	\$ 923,483	979,193	1,346,454
Cost of process supplies (b) .....	\$ 1,134,968	1,420,282	2,729,801
Net value of sales .....	\$ 4,998,216	7,561,064	10,432,857

(a) Includes value of sand and gravel.

(b) Explosives, drill steel, etc.

Table 6 - WAGE-EARNERS EMPLOYED, BY MONTHS, in the ASBESTOS MINING INDUSTRY IN CANADA, 1934 - 1937.

Month	1934	1935	1936	1 9 3 7		MILL
	TOTAL	TOTAL	TOTAL	Surface	Underground	
January .....	1,577	1,605	2,011	1,429	378	1,289
February .....	1,587	1,650	1,964	1,408	364	1,256
March .....	1,595	1,640	1,950	1,517	437	1,357
April .....	1,587	1,739	1,941	1,595	434	1,512
May .....	1,780	1,813	2,351	1,638	513	1,505
June .....	1,928	1,938	2,448	1,702	525	1,537
July .....	1,902	2,036	2,555	1,718	512	1,526
August .....	1,806	1,953	2,687	1,678	549	1,577
September .....	1,623	1,957	2,827	1,643	544	1,580
October .....	1,688	2,148	2,923	1,588	447	1,550
November .....	1,762	2,237	2,939	1,527	437	1,526
December .....	1,653	2,304	2,820	1,530	373	1,510

Table 7 - NUMBER OF WAGE-EARNERS IN MONTH OF HIGHEST EMPLOYMENT, 1936 and 1937, WHOSE REGULAR HOURS PER WEEK WERE AS FOLLOWS -

	1936 Number	1937 Number		1936 Number	1937 Number
40 hours or less .....	8	...	54 hours .....	13	6
44 hours .....	127	...	56 - 59 hours .....	453	...
48 hours .....	1,378	3,808	60 hours .....	242	105
49 - 50 hours .....	802	...	Over 60 hours .....	6	...

Table 8 - FUEL and ELECTRICITY USED IN THE ASBESTOS MINING INDUSTRY IN CANADA, 1936 and 1937.

Kind	Unit of measure	1 9 3 6		1 9 3 7	
		Quantity	Value \$	Quantity	Value \$
Bituminous coal - From Canadian mines .....	short ton	21,391	151,741	36,995	256,047
Imported .....	short ton	...	...	...	...
Anthracite coal - From United States .....	short ton	12,992	96,346	14,026	104,577
Other .....	short ton	2,827	17,729	10,999	82,052
Coke (for fuel only) .....	short ton	56	672	38	454
Gasoline (exclusive of that used in motor cars or trucks)(x) .....	Imp. gal.	54,492	12,356	81,687	17,851
Kerosene or coal oil .....	Imp. gal.	6,087	867	6,187	1,081
Fuel oil and diesel oil .....	Imp. gal.	12,106	1,350	45,469	5,013
Wood (cords of 128 cubic feet of piled wood) ...	cord	65	65	20(a)	10
Electricity purchased, including service charges K. W. H.		87,310,604	698,067	136,454,898	879,349
TOTAL .....	\$	...	979,193	...	1,346,434

(x) Includes all gasoline used in 1937.

(a) Cut by asbestos company.

Table 9 - POWER EQUIPMENT (including stand-by or emergency equipment), 1937.

Description	Ordinarily in use		In reserve or idle	
	Number of units	Total horse power(x)	Number of units	Total horse power(x)
Steam engines and steam turbines .....	7	235	...	...
Gasoline, gas and oil engines, other than diesel engines	3	107	2	10
Electric motors - Operated by purchased power .....	1,066	50,759	29	3,087
TOTAL .....	1,076	51,101	31	3,097
Stationary boilers .....	8	410	3	195

(x) According to manufacturers' rating.

Table 10 - CONSUMPTION OF ASBESTOS IN SPECIFIED CANADIAN INDUSTRIES, 1935 and 1936.

Industry		1 9 3 5		1 9 3 6	
		Quantity	Cost at works \$	Quantity	Cost at works \$
Electrical Apparatus and Supplies -					
Board .....	pound	122,111	20,175	147,311	21,651
Yarn .....	pound	61,018	18,040	87,693	26,626
Tape .....	pound	8,481	5,738	14,922	10,829
Boilers, Tanks and Engines .....	\$	...	3,077	...	4,547
Asbestos Products -					
Fibre .....		See Table 24 - Asbestos Products Industry			
Other forms .....		"			
Roofing paper .....	ton	2,061	76,833	1,242	42,468
Cotton goods, n.e.s. ....	pound	17,248	841	24,739	1,260
Woollen goods, n.e.s. ....	pound	147,533	41,012	204,723	56,537

NOTE - Complete data for 1937 not yet available.



Table 11 - WORLD'S PRODUCTION OF ASBESTOS, 1929, 1935, 1936 and 1937.

NOTE - This table refers to the production of non-fabricated asbestos, obtained from asbestos-bearing rock and commercially divided into spinning and non-spinning fibre. The former is represented mainly by chrysotile,  $H_4Mg_3Si_2O_9$ ; also by crocidolite or blue asbestos,  $NaFe(SiO_3)_2 \cdot FeSiO_2$ , and by amosite, an iron-rich anthophyllite, both of which are found exclusively in the Union of South Africa. Amphibole (anthophyllite)  $(FeMg)SiO_3$  is the principal non-spinning variety.

The spinning fibre is chiefly used for heat-resisting fabrics, and the non-spinning fibre for building materials.

(Metric tons - 000's omitted)

Country	1929	1935	1936	1937 (x)
AFRICA .....	67.9	57.1	73.3	77.6
Southern Rhodesia(1) .....	38.7	38.6	51.1	51.7
Union of South Africa (2) .....	29.2	18.5	22.2	25.9
NORTH AMERICA .....	285.2	199.0	283.3	383.0
Canada (3) .....	282.3	190.9	273.3	372.0
United States (4) .....	2.9	8.1	10.0	11.0
ASIA . (excluding U.S.S.R.) .....	14.9	8.0(x)	10.0(x)	12.0
China (excluding Manchuria) ...	0.2	...	...	...
" Manchuria .....	0.1	0.1	...	...
Cyprus(5).....	14.3	7.6	9.4	11.3
India .....	0.3	0.1	0.1	...
Japan .....	...	...	...	...
U.S.S.R. ....	39.9	95.5	125.1	...
EUROPE (excluding U.S.S.R.) .....	5.0	7.9	11.0(x)	...
Finland (6) .....	1.6	1.7	4.0	...
France .....	0.8	0.5	0.4	...
Italy (6) .....	2.6	3.0	...	...
Czechoslovakia .....	...	2.6	2.7	...
Turkey .....	...	0.1	0.1	...
OCEANIA (Australia) .....	0.3	0.2	0.2	...
TOTAL .....	413	368(x)	503(x)	...

NOTE - 1 metric ton = 1.1023 net (short) tons.

(x) Estimate or provisional figure.

(1) Southern Rhodesia: chrysotile.

(2) Union of South Africa: Chrysotile, amosite and blue asbestos.

(3) Canada: Chrysotile. Sand and gravel, by-products, have been excluded; they amounted in 1929, 1935, 1936 and 1937, to (metric tons, 000's): 17, 3, 3, and 4, respectively. Adinolite,  $Ca(Mg,Fe)_3(SiO_3)_4$ , the annual production of which is considerably less than 100 metric tons, has been also excluded.

Figures refer to shipments and sales.

(4) United States: both chrysotile and amphibole.

(5) Cyprus: Chrysotile, but not of the spinning quality.

(6) Finland, Italy: excluding asbestos powder, the production of which was (metric tons): Finland, 1936, 3,114; Italy, 1935, 1,479.

NOTE - This statement on world production was taken from the 1937/38 Statistical Year-Book of the League of Nations.

#### PRICES (United States Bureau of Mines)

Canadian prices are f.o.b. Quebec mines, tax and bags included; Rhodesian and Russian, c.i.f. New York; and Vermont prices, f.o.b. mines, Vermont.

According to quotations in Metal and Mineral Market prices of Canadian asbestos were constant throughout 1937 until December as follows: Crude No. 1, \$550-\$600; Crude No. 2, \$200-\$225; spinning fibres, \$90-\$170; magnesia and compressed sheet fibres, \$100-\$110; shingle stock, \$45-\$75; paper stock, \$32.50-\$37.50; cement stock, \$19-\$23; floats, \$16-\$18.50; and shorts, \$11-\$14.50. At the end of the year however a substantial gain was in evidence, Crude No. 1 advancing to \$700-\$750; various other crudes ranged from \$150 to \$350; spinning fibres \$110-\$200, and corresponding increases were noted for other grades.

Rhodesian Crude No. 1 was quoted at \$210, and Crude No. 2 at \$185 until May when the prices were advanced to \$250 and \$225, respectively.

Russian Crude AA was quoted at \$470 in February, \$475 in April, \$550 in May and \$750 in December. Crude No. 1 remained at \$225, Crude No. 2 at \$190, and shingle stock at \$55 until December when prices were increased to \$275, \$240, and \$67.50, respectively.

Vermont prices were constant throughout the year until December as follows: Shingle stock, \$47.50; paper stock, \$35; cement stock, \$25; and shorts and floats, \$11-\$12. In December the prices were increased to \$57, \$40, \$25, and \$12-\$18, respectively.

#### GENERAL NOTES

UNITED STATES (U. S. Bureau of Mines) - "The most striking event in the asbestos industry during 1937 was the remarkable increase in imports of crude fibres from Africa. Ten years ago imports from that source about equalled those from Canada in quantity. The proportion from Africa has gained steadily, and in 1937 more than 81 per cent of the total imports of crudes originated there compared with 18 per cent in Canada. However, figures for crudes alone do not reflect the true situation as regards asbestos available for textile use because large tonnages imported from Canada under the classification "textile, shingle and paper fibre" may be used for spinning ... In 1937, as in previous years, the United States led all countries in the manufacture of asbestos products but produced only a very small fraction of the necessary raw asbestos; domestic sources furnished less than 4 per cent of the consumption in 1937. About 95 per cent of the imports of spinning, shingle, paper fabrics and shorts came from Canada, and most of the remainder from the U.S.S.R. and Cyprus. In 1937 chrysotile asbestos sold or used by United States producers totalled 11,547 short tons valued at \$332,747 as compared with 10,719 tons and \$302,301 in 1936. Amphibole sold or used during 1937 amounted to 532 short tons worth \$11,897 as against 345 tons at \$11,860 in the preceding year.

Table 12 - ASBESTOS (UNMANUFACTURED) IMPORTED FOR CONSUMPTION IN THE UNITED STATES, 1936-37, BY COUNTRIES AND CLASSES.

Country	Crude (including blue fibre)		Mill fibre		Stucco and refuse		TOTAL	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
		\$		\$		\$		\$
Africa, British -								
Union of South Africa ..	4,247	490,355	...	...	1	27	4,248	490,362
Other British .....	7,099	794,256	...	...	...	...	7,099	794,256
Canada .....	2,620	556,034	95,788	4,775,513	177,602	2,984,299	278,010	8,315,848
Finland .....	...	...	...	...	88	5,568	88	5,568
France .....	...	...	...	...	122	1,755	122	1,755
Italy .....	51	22,332	...	...	958	19,755	989	42,087
Malta, Gozo, Cyprus .....	...	...	...	...	8,129	510,058	8,219	510,058
U.S.S.R. ....	59	8,464	7,978	363,804	2,196	85,592	10,215	457,660
United Kingdom .....	290	54,636	...	...	...	...	290	54,636
TOTAL - 1937 .....	14,526	1,926,057	103,766	5,139,317	189,096	3,404,834	507,188	10,470,208
TOTAL - 1936 .....	7,912	1,157,551	79,663	3,790,055	156,027	2,577,331	243,602	7,524,937

UNION OF SOUTH AFRICA - Production of asbestos in the Union of South Africa during 1937 totalled 28,069 tons valued at £430,761 compared with 25,237 tons worth £337,229 in 1936. The relative figures for each class of asbestos and province are as follows:-

Table 13 -

Province	AMOSITE		CHRYSTILE		BLUE		TOTAL	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		£		£		£		£
Transvaal .....	7,487.97	133,401	15,141.57	162,044	653.64	14,026	23,283.18	309,471
Cape .....	...	...	...	...	4,786.09	121,290	4,786.09	121,290
Natal .....	...	...	...	...	...	...	...	...
TOTAL - 1937 ..	7,487.97	133,401	15,141.57	162,044	5,439.73	135,316	28,069.27	430,761
TOTAL - 1936 ..	4,823.30	80,701	16,149.17	159,156	4,264.10	97,372	25,236.58	337,229



The Department of Mines of the Union of South Africa reported that one of the principal producers of chrysotile closed down mining operations during 1937 owing to the deposit becoming exhausted, but the opening up of a new mine just over the Transvaal border in Swaziland is being expedited. In the Pietersburg and Barberton districts interest is still being taken in other potential chrysotile deposits and prospecting operations are in progress. The demand for Cape and Transvaal blue types of fibre exceeded the supply during 1937 and efforts are being made to increase production.

CYPRUS - A report on asbestos prepared by the Imperial Institute, London, states that the occurrence of asbestos in Cyprus was known to the ancient Greeks and Romans who are believed to have used it for making winding-sheets for cremations and for lamp wicks. This was probably a long-fibre amphibole variety, but the important deposits which have been exploited on the island in more modern times are of chrysotile. The chrysotile occurs in ribbon-veins which are most abundantly developed in zones of shearing, and, although widely distributed, the asbestos fibres are always short, ranging up to about 1/2 inch. The product of the Cyprus mines is suitable mainly for the production of asbestos-cement manufactures for which purpose it is exported. Exports of asbestos from Cyprus during the twelve months ending December 31, 1937, totalled 11,709 long tons valued at £128,321.

SOUTHERN RHODESIA - The asbestos deposits of Southern Rhodesia are of great commercial importance, ranking next to those of Canada and Russia. The veins of chrysotile vary in width up to 6 inches, but except in the narrowest there are one or more partings of magnetite so that individual fibres are rarely more than 3 inches in length. According to a report issued by the Imperial Institute, London, the consolidation of all the important producers under the control of one large concern, which also controls the bulk of the asbestos manufacturing industries of the United Kingdom, has had a marked effect on the Rhodesian industry. The most efficient methods of development are employed at the mines and the mills are now of the most up-to-date type. The quality of the Rhodesian chrysotile is high but records are not available of the output by grades.

Production during 1937 totalled 57,014 short tons valued at £840,026, this was the highest on record being 668 short tons more than the previous high tonnage of 1936. Of the 1937 production, 41,453 tons valued at £633,032 came from the Shabani deposits in the Bulawayo district and 7,913 tons at £109,556 from the "King and Gaths" deposit in the Victoria district. Exports of asbestos from Southern Rhodesia in 1937 totalled 64,453 short tons valued at £1,230,120 as against 51,227 tons and £959,290 in 1936; of the 1937 exports, 28,677 short tons valued at £518,935 went to British countries and 35,776 tons at £711,185 to foreign countries.

RUSSIA (American-Russian Chamber of Commerce) - "The first two asbestos-treating plants in Russia were built in St. Petersburg and Riga on the eve of the World War. However, most of the demand for asbestos products continued to be supplied from abroad.

"It was not until 1930 that the Soviet asbestos industry began to grow to meet the growing demands of national economy and the defense industry. The output in 1937 was 12.5 times that in 1929. Even this increase, however, was inadequate to meet the demand. When the mass production of caterpillar tractors began the demand for asbestos coupling discs increased 18 fold. The same holds true in the chemical, electrical and other industries, many of which are suffering from an acute shortage of asbestos products.

"The asbestos plants are not working satisfactorily. The quality of the brake bands, linings, coupling discs, and other items is comparatively low ... The amount of high-grade crude asbestos mined in 1937 was 40 per cent below the amount in 1935. This creates a shortage in the factories, as a result of which the asbestos industry fulfilled its program for the first quarter of 1938 only from 45 to 50 per cent."

Table 14 - SOVIET RUSSIAN EXPORTS OF ASBESTOS, 1935, 1936 and 1937.

	1 9 3 5		1 9 3 6		1 9 3 7	
	Metric tons	Roubles	Metric tons	Roubles	Metric tons	Roubles
Asbestos and products .....	25,109	9,973,000	26,155	9,131,000	...	...
Asbestos .....	...	...	...	...	27,299	9,145,000
Asbestos products -						
Paper .....	...	...	...	...	0.1	100
Cardboard .....	...	...	...	...	22	14,000
Padding .....	...	...	...	...	2	5,000
Others .....	...	...	...	...	55	68,000



The "Foreign Minerals Quarterly" for June, 1938, as issued by the United States Bureau of Mines refers to the Russian asbestos industry as follows - "The asbestos deposits at Asbest, 22 miles north of Bazhenova in the Urals are the source of the entire output in the U.S.S.R. today. The asbestos at these mines is found in narrow ribbons up to a few inches wide in serpentine; the asbestos-bearing serpentine of industrial value has been determined by drill holes to a depth of 985 feet below the surface. The present yield of all grades per ton of rock milled is said to be 4 per cent which includes a high percentage of the textile grade. There are three plants which treat the ore and the milling practice used corresponds to that employed in Canada. The standard grades of Russian asbestos are as follows -

AI Crude No. 1 .....	22 - 23 millimeters up or 7/8 - 1 1/4 inches.
A2 Crude No. 11 .....	14 - 15 millimeters up or 1/2 - 7/8 inches.
B3 spinning fibre .....	7 - 9 millimeters up or 1/4 - 1/2 inches.
Shingle stock .....	4 - 5 millimeters up or 1/6 - 1/4 inches.
Paper stock .....	2 - 4 millimeters up or under 1/6 inches.
Cement .....	1 - 2 millimeters up
Shorts and floats .....	Under 1 millimeter up

UNITED KINGDOM -

Table 15 - IMPORTS OF ASBESTOS, RAW and FIBRE, and MANUFACTURES, into the UNITED KINGDOM DURING THE CALENDAR YEARS 1935, 1936 and 1937.

	1 9 3 5		1 9 3 6		1 9 3 7	
	Long ton	£	Long ton	£	Long ton	£
From - Union of South Africa .....	10,932	156,168	12,047	177,176	12,357	205,507
Southern Rhodesia .....	11,910	274,312	16,679	382,274	20,646	479,661
Other British countries ....	7,273	90,975	9,270	124,151	14,487	225,850
Foreign countries .....	1,944	37,267	2,199	36,206	2,473	53,947
TOTAL .....	32,059	558,722	40,195	719,787	49,963	964,965
	Cwt.	£	Cwt.	£	Cwt.	£
Asbestos manufactures .....	403,509	137,917	368,844	137,917	570,929	195,830

DIRECTORY OF FIRMS IN THE CANADIAN ASBESTOS MINING INDUSTRY, 1937.

<u>Name of Firm</u>	<u>Head Office Address</u>	<u>Location of Plant</u>
<u>QUEBEC -</u>		
Asbestos Corporation Ltd.	Canada Cement Building, Montreal	Thetford Mines, Black Lake, Coleraine.
Bell Asbestos Mines Ltd.	Thetford Mines	Thetford Tp.
Canadian Johns-Manville Co. Ltd.	Sun Life Building, Montreal	Asbestos
Granville, R. G. (a)	625 Burnside Place, Montreal	Coleraine.
Johnson's Company	Thetford Mines	Thetford Mines, Coleraine.
La Cie d'Amiante de Thetford, Ltd. (a)	Thetford Mines	Adstock
Nicolet Asbestos Mines Ltd.	820 Transportation Bldg., Montreal	Norbestos
Quebec Asbestos Corp. Ltd.	East Broughton Station	East Broughton Sta.
Testaguzza, Angelo	Thetford Mines	(contractor)
<u>ONTARIO -</u>		
Rahn Lake Mines Corp. Ltd.	8½ Main St. W., North Bay	Barnockburn Tp., Matachewan Dist.

(a) Carried on exploration only.

THE ASBESTOS PRODUCTS INDUSTRY, 1937.

Production in the asbestos products industry during 1937 was valued at \$1,896,677, an increase of 47 per cent over the total of \$1,293,909 reported for the previous year. Among the principal products made from asbestos during the year under review, were - brake lining at \$580,487; boiler and pipe covering at \$212,341; packings at \$131,213; clutch facings at \$126,124; paper at \$85,437; gaskets at \$23,167; cloth at \$6,795, and other asbestos lines made by one or two firms such as dryer felt, shingles and yarn. Other products made by firms in this industry included rockwool, hydraulic brake hose and packings of rubber, duck and flax.

In 1937 there were 13 plants in this industry, 6 being located in Quebec, 6 in Ontario, and 1 in Nova Scotia. Capital employed amounted to \$2,003,659 and employment was afforded to a monthly average of 451 people who received \$464,882 in salaries and wages. These firms also expended \$812,639 for materials used in manufacturing processes and \$91,252 for fuel and electricity.

Table 16 - PRINCIPAL STATISTICS OF THE ASBESTOS PRODUCTS INDUSTRY, 1929 - 1937.

Year	Number of plants	Capital employed \$	Average number of em- ployees	Salaries and wages \$	Cost of fuel and electricity at works \$	Cost of materials at works \$	Gross selling value of products at works \$
1929 .....	12	2,949,712	351	359,433	80,902	1,348,460	2,286,638
1930 .....	11	2,316,645	306	401,490	77,082	1,327,025	2,301,924
1931 .....	13	1,112,141	240	302,638	57,339	729,771	1,308,183
1932 .....	13	2,682,882	279	280,953	67,732	559,673	1,067,801
1933 .....	11	1,777,975	222	208,580	55,031	331,062	757,626
1934 .....	11	1,391,873	228	233,379	46,488	387,074	910,983
1935 .....	13	1,703,301	327	323,854	66,793	518,994	1,130,282
1936 .....	13	1,955,676	372	376,574	79,290	622,530	1,293,909
1937 .....	13	2,003,659	451	464,882	91,252	812,639	1,896,677

Table 17 - PRINCIPAL STATISTICS, BY PROVINCES, 1936 and 1937.

Province	Number of plants	Capital employed \$	Average number of em- ployees	Salaries and wages \$	Cost of fuel and electricity at works \$	Cost of materials at works \$	Gross selling value of products at works \$
<u>1936</u>							
Quebec .....	6	1,440,159	271	257,264	64,588	449,272	853,334
Nova Scotia .....	1)	515,517	101	119,310	14,702	173,258	440,575
Ontario .....	6)						
CANADA .....	13	1,955,676	372	376,574	79,290	622,530	1,293,909
<u>1937</u>							
Quebec .....	6	1,411,039	332	318,929	72,131	550,404	1,227,285
Nova Scotia .....	1)						
Ontario .....	6)	592,620	119	145,953	19,121	262,235	669,392
CANADA .....	13	2,003,659	451	464,882	91,252	812,639	1,896,677

Table 18 - CAPITAL EMPLOYED, BY PROVINCES, 1936 and 1937.

Province	Present value of land, buildings, fixtures, machinery and tools \$	Inventory value of materials on hand, finished products and stocks in process \$	Cash, bills and accounts receivable, pre- paid expenses, etc. \$	TOTAL CAPITAL EMPLOYED \$
<u>1936</u>				
Quebec .....	925,653	263,769	250,737	1,440,159
Other provinces ..	281,696	147,205	86,616	515,517
CANADA .....	1,207,349	410,974	337,353	1,955,676
<u>1937</u>				
Quebec .....	596,708	428,459	385,892	1,411,039
Other provinces ..	516,615	189,211	86,794	592,620
CANADA .....	913,323	617,650	472,686	2,003,659



Table 19 - EMPLOYEES, SALARIES AND WAGES, BY PROVINCES, 1936 and 1937.

Province	Average number of employees					Salaries	Wages	TOTAL SALARIES and WAGES
	On salaries		On wages		TOTAL			
	Male	Female	Male	Female				
	No.	No.	No.	No.				
1936								
Quebec .....	35	6	210	22	271	68,034	189,250	257,284
Other provinces ...	17	9	74	1	101	57,186	62,124	119,310
CANADA .....	52	15	284	23	372	125,220	251,374	376,594
1937								
Quebec .....	51	5	249	27	332	86,563	232,366	318,929
Other provinces ...	21	10	88	...	119	63,680	82,273	145,953
CANADA .....	72	15	337	27	451	150,243	314,639	464,882

Table 20 - WAGE-EARNERS, BY MONTHS, 1936 and 1937. (On the 15th of each month)

Month	1936			1937		
	Male	Female	TOTAL	Male	Female	TOTAL
	No.	No.	No.	No.	No.	No.
January .....	260	19	279	306	25	331
February .....	266	19	285	311	25	336
March .....	268	20	288	312	24	336
April .....	280	22	302	314	26	340
May .....	291	25	316	360	26	386
June .....	292	27	319	370	29	399
July .....	270	23	293	345	27	372
August .....	269	23	292	354	29	383
September .....	299	23	322	362	28	390
October .....	310	23	333	347	29	376
November .....	300	26	326	346	29	375
December .....	307	26	333	338	30	368
AVERAGE .....	284	23	307	337	27	364

Table 21 - REGULAR HOURS WORKED PER WEEK BY WAGE-EARNERS, 1936 and 1937. (Based on period of highest employment)

Regular hours worked per week	Per cent of wage-earners		Regular hours worked per week	Per cent of wage-earners	
	1936	1937		1936	1937
40 hours or less .....	7.2	3.1	49 - 50 hours .....	7.2	1.7
41 - 43 hours .....	1.6	4.6	51 - 54 hours .....	...	0.7
44 hours .....	24.4	22.4	55 hours .....	16.3	21.0
45 - 47 hours .....	0.3	0.5	60 hours and over ....	43.0	5.3
48 hours .....	...	40.7			

Table 22 - FUEL and ELECTRICITY USED, 1936 and 1937.

Kind	Unit of measure	1936		1937	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Anthracite coal .....	short ton	6	64	9	105
Bituminous coal - Canadian .....	short ton	3,557	21,233	4,050	24,306
Imported .....	short ton	...	...	20	105
Coke .....	short ton	6	60	10	105
Gasoline .....	Imp. gal.	156	39	156	39
Fuel oil .....	Imp. gal.	316,147	20,813	374,576	25,560
Kerosene .....	Imp. gal.	225	38	1,331	213
Gas - Manufactured .....	M cu. ft.	286	278	281	269
Electricity purchased .....	K. W. H.	2,293,636	36,765	2,772,393	40,750
TOTAL .....	\$	...	79,290	...	91,252

Table 23 - POWER EQUIPMENT, 1936 and 1937.

	1 9 3 6		1 9 3 7	
	Number of units	Total rated horse power	Number of units	Total rated horse power
Electric motors - Ordinarily in use .....	286	2,825	344	3,162
In reserve or idle .....	5	103	1	5
Total .....	291	2,928	345	3,167
Boilers ..... - Ordinarily in use .....	8	918	8	1,108
In reserve or idle .....	1	200	...	...
Total .....	9	1,118	8	1,108

Table 24 - MATERIALS USED IN THE MANUFACTURE OF ASBESTOS PRODUCTS, 1936 and 1937.

Material	Unit of measure	1 9 3 6		1 9 3 7	
		Quantity	Cost at works \$	Quantity	Cost at works \$
Asbestos fibre .....	lb.	9,084,553	149,649	11,788,087	209,871
Asbestos cloth .....	lb.	16,060	4,689	30,477	10,073
Asbestos paper, corrugated and plain .....	lb.	147,136	6,947	123,913	5,444
Asbestos sheets and strips .....	lb.	19,036	9,518	57,284	12,851
Asbestos yarn .....	lb.	216,992	58,214	295,470	77,579
Cotton cloth and yarn .....	\$	...	51,893	...	68,286
Rubber and rubber sheets .....	lb.	36,071	3,152	94,525	19,474
Containers and packing material .....	\$	...	69,842	...	81,566
All other materials .....	\$	...	268,626	...	327,495
TOTAL .....	\$	...	622,530	...	812,639

Table 25 - PRODUCTS MANUFACTURED IN THE ASBESTOS PRODUCTS INDUSTRY, 1936 and 1937.

Product	Unit of measure	1 9 3 6		1 9 3 7	
		Quantity	Cost at works \$	Quantity	Cost at works \$
Asbestos brake linings - Moulded .....	ft.	1,603,835	252,417	2,263,300	391,919
Other .....	ft.	954,357	139,892	1,449,744	188,568
Asbestos boiler and pipe covering .....	ft.	1,757,708	162,216	2,028,782	212,341
Asbestos cloth .....	lb.	11,940	4,200	10,806	6,795
Asbestos clutch facings .....	No.	...	91,147	557,916	126,124
Asbestos gaskets .....	lb.	33,655	21,216	39,380	23,167
Asbestos packings of all kinds .....	lb.	257,780	113,821	433,083	151,213
Asbestos paper .....	lb.	1,844,768	78,796	2,413,150	85,437
All other products (x) .....	\$	...	430,204	...	731,113
TOTAL .....	\$	...	1,293,909	...	1,896,677

(x) Includes products made by 1 firm such as rockwool, asbestos dryer felt, hydraulic brake hose, asbestos shingles, asbestos yarn, packings of rubber, duck and flax, etc.

Table 26 - PRODUCTION OF ASBESTOS BRAKE LININGS, PIPE COVERINGS AND PACKINGS, 1925 - 1937.

Year	Asbestos brake linings \$	Asbestos boiler and pipe coverings \$	Asbestos packings \$
1925 .....	272,217	179,717	187,916
1926 .....	279,783	232,963	184,515
1927 .....	326,072	277,339	204,376
1928 .....	439,431	376,399	218,904
1929 .....	555,739	406,395	234,595
1930 .....	459,616	283,312	197,601
1931 .....	321,864	178,611	144,983
1932 .....	309,942	83,964	87,682
1933 .....	316,938	65,725	91,597
1934 .....	458,147	99,948	78,860
1935 .....	439,904	136,917	107,824
1936 .....	392,309	162,216	113,821
1937 .....	580,487	212,341	131,213



DIRECTORY OF FIRMS IN THE ASBESTOS PRODUCTS INDUSTRY, 1937.

<u>Names of Firms and Location of Plants</u>	<u>Main Products, 1937.</u>
Guildfords Limited, June St., Halifax, N.S.	Asbestos boiler and pipe coverings, packings, gaskets, and cements; eel grass insulation.
Asbestonos Corporation, Limited St. Lambert, Montreal, P.Q.	Asbestos brake linings, clutch facings, packings and brake blocks.
Asten-Hill Ltd., Valleyfield, P.Q.	Asbestos dryer felts.
Modern School Furniture Ltd., 2035 Desjardins St., Montreal, P.Q.	Asbestos blackboards.
Atlas Asbestos Company Limited, 110 McGill St., Montreal, P.Q.	Asbestos gaskets and cloth.
Canadian Johns-Manville Co. Ltd., Asbestos, P.Q.	Asbestos brake linings, boiler and pipe covering, mill- board, gaskets, clutch facings, packings, paper, shingles, refractory cements, yarn, etc., and mineral wool.
Philip Carey Company Limited, Lennoxville, P.Q.	Asbestos boiler and pipe covering, paper, millboard.
Beldam's Asbestos Packing & General Mfg. Co. Ltd., Toronto, Ont.	Asbestos gaskets.
Canadian Raybestos Co. Ltd., 290 Perry St., Peterboro, Ont.	Asbestos brake linings, clutch facings, packings and gaskets; brass rivets, rubber hose.
Eureka Mineral Wool & Asbestos Co., 102 Adelaide St. W., Toronto, Ont.	Asbestos boiler and pipe covering, gaskets and cement.
Garlock Packing Company, 200 Queen St. N., Hamilton, Ont.	Asbestos packings and gaskets; rubber, duck and flax packings.
Hamilton Engine & Packing Co., 56 Alanson St., Hamilton, Ont.	Asbestos boiler and pipe covering, gaskets and cloth.
Wild, Arthur C., 38 Hiron Ave., Toronto, Ont.	Asbestos boiler and pipe covering, corrugated paper, felt pipe covering.

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