ASBESTOS

By Oliver Bowles and K. G. Warner

SUMMARY OUTLINE

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The most striking event in the asbestos industry during 1937 was the remarkable increase in imports of crude fibers from Africa. Ten years ago imports of crudes from that source about equaled those from Canada in quantity. The proportion from Africa has gained steadily, and in 1937 more than 81 percent of the total imports of crudes originated there compared with 18 percent in Canada. Imports for 1937 originating in Africa more than doubled those reported for 1936, whereas imports from Canada made virtually no gain. 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 fiber" may be used for spinning. Unfortunately, the figures are not broken down to show the actual quantity so used, but even if full allowance is made for the milled spinning fibers imported from Canada it is evident that the United States is becoming more and more dependent upon Africa for its supplies of fiber necessary for woven brake linings and other textiles.

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. Arizona furnishes small quantities of high-grade chrysotile, chiefly of spinning quality, and Vermont is becoming an important producer of short-fiber chrysotile. Small quantities of anthophyllite, for which only a limited market has as yet been developed, are produced in Maryland, Montana, and North Carolina. As indicated in the table of salient statistics that follows, domestic sources furnished less than 4 percent of the consumption in 1937. Foreign supplies of crudes were obtained chiefly from the Union of South Africa and Southern Rhodesia, with subordinate quantities from Canada and the U. S. S. R. About 93 percent of the imports of spinning, shingle, paper fibers, and shorts came from Canada, and most of the remainder from the U. S. S. R. and Cyprus.

Three general reports of interest to the industry appeared during 1937.[1]

[1] Bowles, Oliver, Asbestos: Bull. 403, Bureau of Mines, 92 pp.
Howling, G. E., Asbestos: Imperial Inst. (London) Mineral Resources Department Bull., 2d ed., 88 pp.
Ross, J. G., and Jenkins, G. F., Asbestos: Am. Inst. Min. and Met. Eng., Industrial Minerals and Rocks, New York, 1937, pp. 79–96.

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The following table of salient statistics shows that domestic production in 1937 was 27 percent higher than in 1936. Asbestos sold or used by producers in 1937 increased 9 percent in quantity and 10 percent in value over 1936. Imports gained 26 percent in quantity and 39 percent in value. Compared with 1936 apparent consumption in the United States in 1937 increased 26 percent in quantity and 40 percent in value.

Salient statistics of the asbestos industry in the United States, 1936–37

	1936		1937	
	Short tons	Value	Short tons	Value
Domestic asbestos:				
Produced:				
Chrysotile	[1] 10,520	([2])	13,284	([2])
Amphibole	404	([2])	612	([2])
Total	[1] 10,924	([2])	13,896	([2])
Sold or used by producers:				
Chrysotile	[1] 10,719	[1] $302,301	11,547	$332,747
Amphibole	345	11,860	532	11,897
Total	[1] 11,064	[1] 314,161	12,079	344,644
Imports (unmanufactured)	243,602	7,524,937	307,188	10,470,208
Exports (unmanufactured)	3,744	310,197	3,004	253,734
Apparent consumption [3]	[1] 250,922	[1] 7,528,901	316,263	10,561,118
Exports of asbestos products	([2])	2,479,273	([2])	3,047,025

[1] Revised figures.
[2] Figures not available.
[3] Quantity sold or used by producers plus imports minus exports.

The following table shows the production of asbestos in recent years.

Asbestos sold or used by producers in the United States, 1933–37, by varieties

Year	Chrysotile		Amphibole		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1933	([1])	([1])	([1])	([1])	4,745	$130,677
1934	([1])	([1])	([1])	([1])	5,087	158,347
1935	([1])	([1])	([1])	([1])	8,920	292,927
1936	[2] 10,719	[2] $302,301	345	$11,860	[2] 11,064	[2] 314,161
1937	11,547	332,747	532	11,897	12,079	344,644

[1] Bureau of Mines not at liberty to publish figures separately for chrysotile and amphibole.
[2] Revised figures.

Consumption trends.—The following table shows trends in the asbestos-products industries of the United States during recent years. Apparent consumption (quantity sold or used by producers plus imports minus exports) gained remarkably in 1937. The volume of asbestos consumed depends primarily on two great industries, automobile manufacture and the building trades, but, as figure 1 indicates, its gain in 1937 was far in advance of that in either of these industries. The disproportionate increase in asbestos consumption probably was due partly to heavy demand for asbestos insulation used in the extensive power-plant reconditioning that accompanied the rapid upturn in manufacturing activity early in 1937. Another factor was an un-

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usually heavy demand for asbestos shingles and other asbestos-cement building materials. There may also have been a substantial

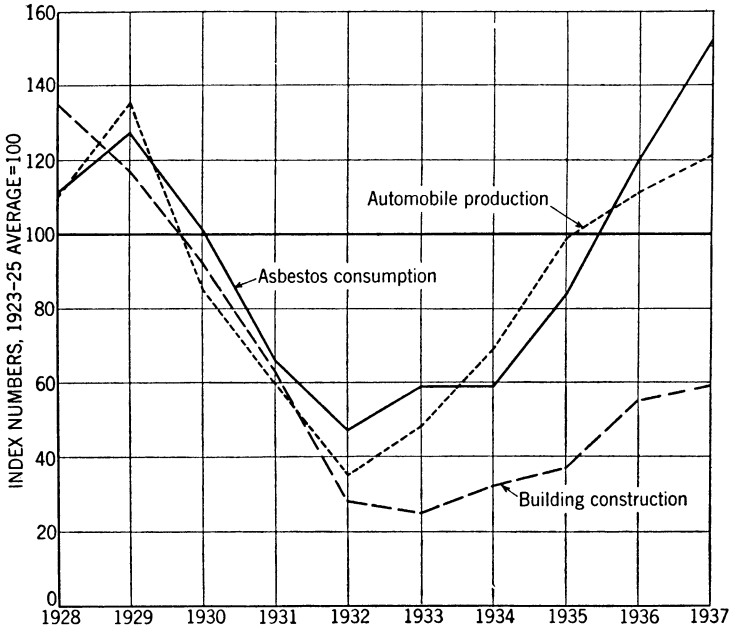


FIGURE 1.—Asbestos consumption compared with automobile production and building construction, 1928–37. Unlike units are reduced to percentages of the 1923–25 average. Statistics of asbestos are from the Bureau of Mines, automobiles from the Bureau of the Census, and building contracts from the Federal Reserve Board.

increase in consumers' stocks on which the Bureau of Mines has no data.

Raw asbestos consumed in the United States and asbestos products manufactured in and exported from the United States, 1933–37

Year	Raw asbestos—apparent consumption	Asbestos products—		Year	Raw asbestos—apparent consumption	Asbestos products—	
		Manufactured [1]	Exported [2]			Manufactured [1]	Exported [2]
	Short tons				*Short tons*		
1933	122,909	$43,716,852	$1,743,140	1936	[3] 250,922	(4)	$2,479,273
1934	123,752	(4)	2,142,514	1937	316,263	(4)	3,047,025
1935	174,655	58,815,424	2,261,929				

[1] Figures of Bureau of the Census (collected biennially for odd years) include value of certain gaskets, packing, and similar products in which little asbestos was employed.
[2] Compiled from the records of the Bureau of Foreign and Domestic Commerce.
[3] Revised figures.
[4] Figures not yet available.

Market conditions.—The demand for asbestos was strong throughout most of the year. Canadian plants operated almost at capacity to supply the market requirements of the shorter grades. Demand fell sharply during November and December.

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

According to quotations in Metal and Mineral Markets, prices of Canadian asbestos were constant throughout 1937 until December as follows: Crude No. 1, $550–$600 per short ton; Crude No. 2, $200–$225; spinning fibers, $90–$170; magnesia and compressed-sheet fibers, $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 advanced to $700–$750; various other crudes ranged from $150–$350; spinning fibers rose to $110–$200; and corresponding increases were noted for other grades.

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

Russian Crude AA was quoted at $470 per short ton 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 per short ton; paper stock, $35; cement stock, $23; and shorts and floats, $11–$12. In December prices were increased to $57, $40, $25, and $12–$18, respectively.

REVIEW BY STATES

Arizona.—Activity was considerably higher in 1937 than in 1936. Sales of chrysotile were made by the Johns-Manville Products Corporation, New York, N. Y.; Emsco Asbestos Co., Globe, Ariz.; Bear Canyon Asbestos Co., Globe, Ariz.; Arizona Chrysotile Asbestos Co., Globe, Ariz.; and Arizona Asbestos Corporation, 172 North Spring Street, Los Angeles, Calif. The entire sales were from mines in Gila County. The Emsco Asbestos Co. has nearly completed a fiberizing mill at Downey, Calif., where fiber received from the primary mill at Globe, Ariz., is prepared in grades adapted to all uses.

Maryland.—The Powhatan Mining Corporation, Woodlawn, Baltimore, Md., produced anthophyllite near Pylesville, Harford County, and prepared it for use chiefly for filtration of chemicals.

Montana.—The Universal Insulation Co. (successor to Vermiculite & Asbestos Co.), 2601 West 107th Street, Chicago, Ill., produced anthophyllite from a deposit near Libby, Lincoln County; and the Karstolite Co. mined anthophyllite near Gallatin Gateway, Gallatin County.

North Carolina.—The American Asbestos Co. (successor to National Asbestos Co.) produced a small quantity of anthophyllite at Minneapolis, Avery County.

Vermont.—The Vermont Asbestos Corporation, 500 Fifth Avenue, New York, N. Y., operated its enlarged mill at Eden, Lamoille County, actively during 1937. These deposits, which are regarded as an extension of the chrysotile belt of Quebec, Canada, furnish a large percentage of the entire output of asbestos in the United States. A full line of mill fibers is prepared, but virtually no crudes are produced.

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FOREIGN TRADE[2]

The following table shows imports of unmanufactured asbestos into the United States by countries and classes in 1936 and 1937. As indicated at the beginning of this chapter, a preponderance of the crude fibers used in the United States originates in Africa. All higher-grade mill fibers were imported from Canada except about 8 percent that came from the U. S. S. R. Canada supplied 94 percent of the short fibers in 1937, and most of the remainder originated in Cyprus and the U. S. S. R.

Asbestos (unmanufactured) imported for consumption in the United States, 1936–37, by countries and classes

Country	Crude (including blue fiber)		Mill fiber		Stucco and refuse		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1936								
Africa, British:								
Union of South Africa	2,080	$246,171					2,080	$246,171
Other British	3,266	412,138					3,266	412,138
Canada	2,281	432,004	73,259	$3,488,850	150,538	$2,469,910	226,078	6,390,764
Finland			22	840	59	1,528	81	2,368
Italy	25	20,928			1,044	14,187	1,069	35,115
Malta, Gozo, Cyprus					4,386	91,706	4,386	91,706
U. S. S. R.	40	7,074	6,382	300,300			6,422	307,374
United Kingdom	220	39,236	[1]	65			220	39,301
	7,912	1,157,551	79,663	3,790,055	156,027	2,577,331	243,602	7,524,937
1937								
Africa, British:								
Union of South Africa	4,247	490,335			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	276,010	8,315,846
Finland					88	3,568	88	3,568
France					122	1,735	122	1,735
Italy	31	22,332			958	19,755	989	42,087
Malta, Gozo, Cyprus					8,129	310,058	8,129	310,058
U. S. S. R.	39	8,464	7,978	363,804	2,196	85,392	10,213	457,660
United Kingdom	290	54,636					290	54,636
	14,326	1,926,057	103,766	5,139,317	189,096	3,404,834	307,188	10,470,208

[1] Less than 1 ton.

The following table shows imports and exports of unmanufactured asbestos for the 5-year period, 1933–37.

Asbestos (unmanufactured) imported for consumption in and exported from the United States, 1933–37

Year	Imports		Exports	
	Short tons	Value	Short tons	Value
1933	119,542	$3,542,483	1,378	$88,521
1934	120,334	3,377,994	1,669	94,182
1935	166,585	5,125,413	850	87,896
1936	243,602	7,524,937	3,744	310,197
1937	307,188	10,470,208	3,004	253,734

[2] Figures on imports and exports compiled by M. B. Price, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

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The following table shows exports of asbestos products in 1936 and 1937.

Manufactured asbestos products exported from the United States, 1936–37, by kinds

Product	1936		1937	
	Quantity	Value	Quantity	Value
Brake lining:				
Molded and semimolded	(1)	$670,979	(1)	$722,075
Not molded, linear feet	1,963,029	276,925	1,633,558	250,955
Clutch facing, number	316,585	77,065	499,870	140,711
Paper, millboard, and roll board, short tons	630	110,129	869	183,557
Pipe covering and cement, do	1,665	134,391	2,384	197,000
Textiles, yarn, and packing, do	665	676,853	762	789,398
Asbestos roofing, squares	41,459	142,335	37,026	166,312
Other asbestos manufactures, except roofing, short tons	1,354	217,065	1,889	324,100
Magnesia and manufactures, do	1,051	173,531	1,567	272,917

[1] Quantity not recorded.

WORLD PRODUCTION

The following table shows world production of asbestos, by countries, from 1933 to 1937, insofar as figures are available. The striking increase in output of fiber in Canada is the only feature of 1937 production that demands special comment.

World production of asbestos, 1933–37, by countries, in metric tons [1]

[Compiled by M. T. Latus]

Country [1]	1933	1934	1935	1936	1937
Argentina	----------	----------	[2] 13	----------	(3)
Australia:					
South Australia	13	----------	36	81	(3)
Western Australia	270	157	143	162	(3)
Bolivia	----------	----------	----------	(4)	21
Brazil	99	(3)	(3)	(3)	(3)
Bulgaria	----------	3	3	----------	(3)
Canada [5]	143,667	141,502	190,931	273,322	371,967
China	236	290	(3)	(3)	(3)
Chosen	12	4	6	69	(3)
Cyprus [6]	4,640	7,712	7,634	9,659	11,892
Czechoslovakia	1,200	2,100	2,600	2,700	(3)
Finland	1,340	1,735	1,742	3,963	(3)
France	400	400	450	(3)	(3)
Greece	14	30	2	1	(3)
India, British	----------	25	64	57	(3)
Indochina	----------	----------	----------	5	(3)
Italy	3,267	2,252	4,320	6,113	(3)
Japan [7]	1,000	1,000	1,000	1,000	1,000
Southern Rhodesia	27,381	29,224	38,644	51,116	51,722
Turkey	120	4	104	119	(3)
Union of South Africa	14,411	15,960	20,600	22,894	25,975
U. S. S. R.	71,700	92,200	95,500	125,117	(3)
United States (sold or used by producers)	4,305	4,615	8,092	[8] 10,037	10,958
Venezuela	----------	----------	76	71	(3)

[1] In addition to the countries listed, a small quantity of asbestos is reported from Madagascar.
[2] Rail and river shipments.
[3] Data not available.
[4] Less than 1 ton.
[5] Exclusive of sand, gravel, and stone (waste rock only), production of which is reported as follows: 1933, 5,847 tons; 1934, 4,238 tons; 1935, 2,744 tons; 1936, 2,815 tons; 1937, 3,611 tons.
[6] Exports.
[7] Approximate production.
[8] Revised figures.

CANADA

Sales of asbestos in Canada in 1937 were the highest in the history of the industry, having increased 36 percent in quantity and 46

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percent in value over those of 1936. The entire production was from the Province of Quebec. The following table shows sales in 1936 and 1937 as published in the Preliminary Report on the Mineral Production of Canada in 1937, issued by the Dominion Bureau of Statistics.

Sales of asbestos in Canada, 1936–37

	1936			1937		
	Short tons	Value		Short tons	Value	
		Total	Average per ton		Total	Average per ton
Grade:						
Crudes	3,440	$790,971	$229.93	3,846	$947,917	$246.47
Fibers	133,288	6,483,946	48.65	200,247	10,235,820	51.12
Shorts	164,559	2,683,266	16.31	205,933	3,322,054	16.13
	301,287	9,958,183	33.05	410,026	14,505,791	35.38
Sand, gravel, and stone (waste rock only)	3,103	2,356	.76	3,980	3,301	.83
Total asbestos and waste rock	304,390	9,960,539		414,006	14,509,092	
Rock mined	4,692,004			6,477,805		
Rock milled	3,568,992			5,440,607		

AFRICA

Southern Rhodesia.—The output of asbestos in Southern Rhodesia in 1937 was the highest on record, exceeding that of 1936 by about 1 percent. The Shabanie mine continues to be the largest producer. The following table shows Rhodesian production during recent years.

Asbestos produced in Southern Rhodesia, 1933–37

Year	Short tons	Value	Year	Short tons	Value
1933	30,182	£555,993	1936	56,346	£836,469
1934	32,214	402,745	1937	57,014	840,025
1935	42,598	646,658			

Union of South Africa.—Production in the Union of South Africa in 1937 increased about 13 percent over that of 1936 but was still considerably below the peak of 1929. The following table shows the output in recent years.

Asbestos produced in the Union of South Africa, 1933–37, by sources

Year	Short tons			Total value
	Transvaal	Cape Province	Total	
1933	12,662	3,224	15,886	£197,120
1934	14,783	2,810	17,593	203,033
1935	[1] 20,167	[1] 2,541	22,708	[2] 226,167
1936	21,188	4,048	25,236	[2] 337,229
1937	23,921	4,712	28,633	[2] 431,212

[1] Small quantity of blue fiber from Transvaal included under Cape Province.
[2] Value of local sales plus value of exports.

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The Union of South Africa produces and exports three varieties of asbestos—chrysotile, amosite, and crocidolite (blue). The following table shows the tonnage of each variety produced from 1933 to 1937.

Asbestos produced in the Union of South Africa, 1933–37, by varieties and sources, in short tons

Variety and source	1933	1934	1935 [1]	1936 [1]	1937 [2]
Amosite (Transvaal)	3,090	3,757	4,684	4,823	6,531
Chrysotile (Transvaal)	9,572	11,025	15,483	16,149	16,855
Blue (Transvaal)	----------	1	2,541	216	535
Blue (Cape)	3,224	2,810		4,048	4,712
	15,886	17,593	22,708	25,236	28,633

[1] Data from Annual Report of the Government Mining Engineer, Union of South Africa, Department of Mines.
[2] Data from Monthly Reports, Union of South Africa, Department of Mines.

Swaziland.—An important event in the African asbestos industry is the development of the Havelock mine in Swaziland by Turner & Newall, Ltd. It is reported that threatened exhaustion of reserves in the Amianthus mine, Transvaal, is the main incentive for this new enterprise. The asbestos will be carried to Barberton Station by an aerial ropeway 12½ miles long. The initial annual production is estimated at 24,000 tons of chrysotile fiber.

CYPRUS

Tunnel Asbestos Cement, Ltd., produced short-fiber chrysotile at Amiandos. The following table, compiled mainly from the Annual Report of the Inspector of Mines and Labour, shows exports during recent years. Virtually the entire production is exported.

Asbestos exported from Cyprus, 1933–37

Year	Long tons	Value	Year	Long tons	Value
1933	4,567	[1] £44,088	1936	9,506	£80,343
1934	7,590	[1] 73,562	1937	11,704	126,371
1935	7,513	50,174			

[1] Reported by Cyprus & General Asbestos Co., Ltd.

OTHER COUNTRIES

U. S. S. R.—No statistics later than those published in the Minerals Yearbook, 1937, are available.

Bolivia.—A sample of asbestos from Bolivia submitted to the Bureau of Mines through the courtesy of the Bureau of Foreign and Domestic Commerce consisted of crocidolite (blue asbestos) in fibers up to 5 inches in length. Although most of the sample was strong and evidently of good spinning grade, some fine, intermingled fibers were quite weak. The deposit, which is in the Department of Cochabamba in the Chapare region, is said to be extensive. The occurrence is interesting inasmuch as commercial deposits of blue asbestos have heretofore been confined to the Union of South Africa and to a small occurrence near Hawker, South Australia.

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