ASBESTOS

By Oliver Bowles and Dorothy I. Marsh

SUMMARY OUTLINE

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SUMMARY

Asbestos production in the United States in 1945 experienced a substantial gain over 1944. As in previous years, most of the domestic output consisted of the shorter grades of chrysotile mined in Vermont. Production in 1945 totaled 13,590 short tons compared with 7,558 tons in 1944, a gain of 80 percent. Domestic sales reached 12,226 short tons, a gain of 83 percent over 1944. The domestic producing industry furnished only 3 percent of total consumption in the United States during 1945.

Canada furnished a large part of the United States requirements of shingle stock, paper stock, and other of the nonspinning grades. Africa supplied a substantial part of longer grades that were of great importance in the military program and will continue in strong demand under peacetime conditions. Woven friction materials, particularly for automotive manufacture, and packings and gaskets employed in power-generating plants are among the important uses of the long fibers.

Amosite asbestos, used extensively in making 85-percent magnesia and other high-temperature molded insulation, is obtained only in South Africa. Blue asbestos (crocidolite), an important use of which is for making asbestos-cement pipe, is obtained chiefly in South Africa, although small quantities sometimes originate in Australia.

Tremolite asbestos, which is of value for filtering chemicals, was mined in Maryland for many years until the deposit was exhausted. Production has now shifted to California and Alaska.

There were no serious interruptions to imports of fiber either from Africa or Canada in 1945; accordingly, adequate supplies were available for military and essential industrial needs and to build up a stock pile as a reserve. With cessation of major military operations during the latter part of 1945, the situation was so favorable that all special canvasses conducted by the War Production Board were discontinued, and steps were taken to liquidate a large part of the

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Government stock pile, which was no longer regarded as necessary. Early in 1946, 3,000 tons of C & G3 and 1,400 tons of C & G4 (Rhodesian grades of chrysotile) were sold to the French Raw Materials Mission; and 1,500 tons of C & G3 and 4,000 tons of C & G4 to the Belgian Purchasing Mission. The Government stock pile is, therefore, almost depleted. At the end of 1945 there was a world shortage of shingle and paper grades of asbestos. As the building program attains increasing volume, the shortage will probably become more acute.

Salient statistics for asbestos in 1944 and 1945 are summarized in the following table.

Salient statistics of the asbestos industry in the United States, 1944–45

	1944		1945	
	Short tons	Value	Short tons	Value
Domestic asbestos—				
Produced:				
Chrysotile	[1] 7,166	[2]	13,340	[2]
Amphibole	[1] 392	[2]	250	[2]
Total produced	7,558	[2]	13,590	[2]
Sold or used by producers:				
Chrysotile	[1] 6,275	[1] $373,112	11,986	$413,359
Amphibole	[1] 392	[1] 7,222	240	3,989
Total sold or used by producers	6,667	380,334	12,226	417,348
Imports (unmanufactured)	383,049	18,542,940	374,199	16,284,915
Exports (unmanufactured)	475	58,983	8,550	837,175
Apparent consumption [3]	[1] 389,241	[1] 18,864,291	377,875	15,865,088
Exports of asbestos products	[2]	5,614,243	[2]	7,264,087

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

The following table shows domestic production of asbestos during recent years according to varieties.

Asbestos sold or used by producers in the United States, 1941–45, by varieties

Year	Chrysotile		Amphibole		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1941	22,439	$707,589	1,952	$18,164	24,391	$725,753
1942	13,373	480,245	2,108	18,612	15,481	498,857
1943	3,900	302,289	2,114	32,526	6,014	334,815
1944	[1] 6,275	[1] 373,112	[1] 392	[1] 7,222	6,667	380,334
1945	11,986	413,359	240	3,989	12,226	417,348

[1] Revised figure.

DOMESTIC INDUSTRY

REVIEW BY STATES

Alaska.—Tremolite asbestos was again produced in the Dahl Creek area, Kobuk River district. A small quantity of long slip-fiber chrysotile also was produced. The deposits of both varieties were worked by the Arctic Circle Exploration Co., Candle, Alaska.

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Arizona.—The Arizona Chrysotile Asbestos Co. of Globe continued to be the largest producer in the State. Arthur Enders produced both spinning and short fibers at the Reynolds Falls mine about 50 miles from Globe, Gila County. The Globe Los Angeles Mining Co. (address 724 S. Spring St., Los Angeles 14, Calif.) recovered short fiber from the waste dumps of the Canadian mine in Gila County. Guy Phillips of Globe and John A. Bacon of Roosevelt also produced in Gila County. The entire production of Arizona was of the chrysotile variety. Sales were considerably greater than in 1944.

The mill of Pine Top Asbestos Mines, financed by the Defense Plant Corporation, has been acquired by the Globe Asbestos Co. and is said to have begun production in January 1946.

California.—The Powhatan Mining Co. (Woodlawn, Baltimore, Md.) produced tremolite asbestos near Castella and Hazel Creek (Sims), Shasta County—shipping point, Dunsmuir. Homer E. Fenn also reported sales of tremolite from a deposit near Hazel Creek. Kohler & Chase shipped short-fiber chrysotile from the mine near Monticello, Napa County, but did not produce. Sales in 1945 were considerably smaller than in 1944.

Georgia.—The only producer in Georgia in 1945 was the Powhatan Mining Co. from its amphibole asbestos property near Dillard, Rabun County.

North Carolina.—A deposit of amphibole asbestos in Macon County not far from Dillard, which is over the line in Georgia, was worked by the Powhatan Mining Co. of Woodlawn, Baltimore, Md.

Vermont.—The Vermont Asbestos Mines Division of the Ruberoid Co. (500 5th Ave., New York 18, N. Y.) is operating both the new quarry 1 mile from the mill, and the old quarry close to the mill site. Both mill and quarries were operated most of the time throughout the winter of 1945–46, as well as during the summer months, but production was limited by a serious shortage of labor. The long fiber obtained in the new quarry has not yet been adapted to spinning purposes but is being prepared as a high-grade shingle fiber. Most of the output is short-fiber chrysotile. Production was far below plant capacity but was, nevertheless, much greater than in 1944.

TRENDS IN CONSUMPTION

Domestic consumption of unmanufactured asbestos and the value of exports of asbestos products for a 10-year period are indicated in the accompanying table. The value of asbestos products manufac-

Raw asbestos consumed in and asbestos products exported from the United States, 1936–45

Year	Raw asbestos—apparent consumption (short tons)	Asbestos products—exports (value)	Year	Raw asbestos—apparent consumption (short tons)	Asbestos products—exports (value)
1936	250, 922	$2, 479, 273	1941	438, 741	$4, 835, 194
1937	316, 263	3, 047, 078	1942	433, 919	5, 116, 919
1938	187, 150	2, 533, 916	1943	445, 902	4, 877, 864
1939	255, 547	3, 354, 920	1944 [1]	389, 241	5, 614, 243
1940	262, 199	3, 473, 248	1945	377, 875	7, 264, 087

[1] Revised figures.

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tured in the United States has not been compiled by the Bureau of the Census since 1939.

The building industry furnishes an extensive market for asbestos-cement, heat-insulating, and fireproofing products; accordingly, consumption trends of asbestos should correspond in general with trends in the construction industries. Power plants and industrial organizations also provide substantial markets for asbestos in the form of gaskets, packings, boiler lagging, pipe covering, and friction materials. The market requirements for such products may therefore be measured approximately by the volume of industrial production. These relationships are brought out in figure 1, in which asbestos consumption is plotted against total new construction and industrial production.

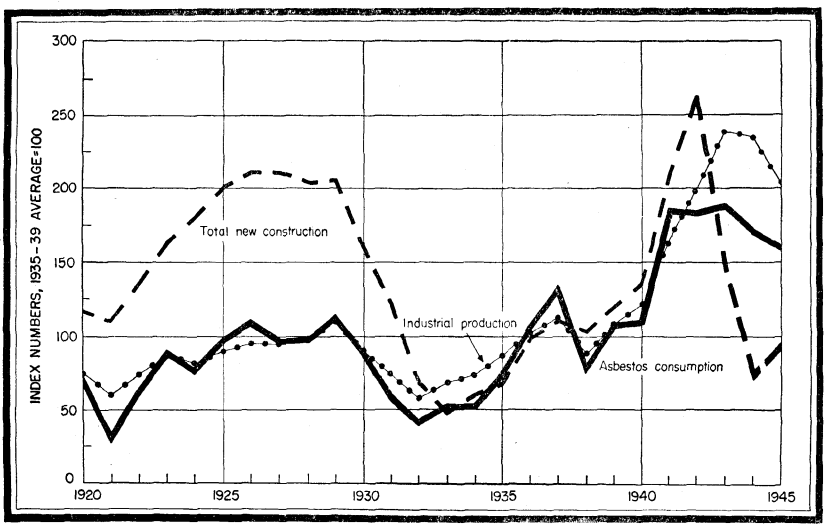


FIGURE 1.—Consumption of asbestos compared with total new construction and industrial production, 1920–45. Units are reduced to percentages of the 1935–39 average. Statistics on value of construction from Bureau of Foreign and Domestic Commerce and on industrial production from Federal Reserve Board.

CONSUMPTION ACCORDING TO USE

The Bureau of Mines has, for the first time, conducted a canvass of asbestos consumption by uses, but the returns are too incomplete and interpretation of the figures too complex to permit incorporation in this chapter. The figures will appear separately at a later time.

MARKET CONDITIONS

Although the Canadian mines were operating virtually at capacity and imports from Africa were uninterrupted, market demands threatened to exceed supply. Demands for spinning fibers eased somewhat during the early months of 1945 but became stronger toward its close. Decreased requirements because of canceled war orders were more than compensated by demands from liberated countries for crudes and spinning and shingle fibers. Moreover, there was an increasing demand for fibers of the latter category to supply the needs of new

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asbestos-cement industries recently established in several countries. A definite shortage of both spinning and shingle fibers had developed at the end of the year.

PRICES

Prices of asbestos as quoted in E&MJ Metal and Mineral Markets were unchanged throughout the year, as follows:

Per ton, f. o. b. Quebec mines, tax and bags included: Crude No. 1, $650–$750; crude No. 2 and sundry crudes, $165–$385; spinning fibers, $124–$233; magnesia and compressed sheet fibers, $124–$146.50; various grades shingle stock, $62.50–$85; various grades paper stock, $44–$49; cement stock, $28.50–$33; floats, $19.50–$21; shorts, $14.50–$26.50. Quotations in United States currency.

Per ton, f. o. b. Hyde Park, Vt.; Shingle fiber, $62.50–$65.50; paper-stock fiber, $44–$53; waste, $33; shorts, $14.50–$28.50; floats, $19.50.

NEW DEVELOPMENTS

Several new asbestos products have been perfected lately, among them an asbestos paper as thin as cigarette paper. Because of its excellent binding properties, its low moisture absorption, and its resistence to moderately high temperatures asbestos has a promising future for use in combination with plastics. Amosite asbestos has been suggested as a satisfactory substitute for kapok used in life jackets.

The new asbestos quarry and mill of the Compania Minas de Cemento de Tinaquillo, near Tinaquillo, Venezuela, began operation in 1945. A factory for making cement-asbestos products now under construction at Caracas will use the shorter fibers, and an export trade for the longer fibers will be sought.

FUTURE OUTLOOK

The largest tonnages of asbestos are used in the building trades. Asbestos-cement products in the form of flat and corrugated sheeting, wallboard, millboard, lumber, and roofing shingles are finding wider application at this time because of a lumber shortage. As the building program enlarges during 1946, the demands for such products will so increase that shortage of cement-stock fibers is forecast. Important accessories to the building trades are heat-insulation materials, such as pipe and boiler covering. Eighty-five percent magnesia pipe covering and block insulation, air-cell pipe covering made of asbestos paper, cements, and other insulating products will doubtless be in heavy demand to supply the needs of new industrial units, as well as many new public and private building projects.

A strong demand is in prospect also for the longer fibers applied to textile use. The revivified automobile industry will demand large quantities of woven brake linings and clutch facings, and many woven packings and gaskets will be needed to satisfy the requirements of industrial and power plants. There will, of course, be a tremendous decline in demand for cable coverings, other Navy uses, and friction materials for army mobile equipment and aircraft, but it is believed

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that industrial and construction needs will more than compensate for these losses.

The rehabilitation of asbestos products industries in foreign countries is an important factor in the raw materials situation. In most of the countries where such plants exist, there are no asbestos-producing industries. The supplies of raw materials must originate in the long-established centers of production, namely Canada, Africa, and Soviet Russia. This condition threatens to increase further the danger of a shortage of supply of certain grades. The U. S. S. R. is a large asbestos producer, but with growing industrialization it seems unlikely that large quantities of Russian fiber will be made available to world markets.

FOREIGN TRADE[1]

The following table shows imports of unmanufactured asbestos into the United States in 1944 and 1945. Total imports declined 2 percent in quantity and 12 percent in value. The larger proportional decline in value is due to a falling off in imports of crudes and high-grade mill fibers and an increase in imports of low-priced short fibers. Imports from Africa declined greatly. Imports from the U. S. S. R. were about the same in 1945 as in 1944, but the fiber received in 1945 was of higher grade.

Asbestos (unmanufactured) imported for consumption in the United States, 1944–45 by countries and classes

Country	Crude (including blue fiber)		Mill fibers		Short fibers		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1944								
Africa:								
Southern Rhodesia	7,966	$1,522,825					7,966	$1,522,825
Union of South Africa	19,196	1,859,982					19,196	1,859,982
Bolivia	15	1,905					15	1,905
Canada	1,528	564,545	145,791	$9,757,627	205,928	$4,720,939	353,247	15,043,111
Chile	14	1,118					14	1,118
U. S. S. R.			2,610	113,390			2,610	113,390
United Kingdom			1	609			1	609
	28,719	3,950,375	148,402	9,871,626	205,928	4,720,939	383,049	18,542,940
1945								
Africa:								
Southern Rhodesia	2,545	531,501					2,545	531,501
Union of South Africa	13,247	1,363,434					13,247	1,363,434
Australia	2	162					2	162
Canada	780	293,858	137,734	9,105,325	217,254	4,813,867	355,768	14,213,050
Cuba	11	1,975					11	1,975
U. S. S. R.	2,625	174,183					2,625	174,183
United Kingdom	1	610					1	610
	19,211	2,365,723	137,734	9,105,325	217,254	4,813,867	374,199	16,284,915

[1] Figures on imports and exports compiled by M. B. Price, of the Bureau of Mines, from records of the U. S. Department of Commerce.

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The following table shows imports and exports of unmanufactured asbestos for the 5-year period 1941–45.

Asbestos (unmanufactured) imported for consumption in and exported from the United States, 1941–45

Year	Imports		Exports	
	Short tons	Value	Short tons	Value
1941	419,196	$17,909,077	4,846	$325,825
1942	419,242	21,217,650	774	134,411
1943	440,255	23,053,524	367	36,856
1944	383,049	18,542,940	475	58,983
1945	374,199	16,284,915	8,550	837,175

The following table shows exports of asbestos products in 1944 and 1945. The value of exports shows a gain of 29 percent.

Manufactured asbestos products exported from the United States, 1944–45, by kinds

Product	1944		1945	
	Quantity	Value	Quantity	Value
Brake lining:				
Molded and semimolded short tons	1,035	$1,467,692	1,093	$1,580,652
Not molded linear feet	321,019	193,443	353,028	236,099
Clutch facing number	1,412,544	567,653	1,360,846	555,995
Paper, millboard, and roll board short tons	773	121,137	754	136,019
Pipe covering and cement do	1,730	264,349	1,825	213,468
Textiles, yarn, and packing do	1,085	1,346,407	1,665	1,994,297
Asbestos roofing squares	59,580	438,800	119,770	676,898
Other asbestos manufactures, except roofing short tons	5,353	957,536	6,047	1,208,100
Magnesia and manufactures do	1,266	257,226	9,131	662,559
		5,614,243		7,264,087

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WORLD PRODUCTION [2]

Production of asbestos throughout the world, by countries, from 1938 to 1945, insofar as figures are available, is indicated in the following table.

World production of asbestos, 1938–45, by countries, in metric tons [1]

Country [1]	1938	1939	1940	1941	1942	1943	1944	1945
Argentina		110	150	84	51	(2)	(2)	(2)
Australia:								
New South Wales			9	38	142	422	353	(2)
South Australia	49	46	119	152	64	11	6	(2)
Tasmania	4			4	7	19	105	(2)
Western Australia	123	279	370	62	121	247	313	(2)
Bolivia	21	[3] 2	[3] 71	[3] 211	[3] 58	[3] 22	[3] 13	[3] 61
Brazil	120	45	500	[3] 13	(2)	(2)	(2)	(2)
Canada (sales) [4]	262,894	330,642	313,504	433,492	398,669	423,831	380,349	423,557
China	(2)	(2)	100	(2)	(2)	(2)	(2)	(2)
Cyprus (exports)	5,668	10,377	9,673	4,874	3,503	1,332	(2)	(2)
Egypt						7	240	[5] 50
French Morocco					116	182	507	(2)
Greece	85	(2)	(2)	(2)	(2)	(2)	(2)	(2)
India, British	90	266	251	372	514	293	(2)	(2)
Italy	6,860	6,765	8,269	10,766	11,695	[6] 7,419	(2)	(2)
Japan (approximate)	1,000	1,000	1,000	(2)	(2)	(2)	(2)	(2)
Kenya Colony	5	(2)	(2)	213	307	321	341	(2)
Madagascar				3	11	(2)	3	(2)
New Zealand				54	43	190	17	(2)
Southern Rhodesia	53,352	52,900	[3] 52,518	[3] 49,191	[3] 56,546	[3] 51,149	52,882	51,118
Spain				2	84	50		(2)
Swaziland		7,233	18,873	19,166	23,219	17,179	29,628	(2)
Switzerland					6	11	7	(2)
Turkey	668	88	99	146	295	133	231	(2)
Uganda	53	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Union of South Africa	21,025	20,003	24,849	[7] 25,655	31,351	32,346	31,372	[5] 19,796
U. S. S. R.	86,000	(2)	(2)	(2)	(2)	(2)	(2)	(2)
United States (sold or used by producers)	9,471	14,024	18,198	22,127	14,044	5,456	6,048	11,091
Venezuela	(2)	(2)	20	(2)	(2)	(2)	(2)	(2)

[1] In addition to countries listed asbestos is produced in Algeria, Bulgaria, Czechoslovakia, Finland, France, Indochina, and Korea (Chosen).
[2] Data not available.
[3] Exports.
[4] Exclusive of sand, gravel, and stone (waste rock only), production of which is reported as follows: 1938, 2,975 tons; 1939, 3,535 tons; 1940, 5,880 tons; 1941, 7,669 tons; 1942, 7,339 tons; 1943, 6,272 tons; 1944–45, data not available.
[5] January to September, inclusive.
[6] January to June, inclusive.
[7] Preliminary.

CANADA

Production of asbestos in the Thetford Mines area of the Province of Quebec in 1945 was 11 percent greater than in 1944 and was only 2 percent less than in the peak year 1941. Production of crude fiber continues to decline. The extensive program of underground mining by the block-caving method undertaken by Canadian Johns-Manville is progressing satisfactorily, and production from stopes may begin within a year.

To the three United States asbestos-products manufacturers that have asbestos mines and mills in Quebec is to be added a fourth—Flintkote Mines, Ltd., a subsidiary of the Flintkote Co., 4111 R. C. A. Building, New York 20, N. Y. This firm has purchased an asbestos property a few miles north of Thetford Mines.

The figures for 1945 in the following table have been released by the Department of Mines of the Province of Quebec.

[2] Statistics compiled by B. B. Waldbauer.

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Sales of asbestos in Canada, 1944–45, by grades

	1944			1945		
	Short tons	Value		Short tons	Value	
		Total	Average per ton		Total	Average per ton
Grade:						
Crudes	1,547	$621,956	$402.04	978	$412,557	$421.84
Fibers	190,233	14,305,966	75.20	219,767	16,628,467	75.66
Shorts	227,485	5,691,594	25.02	246,149	5,761,487	23.41
	419,265	20,619,516	49.18	466,894	22,802,511	48.84
Rock mined	7,778,805			(1)		
Rock milled	6,587,740			(1)		

[1] Data not available.

AFRICA

Southern Rhodesia.—No figures for Rhodesian asbestos production were published from 1940 to 1944, but export data, which are available for those years, are a fair measure of production because local consumption is quite small. As indicated in the following table, production data are now available for 1944 and 1945. Exports for 1944 were 46,755 short tons valued at £1,627,187.

Asbestos exported from or produced in Southern Rhodesia, 1940–45

Year	Short tons	Value	Year	Short tons	Value
1940	[1] 57,891	£1,419,566	1943	[1] 56,382	£1,827,387
1941	[1] 54,224	1,419,405	1944	[2] 58,293	(3)
1942	[1] 62,332	1,811,042	1945	[2] 56,348	(3)

[1] Exports. [2] Production. [3] Data not available.

Swaziland.—Chrysotile production in Swaziland is increasing greatly. As indicated in the preceding table of world production, output in 1944 was 28 percent greater than in 1942, the year of highest production up to 1944.

Union of South Africa.—Data for the first 9 months of 1945 show that both production and exports for the Union were considerably lower than in any year since 1941. Available data on exports and production, by Provinces, are given in the following table.

Asbestos produced in and exported from the Union of South Africa, 1940–45

Year	Production (short tons)				Exports	
	Transvaal	Cape Province	Natal	Total	Short tons	Value
1940	21,011	6,381	(1)	27,392	43,482	£934,417
1941	[2] 21,704	[2] 6,576	(1)	[2] 28,280	43,588	990,756
1942	27,278	7,281	(1)	34,559	55,223	1,348,977
1943	27,768	7,888	(1)	35,656	50,182	1,256,902
1944	26,747	7,835	(1)	34,582	[3] 28,203	[3] 673,735
1945 [4]	15,516	6,305	(1)	21,821	[3] 17,710	[3] 452,100

[1] Data not available.
[2] Partly estimated.
[3] Subject to revision.
[4] January to September, inclusive.

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Four varieties of asbestos are marketed in the Union. Amosite, the principal variety, is produced only in the Transvaal. Crocidolite (blue asbestos) is mined in both the Transvaal and Cape Provinces. Because of depletion of the Amianthus mine chrysotile production in the Transvaal has declined greatly since 1937. The following table shows the tonnage of each variety produced, by Provinces, during recent years.

Asbestos produced in the Union of South Africa, 1940–45, by varieties and sources, in short tons [1]

Variety and source	1940	1941 [2]	1942	1943	1944	1945 [3]
Amosite (Transvaal)	17,767	19,211	24,924	23,189	22,848	13,067
Chrysotile (Transvaal)	646	1,658	1,917	2,034	2,014	1,412
Blue (Transvaal)	2,520	776	360	2,456	1,831	1,037
Blue (Cape)	6,381	6,576	7,281	7,888	7,835	6,305
Anthophyllite (Transvaal)	78	59	77	89	54	----------
	27,392	28,280	34,559	35,656	34,582	21,821

[1] Data from Union of South Africa, Department of Mines, Quarterly Report.
[2] Partly estimated.
[3] January to September, inclusive.

OTHER COUNTRIES

Statistics of the Russian asbestos industry have not been available for several years. Egypt, French Morocco, Turkey, and Kenya Colony have recently become small producers. The Cyprus industry is active, but statistics of production or exports since 1943 are not now available.

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