Asbestos

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GENERAL SUMMARY

IN 1946 the demand for asbestos far exceeded the supply. Construction and other consuming industries were booming, and they could have absorbed more asbestos products than manufacturers were able to furnish. Consequently, old plants were expanded and many new ones built. Part of this expansion program was undertaken with insufficient consideration of the availability of raw asbestos.

Domestic production of asbestos, principally from Vermont, totaled 14,426 short tons in 1946, 6 percent more than in 1945. Domestic mines furnished only 3 percent of the asbestos consumed in the United States in 1946. Imports reached a record tonnage.

Most of the chrysotile consumed in the United States is imported from Canada. Smaller quantities come from Africa and Russia. The imports from Africa were of the longer grades. Before the war Russia exported a substantial tonnage of chrysotile, but at present her sales to other countries are very small. All of the Russian asbestos received in 1946 was classified as crude.

All of the amosite used in this country for molded and other insulation products was imported from South Africa. Virtually all of the blue asbestos (crocidolite) used in asbestos-cement pipe came from South Africa; a small tonnage came from Australia. The unfavorable location of the Australian deposits limits their ability to compete.

Domestic production of tremolite asbestos for filtering was reported from California only. Limited quantities of amphibole asbestos were produced in several States.

Salient statistics of the asbestos industry in the United States, 1945–46

	1945		1946	
	Short tons	Value	Short tons	Value
Domestic asbestos—				
Produced:				
Chrysotile	13,340	(1)	13,989	(1)
Amphibole	250	(1)	437	(1)
Total produced	13,590	(1)	14,426	(1)
Sold or used by producers:				
Chrysotile	11,986	[2] $442,056	13,645	$499,260
Amphibole	240	3,989	430	5,504
Total sold or used by producers	12,226	[2] 446,045	14,075	504,764
Imports (unmanufactured)	374,199	16,284,915	456,688	18,731,378
Exports (unmanufactured)	8,550	837,175	11,011	1,395,367
Apparent consumption [3]	377,875	[2] 15,893,785	459,752	17,840,775
Exports of asbestos products	(1)	7,264,087	(1)	9,263,092

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

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Among the minerals that will be stock-piled by the Army and Navy Munitions Board are some grades of amosite and long-fiber grades of chrysotile that ordinarily are obtained from Africa. Funds were appropriated by the Congress in 1946; but the purchase program remained relatively inactive, owing to the shortage of supply. Stocks of asbestos accumulated by the Government during the war were being sold to industry and at the end of the year were nearly depleted.

In accord with the general trend, prices of raw asbestos increased in 1946.

Salient statistics for asbestos in 1945 and 1946 are summarized in the preceding table.

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

Asbestos sold or used by producers in the United States, 1942–46, by varieties

Year	Chrysotile		Amphibole		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
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	6,275	373,112	392	7,222	6,667	380,334
1945	11,986	[1] 442,056	240	3,989	12,226	[1] 446,045
1946	13,645	499,260	430	5,504	14,075	504,764

[1] Revised figure.

REVIEW BY STATES

Alaska.—Small quantities of tremolite and chrysotile asbestos have been produced in the Kobuk River district in recent years by the Arctic Circle Exploration Co., Candle, Alaska, but no output was reported for 1946.

Arizona.—The Arizona Chrysotile Asbestos Co. of Globe was again the largest producer in the State. Arthur Enders of Globe purchased, milled, and resold asbestos but did not mine in 1946. The Globe Asbestos Co. operated the Fiber King mine in Gila County. Total sales of Arizona fiber were somewhat lower than in 1945. All the asbestos produced in Arizona was chrysotile. The mill of the Globe Asbestos Co. was operated part of the last 2 months of 1946.

California.—The Powhatan Mining Co. (Woodlawn, Baltimore, Md.) produced tremolite asbestos near Castella, Shasta County. Homer Fenn of Hazel Creek reported production of tremolite from the Loma Blanca mine in Shasta County. Production of amphibole asbestos was reported also by H. Zimdars and J. Delume of Foresthill, Placer County.

Georgia.—The only asbestos production in Georgia in 1946 came from an amphibole mine near Dillard, Rabun County, operated by Powhatan Mining Co. of Woodlawn, Baltimore, Md.

North Carolina.—Powhatan Mining Co. was also the only producer of asbestos in North Carolina in 1946. The mine is near Dillard, Ga., but is across the State line in Macon County, N. C.

Vermont.—The Vermont Asbestos Mines Division of the Ruberoid Co. (500 Fifth Ave., New York 18, N. Y.) operated its mill, near

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Eden, three shifts a day. Construction of additional mill capacity is being considered, but no major equipment was installed in 1946. The company obtains some exceptionally long fiber from its nearby mine; but it has not been adapted to spinning uses, and the entire output is milled to nonspinning grades. Production was substantially greater than in 1945.

TRENDS IN CONSUMPTION

The accompanying table shows the domestic consumption of unmanufactured asbestos and the value of asbestos products exported during the past 10 years. Statistics of asbestos products manufactured in the United States have not been compiled by the Bureau of the Census since 1939.

Raw asbestos consumed in and asbestos products exported from the United States, 1937–46

Year	Raw asbestos—apparent consumption (short tons)	Asbestos products—exports (value)	Year	Raw asbestos—apparent consumption (short tons)	Asbestos products—exports (value)
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	389,241	5,614,243
1940	262,199	3,473,248	1945	377,875	7,264,087
1941	438,741	4,835,194	1946	459,752	9,263,092

Asbestos is widely used in industry in such products as pipe covering, packing, gaskets, and friction materials; and the building industry provides a large market for asbestos-cement products, floor tile, insulation, and other uses. The correlation between activity in construction, general industrial production, and asbestos consumption during the past 27 years is shown in figure 1.

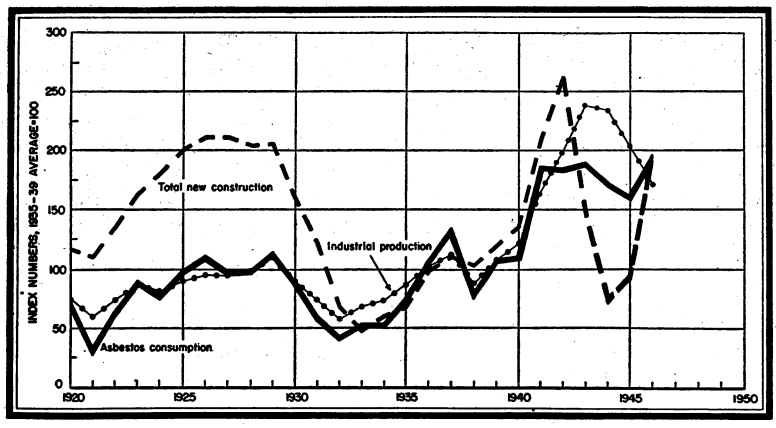


FIGURE 1.—Consumption of asbestos compared with total new construction and industrial production, 1920–46. Units are reduced to percentages of the 1935–39 average. Statistics on value of construction from Bureau of Foreign and Domestic Commerce and on industrial production from Federal Reserve Board.

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MARKET CONDITIONS

Demand for asbestos increased in virtually all consuming countries in 1946, and a world-wide shortage developed. European and Asiatic factories that were cut off from the major sources of supply during the war were in the market for large tonnages of raw asbestos. In the past few years, eight asbestos-cement plants have been built in Latin America.[1] Similarly the American asbestos-products industry has grown. In 1946 the demand for products was so great that virtually all plants could have operated at capacity, but not enough raw material was available. The most acute shortage was of the grades of fiber suitable for the manufacture of asbestos-cement products, and there was also a severe deficiency in groups 6 and 7. Prolonged strikes in the factories of some of the principal manufacturers made available a substantial quantity of raw asbestos to the others, but this afforded only minor relief. At their present rate of expansion, there is little prospect that the mines will be able to satisfy the demand in the coming year. As Russian exports of raw asbestos are now very small, the burden of supplying the world market has fallen on Canada and Africa.

PRICES

The prices of asbestos, in common with most other commodities, increased during 1946. As quoted in the magazine Asbestos, the prices per short ton of Canadian fiber, f. o. b. mines, in January were as follows, in United States currency: Group 1 (Crude No. 1), $650–$750; group 2 (Crude No. 2, Crude Run-of-Mine and Sundry), $165–$385; group 3 (Spinning or Textile Fiber), $124–$260; group 4 (Shingle Fiber), $62.50–$90; group 5 (Paper Fiber), $44–$53; group 6 (Waste, Stucco, or Plaster), $33–$35; and group 7 (Refuse or Shorts), $14.50–$30.

Prices of Canadian asbestos increased after June, and in December these figures were quoted: Group 1 (Crude No. 1), $800; group 2 (Crude No. 2, Crude Run-of-Mine and Sundry), $275–$495; group 3 (Spinning or Textile Fiber), $155–$286; group 4 (Shingle Fiber), $75–$102.50; group 5 (Paper Fiber), $52.50–$59; group 6 (Waste, Stucco, or Plaster), $39; and group 7 (Refuse or Shorts), $17.50–$34.

The prices per short ton of Vermont asbestos quoted in January 1946 were: Shingle Stock Fibers, $62.50–$65.50; Paper Stock Fibers, $44–$54; Waste, $33; Floats, $19.50; and Shorts, $14.50–$28.50. By December they were: Shingle Stock Fibers, $75–$83; Paper Stock Fibers, $52.50–$59; Waste, $39; Floats, $24; and Shorts, $18.50–$35.

NEW DEVELOPMENTS

Many new or improved asbestos products, such as spray-coated insulation for corrugated sheets, asbestos ash trays, ironer pads, and wine and sugar filters, attracted attention in 1946, but of greater immediate significance was the growth of some established products. In past years there has always been a surplus of the very short fibers that are not suited for use in asbestos-cement or paper. However,

[1] Asbestos, Acute Shortage of Shingle Fiber Revealed by Survey: Vol. 28, No. 5, November 1946, pp. 2–4

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this material is satisfactory for floor tile and consequently its status has changed unexpectedly. Floor-tile production capacity has increased so rapidly that not enough short asbestos is being recovered to satisfy the need. Equipment is being installed in the mills to increase recovery of these waste shorts, and it is expected that the trend in milling practice will be toward finer grinding.

With the shortage of asbestos has come a growth of interest in new deposits. There have been several reports of discoveries or development of known deposits. From South Africa came a statement that Stoltzburg Asbestos Holdings, Ltd., was preparing to open a mine on farm Stoltzburg No. 202 in the Carolina district.[2] A mill has been erected by Australian Blue Asbestos, Ltd., at Wittenoom, Western Australia, to produce blue fiber.[3] A large deposit of amosite is said to have been found in Wadi Hafafit in Baramia district of Upper Egypt. A deposit that may have practical interest to American consumers has been found in the Lewis Brook area on the west coast of Newfoundland. It has been examined by geologists and is believed to be of commercial size.

The growing desire of foreign countries to develop asbestos-products plants may have a considerable effect both on our export market and on the demand for raw asbestos. American companies have indicated a willingness to furnish technical and other assistance on such projects.

Interest in substitutes has also increased. The blending of fibrous glass and asbestos tends to relieve the shortage and also often yields a product having better properties than either material alone could achieve.[4] A fireproof wallboard consisting of cement and treated wood fibers is reported to have been developed for interior walls.

Some companies are interested in the possibility of producing asbestos synthetically. The Germans claim to have made a low-quality amphibole by crystallization from a vapor. Although the venture was not a commercial success, the fact that a fibrous product was made may have significance for the future.

FOREIGN TRADE [5]

More asbestos was imported into the United States in 1946 than in any previous year. Most of it came from Canada, but minor quantities of fiber came from Africa, Russia, and elsewhere. Receipts from U. S. S. R. totaled about the same as in 1945, but imports from South Africa declined sharply. The following table shows imports of unmanufactured asbestos into the United States during the past 2 years.

[2] South African Mining and Engineering Journal, New Asbestos Property: Vol. 56, No. 2765, February 1946, p. 594.
[3] Asbestos, Asbestos Mill at Wittenoom, Australia: Vol. 28, No. 3, September 1946, p. 10.
[4] Pryor, R. R., Fiberglas and Asbestos: Asbestos, vol. 28, No. 5, November 1946, pp. 8-12.
[5] 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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Asbestos (unmanufactured) imported for consumption in the United States, 1945–46, 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
1945								
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
Southern Rhodesia	2,545	531,501					2,545	531,501
Union of South Africa	13,247	1,363,434					13,247	1,363,434
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
1946								
Australia	24	1,804					24	1,804
Brazil	(1)	78					(1)	78
Canada	521	228,073	153,002	10,362,252	288,550	6,604,040	442,073	17,194,365
China	313	62,206					313	62,206
Italy	6	4,320	2	2,655			8	6,975
Southern Rhodesia	5,239	723,381	224	25,231			5,463	748,612
Union of South Africa	6,050	574,106					6,050	574,106
U. S. S. R.	2,750	142,294					2,750	142,294
United Kingdom	(1)	63					(1)	63
Venezuela			7	875			7	875
	14,903	1,736,325	153,235	10,391,013	288,550	6,604,040	456,688	18,731,378

[1] Less than 1 ton.

The following table shows imports and exports of unmanufactured asbestos for 1942–46.

Asbestos (unmanufactured) imported for consumption in and exported from the United States, 1942–46

Year	Imports		Exports	
	Short tons	Value	Short tons	Value
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
1946	456,688	18,731,378	11,011	1,395,367

The following table shows exports of asbestos products in 1945 and 1946. The value of exports increased 28 percent.

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Manufactured asbestos products exported from the United States, 1945–46, by kinds

Products	1945		1946	
	Quantity	Value	Quantity	Value
Brake lining:				
Molded and semimolded ---- short tons	1,093	$1,580,652	1,248	$1,837,752
Not molded ---- linear feet	353,028	236,099	740,670	368,680
Clutch facing ---- number	1,360,846	555,995	1,196,241	500,046
Paper, millboard, and roll board ---- short tons	754	136,019	653	141,837
Pipe covering and cement ---- do	1,825	213,468	1,103	145,010
Textiles, yarn, and packing ---- do	1,665	1,994,297	2,327	2,674,573
Asbestos roofing ---- squares	119,770	676,898	129,728	806,182
Other asbestos manufactures, except roofing ---- short tons	6,047	1,208,100	8,734	1,695,386
Magnesia and manufactures ---- do	9,131	662,559	17,423	1,093,626
		7,264,087		9,263,092

WORLD REVIEW [6]

Available statistics of asbestos production throughout the world from 1938 to 1946 are shown in the following table.

World production of asbestos, 1938–46, by countries, in metric tons [1]

Country [1]	1938	1939	1940	1941	1942	1943	1944	1945	1946
Argentina		110	150	84	51	349	(2)	(2)	(2)
Australia:									
New South Wales			9	38	142	422	353	500	(2)
South Australia	49	46	119	152	64	11	6	7	(2)
Tasmania	4			4	7	19	105	281	(2)
Western Australia	123	279	370	62	121	247	313	1,036	(2)
Bolivia	21	[3] 2	[3] 71	[3] 211	[3] 58	[3] 22	[3] 13	[3] 61	[3]
Brazil	120	45	500	[3] 13	(2)	(2)	(2)	(2)	(2)
Canada (sales) [4]	262,894	330,642	313,504	433,492	398,669	423,831	380,349	423,559	496,849
China	700	18,015	20,015	20,515	20,615	(2)	(2)	(2)	(2)
Cyprus (exports)	5,668	10,377	9,673	4,874	3,128	1,186	1,983	3,125	5,993
Egypt						7	240	[5] 50	55
Finland [6]	6,422	6,220	5,337	3,842	4,679	7,466	7,733	4,197	(2)
France	450	(2)	(2)	(2)	(2)	(2)	(2)	1,016	587
French Morocco					116	182	507	(2)	(2)
Greece	85	2	(2)	(2)	(2)	(2)	(2)	(2)	(2)
India	90	266	251	372	514	293	592	(2)	(2)
Indochina				22	146	312	2,450		(2)
Italy	6,860	6,765	8,271	10,766	11,695	[7] 7,419	(2)	4,811	(2)
Japan	[8] 1,000	[8] 1,000	[8] 1,000	(2)	[9] 1,526	6,418	[9] 9,395	[9] 2,659	1,706
Kenya Colony	5	(2)	(2)	213	307	321	341	389	(2)
Korea (Chosen)	286	(2)	(2)	(2)	(2)	(2)	4,815	(2)	(2)
Madagascar				3	11	(2)	3	1	(2)
New Zealand				54	43	190	17	2	(2)
Southern Rhodesia	53,352	52,900	50,809	40,037	50,623	52,749	52,882	51,118	50,686
Spain				2	84	50	(2)	(2)	(2)
Swaziland		7,233	18,873	19,166	23,219	17,179	29,628	21,243	29,155
Switzerland					6	11	7	35	(2)
Turkey	668	88	99	146	295	133	231	138	(2)
Uganda	53	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Union of South Africa	21,025	20,003	24,849	25,422	31,351	32,346	31,372	25,597	[8] 13,095
U. S. S. R.	86,000	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
United States (sold or used producers)	9,471	14,024	18,198	22,127	14,044	5,456	6,048	11,091	12,769
Venezuela	(2)	(2)	20	(2)	(2)	(2)	(2)	(2)	(2)

[1] In addition to countries listed asbestos is produced in Algeria, Bulgaria, and Czechoslovakia.
[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; 1944–46 data not available.
[5] January to September, inclusive.
[6] Includes asbestos flour.
[7] January to June, inclusive.
[8] Approximate.
[9] Incomplete figure.

[6] Statistics compiled by B. B. Mitchell.

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CANADA

In 1946, output of asbestos in the Province of Quebec, Canada, attained a new record, 15 percent higher than the one established in 1941 and 17 percent more than the tonnage reported in 1945.

To meet the great demand for Canadian chrysotile, the capacities of mines and mills are being rapidly increased. When its present program of mill expansion and development of underground mining is completed, Canadian Johns Manville Co., Ltd., will have increased its capacity by 50 percent. The new mine and mill of Flintkote Mines, Ltd., 4 miles northeast of the city of Thetford Mines, went into production in June 1946.

The statistics in the accompanying table of Canadian sales of asbestos were supplied by the Department of Mines of the Province of Quebec.

Sales of asbestos in Canada, 1945–46, by grades

	1945			1946 [1]		
	Short tons	Value		Short tons	Value	
		Total	Average per ton		Total	Average per ton
Grade:						
Crudes	981	$415,203	$423.24	741	$334,646	$451.61
Fibers	219,767	16,628,467	75.66	228,234	17,174,712	75.25
Shorts	246,148	5,761,487	23.41	318,710	7,591,676	23.82
	466,896	22,805,157	48.84	547,685	25,101,034	45.83
Rock mined	8,765,370			9,127,859		
Rock milled	6,459,813			7,027,483		

[1] Preliminary.

AFRICA

Southern Rhodesia.—In the mineral production of Southern Rhodesia, the value of asbestos ranks second only to gold. Some is sold to the United States, but most of the exports go to other consumers. In 1945 the United Kingdom took 17,499 short tons; Australia, 8,192; India 5,115; Belgium, 4,680; France, 3,078; the United States, 2,281; Argentina, 2,700; and Sweden, 2,100. Production statistics for recent years are shown in the accompanying table.

Asbestos produced in Southern Rhodesia, 1941–46

Year	Short tons	Value	Year	Short tons	Value
1941	44,134	£910,041	1944	58,293	£1,674,467
1942	55,803	1,488,052	1945	56,348	1,788,386
1943	58,146	1,673,025	1946	55,872	1,676,503

Swaziland.—As shown in the table of world production, output of chrysotile asbestos in Swaziland has increased rapidly since 1939. In 1946, production was nearly as great as in the record year 1944.

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Union of South Africa.—Since 1943, asbestos output in the Union of South Africa has declined steadily, and data covering the first 9 months indicate that this trend continued in 1946. Available statistics on production and exports, by Provinces, are shown in the following table.

Asbestos produced in and exported from the Union of South Africa, 1942–46 [1]

Year	Production (short tons)				Exports [2]	
	Transvaal	Cape Province	Natal	Total	Short tons	Value
1942	27,278	7,281	(3)	34,559	30,169	£731,408
1943	27,768	7,888	(3)	35,656	35,940	880,019
1944	26,747	7,835	(3)	34,582	28,174	672,941
1945	20,016	8,200	(3)	28,216	22,005	591,124
1946 [4]	9,052	5,383	(3)	14,435	13,186	339,000

[1] Data from Union of South Africa, Department of Mines, Quarterly Report.
[2] Revised. (Data previously listed included manufactures.)
[3] Data not available.
[4] January to September, inclusive.

Output of all the four varieties of asbestos that are regularly marketed in South Africa were reported in 1946. However, the production of amosite was much lower than in recent years. The following table shows the tonnage of each variety produced, by Provinces, during the past 5 years.

Asbestos produced in the Union of South Africa, 1942–46, by varieties and sources in short tons [1]

Variety and source	1942	1943	1944	1945	1946 [2]
Amosite (Transvaal)	24,924	23,189	22,848	16,737	6,889
Chrysotile (Transvaal)	1,917	2,034	2,014	1,765	1,256
Blue (Transvaal)	360	2,456	1,831	1,471	877
Blue (Cape)	7,281	7,888	7,835	8,200	5,383
Anthophyllite (Transvaal)	77	89	54	43	30
	34,559	35,656	34,582	28,216	14,435

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

OTHER COUNTRIES

In addition to those previously mentioned, the only other country known to have a substantial asbestos production is Russia. In 1938 its output was reported to have been 86,000 metric tons, but no production statistics have been released for subsequent years. As shown in the world table, relatively minor but locally significant tonnages of asbestos are produced in many countries.

Output of asbestos fiber in Italy is gradually recovering.

An asbestos mill owned by Campañía Minas de Cemento de Tinaquilla has gone into operation at Tinaquilla, State of Cojedes, Venezuela.

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