ASBESTOS

By Oliver Bowles and F. M. Barsigian

SUMMARY OUTLINE

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SUMMARY

Sales of asbestos of domestic origin in 1943—6,014 short tons—were 61 percent less than in 1942. Sales of chrysotile declined greatly, but those of amphibole showed little change. Most of the domestic production consists normally of the shorter grades of chrysotile, but the principal producer of these grades suspended operations temporarily in 1943 while opening up a new quarry. Because of the great decline in output, United States sales furnished only 1 percent of domestic requirements.

Canada supplied the larger part of United States needs of chrysotile, but the Canadian output consists chiefly of the nonspinning shorter grades. African chrysotile was imported in substantial quantities to supplement the supply of Canadian spinning fibers. Soviet Russia, Australia, and India are other sources.

Asbestos is an important mineral in the military program. The United States depends almost entirely for its supply of the critical grades on imports from Canada, Southern Rhodesia, and the Union of South Africa. The domestic contribution of critical grades is negligible.

Three types of asbestos—chrysotile, amosite, and blue—are needed for military use. Chrysotile grades fall in two categories—long fibers suitable for textiles and short fibers used in making asbestos paper, millboard, insulating cements, and a variety of asbestos-cement products such as shingles, flat and corrugated siding, and pipe. The long fibers equivalent to Canadian Groups 1, 2, and 3 and Rhodesian Grades C & G1 and C & G2 are regarded as critical because they are much in demand, and supplies are not as abundant as desired. Aside from a considerable tonnage used in sheet packing, the long fibers are employed in asbestos textiles. Their more important uses are in Navy cable, friction materials, packings and gaskets, cloth for the Maritime Commission and Navy, laminated plastics, and aircraft tape. The Rhodesian fibers are lower in iron than the Canadian; for this reason, their use is required for textiles used in Navy cable construction where electrical insulation is important. Supplies of asbestos textiles are short, and therefore they are carefully controlled and allocated under the provisions of Order M–283.

Amosite, mined only in Africa, is a critical variety that has important military uses, including woven insulation for ship work, 85-percent magnesia and other high-temperature molded insulations, fireproof marine insulating board, and sprayed-asbestos insulation. It

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is difficult to increase the production of amosite, and future requirements are not assured for as long a period as is desirable.

Blue asbestos, Grades MS and S, are imported from the Union of South Africa chiefly for the manufacture of asbestos-cement pipes, which have performed important functions as substitutes for iron pipe, thus freeing iron for more direct military uses. The supply of blue asbestos appears to be adequate, and therefore these grades were not as critical at the end of 1943 as they were early in the year.

Conservation Order M–79, as amended October 1, 1943, restricted the end uses of Rhodesian C & G1 and C & G2 and amosite Grades B–1, B–3 or D–3, and 3/DM–1 and placed certain restrictions on Canadian spinning fibers. One of its most important requirements was the stipulation that 1 ton of Rhodesian C & G3 be used with every 5 tons of Canadian Grade 3R in textile manufacture. Rhodesian C & G3 has always been regarded as a shingle fiber unsuited for textile use; but, with the cordial cooperation of manufacturers, large quantities of this lower-grade fiber were worked into textile products, thereby avoiding what might have been a serious shortage of spinning fibers.

In 1943 the entire supply of critical grades imported from the Union of South Africa and Rhodesia was purchased by the Metals Reserve Co. and allocated in accordance with the more urgent needs. The same procedure will be followed in 1944, although it is possible that blue fibers will be exempted from this requirement and will be handled through private negotiations. The Combined Raw Materials Board determines the distribution, between the United Kingdom and the United States, of the available supply of all critical grades.

Ample supplies of the shorter grades of chrysotile fibers were imported from Canada in 1943. Anthophyllite and tremolite, varieties of asbestos that are generally weak and brittle, are employed for welding-rod coatings, acid filters, and insulating cements, and as fillers in some products. They are produced in several countries but enter international trade to a very limited extent.

Salient statistics for asbestos in 1942 and 1943 are summarized in the following table.

Salient statistics of the asbestos industry in the United States, 1942–43

	1942		1943	
	Short tons	Value	Short tons	Value
Domestic asbestos—				
Produced:				
Chrysotile	13,109	(1)	1,731	(1)
Amphibole	2,208	(1)	2,214	(1)
Total produced	15,317	(1)	3,945	(1)
Sold or used by producers:				
Chrysotile	13,373	$480,245	3,900	$302,289
Amphibole	2,108	18,612	2,114	32,526
Total sold or used by producers	15,481	498,857	6,014	334,815
Imports (unmanufactured)	419,242	21,217,650	440,255	23,053,524
Exports (unmanufactured)	774	134,411	364	34,355
Apparent consumption [2]	[3] 433,949	[3] 21,582,096	445,905	23,353,984
Exports of asbestos products	(1)	5,116,919	(1)	4,876,500

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

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

Asbestos sold or used by producers in the United States, 1939–43, by varieties

Year	Chrysotile		Amphibole		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1939	15,043	$503,097	416	$9,691	15,459	$512,788
1940	18,672	664,520	1,388	9,988	20,060	674,508
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

DOMESTIC INDUSTRY

REVIEW BY STATES

Arizona.—Sales of Arizona asbestos in 1943 totaled somewhat less than in 1942, but the value was considerably higher. Sales were made by the following companies: Arizona Chrysotile Asbestos Co., Arthur Enders, and Guy G. Phillips, all of Globe; Earl Pierce, of Young; and Johns-Manville Products Corporation, 22 East 40th Street, New York, N. Y., with mine and mill at Chrysotile.

High-grade iron-free chrysotile asbestos like that obtainable in Arizona has important special uses in the war program. Accordingly the Reconstruction Finance Corporation has authorized a loan of $25,000 to Pine Top Asbestos Mines which, supplemented by about $17,000 from other sources, will be used to develop properties of the company 37 miles northeast of Globe. The Defense Plant Corporation has agreed to advance $80,000 to the company for building a mill to handle the product of its own mines and to serve as a custom mill for small producers in the region. Limited progress had been made on these projects by the end of 1943.

California.—The only producer of asbestos in California making sales in 1943, as in 1942, was Kohler & Chase, miners of short-fiber chrysotile near Monticello, Napa County.

Georgia.—Production of asbestos in Georgia in 1943 was less than half as great as that in 1942. The only operator was again the Powhatan Mining Co., from its amphibole asbestos property near Dillard, Rabun County.

North Carolina.—Sales of asbestos in North Carolina were considerably larger in 1943 than in 1942. The Industrial Minerals Corporation, operating at Newdale, Yancey County, is the largest producer of amphibole asbestos in the United States. Substantial quantities were sold, chiefly for welding-rod coating. W. T. Hippey also produced a considerable tonnage of anthophyllite at Micaville, Yancey County.

Oregon.—Philip S. Hoyt and Mrs. Flora Winsenberg reported sales of small tonnages of tremolite asbestos to be used in making acid filters. The properties are near Grants Pass, Jackson County.

Vermont.—The Vermont Asbestos Mines Division of the Ruberoid Co. discontinued operation of its open-pit mine adjacent to the mill near Eden, Vt., but has developed a new operation in asbestos-bearing rock on the opposite slope of Belvidere Mountain. Rock from this

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source is conveyed over the mountain by an overhead cableway about 1 mile long. The deposit, which is said to be extensive, furnishes chrysotile fiber of nonspinning grades. Because of the change in source of raw material there was no production during 1943, but it was expected that the new tramway would come into operation with the advent of favorable weather in the spring of 1944 and that the mill would attain a normal rate of production during ensuing months. Asbestos sales during 1943 were made from stock on hand.

TRENDS IN CONSUMPTION

Domestic consumption of unmanufactured asbestos and value of exports of asbestos products during the past 20 years are indicated in the accompanying table. Consumption broke all previous records in 1943 and exports of asbestos products were exceeded in value only by those of 1942. The latest year for which the Bureau of the Census published data on manufactured asbestos products was 1939, when their value was $97,944,735.

Raw asbestos consumed in and asbestos products exported from the United States, 1924–43

Year	Raw asbestos—apparent consumption (short tons)	Asbestos products—exports (value)	Year	Raw asbestos—apparent consumption (short tons)	Asbestos products—exports (value)
1924	182,280	$2,529,795	1934	123,752	$2,142,514
1925	230,669	2,383,325	1935	174,655	2,261,929
1926	257,875	3,481,814	1936	250,922	2,479,273
1927	226,365	2,687,086	1937	316,263	3,047,078
1928	231,984	3,999,022	1938	187,150	2,533,916
1929	264,873	4,640,599	1939	255,547	3,354,920
1930	212,152	4,193,510	1940	262,199	3,473,248
1931	137,875	2,606,166	1941	438,741	4,835,194
1932	98,606	1,608,880	1942	[1] 433,949	5,116,919
1933	122,909	1,743,140	1943	445,905	4,876,500

[1] Revised figures.

The customary correlation of the asbestos industry with the manufacture of automobiles because of the importance of asbestos in brake bands and clutch facings is of no significance under current conditions, because automobile manufacture has been virtually suspended and has been superseded by the manufacture of airplanes, tanks, army trucks, jeeps, and mobile artillery, which have been and are being made in vast numbers. The large tonnages of asbestos formerly employed in commercial and pleasure cars now perform similar functions in military equipment. Other important uses are as packings, gaskets, boiler lagging, and pipe coverings at industrial plants. All these activities are included under industrial production, most of which was geared more or less directly to the military program in 1943.

Asbestos also finds wide application in the building industry, where it is employed for heat insulation and fireproofing. In this field also military construction has absorbed large quantities of asbestos products normally employed in private building.

The relation of asbestos consumption to industrial production and building construction is indicated in figure 1. The trends are strikingly similar from 1933 to 1941, but since that time industrial pro-

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duction has risen to such unparalleled heights that asbestos consumption could not keep pace with it. Asbestos production and fabrication had approached 100 percent of capacity, and importations from Africa had reached the limit of available transportation facilities by the end of 1941. Efforts to increase mine and mill output in 1943 were hampered to some extent by shortage of labor. The demands of greatly increased manufacturing activity have been met by careful conservation and by allocation of the critical grades of raw asbestos and their most essential products to urgent war needs. Credit for maintaining supplies in balance with war demands may be given to the War Production Board, the Combined Raw Materials Board, and the cordial cooperation with these agencies by the asbestos-producing and the manufacturing industries.

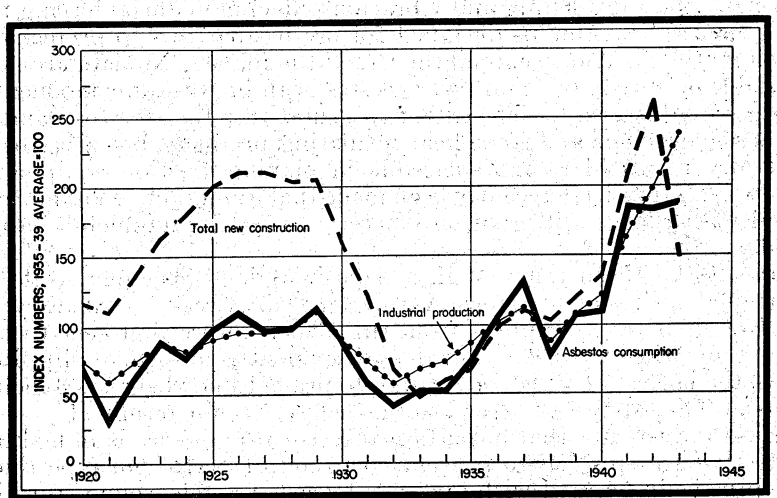


FIGURE 1.—Consumption of asbestos compared with total new construction and industrial production, 1920–43. Units are reduced to percentages of the 1935–39 average. Statistics on value of construction from the Bureau of Foreign and Domestic Commerce and on industrial production from the Federal Reserve Board.

MARKET CONDITIONS

Market trends throughout the year veered consistently from civilian to war needs. Demands were heavy, particularly for the long fibers. Supplies of spinning fibers were little in excess of immediate needs. Short fibers were adequate at all times to meet market requirements. While demands of private builders lagged, the requirements of asbestos-cement-products manufacturers were stimulated to some extent by the call for nonstrategic materials to substitute for critical metals.

PRICES

Prices of asbestos as quoted in E&MJ Metal and Mineral Markets show no change in 1943 from those quoted in 1942, which are given in full in the chapter on Asbestos in Minerals Yearbook, 1942, and therefore need not be repeated here.

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NEW DEVELOPMENTS

Research work is now being conducted in Canada on a process for recovering magnesium chloride from serpentine tailings in the Quebec asbestos area. Magnesium chloride is used as a source of metallic magnesium, now employed extensively in the manufacture of munitions, which may find wide use under peacetime conditions. Profitable utilization of this waste product in Quebec is highly desirable because the spoil banks now comprise over 200,000,000 tons and are being increased at a rate of about 20,000 tons a day. Possible byproducts are salt cake, chlorine, silica, iron oxide, and chromite. A similar waste-utilization problem exists at all chrysotile-asbestos mining centers.

A new sound-deadening and vibration-reducing material having the trade name "Vibeston" is designed for use in airplanes to protect the hearing of flyers and to extend the life of the plane. No data are now available on its composition, but asbestos is an important component.

Glass wool is used to some extent as a substitute for asbestos in making wire coverings and some heat-insulating products, but asbestos is generally regarded as indispensable in making friction equipment. However, claims have recently been made that aluminum wool impregnated with rubber will give satisfactory service in automobile brake bands.

Interest has been renewed in a deposit of long-fiber chrysotile of good quality in northwestern Alaska on Dahl Creek, a tributary of the Kobuk River. Samples from this deposit were first sent to the Bureau of Mines in 1932. The deposit evidently consists of slip-fiber veins, the largest of which, according to present knowledge, is 3 inches across. The extent of the deposit has not yet been determined.

A use for asbestos that has attained recent prominence is in making protective asbestos felt to prevent corrosion of petroleum pipe lines. The pipe is first coated with tar, then by asbestos felt wound spirally. The Big Inch pipe line required 36,100 square feet of such felt per mile and the Little Inch 30,100 square feet per mile. However, the entire length of the pipe lines was not thus covered.

A special asbestos product, the nature of which cannot be disclosed at this time, has been developed for use as a rust-preventive coating for artillery in Africa where ordinary coatings are inadequate to resist the intense heat.

A new asbestos-cement product sold under the trade name "Stonewall" is said to be particularly adapted to replace metals urgently needed for war uses. The material may be applied to many types of construction.

POST-WAR OUTLOOK

Although asbestos has important war uses, many of them are equally applicable to a peacetime economy. For instance, asbestos gaskets, packings, and heat-insulating products now used in munition plants are employed in just the same ways in factories producing peacetime civilian goods. It is expected therefore that post-war asbestos consumption will approximate that of the years immediately preceding the war. It is possible, however, that the use of certain substitutes already mentioned will tend to reduce consumption to some extent.

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Domestic output has never furnished more than a small fraction of domestic requirements. Although there is always the possibility of new and extensive discoveries, the expectation of finding them is remote, and there is little prospect of any substantial change in the domestic situation.

FOREIGN TRADE [1]

The following table shows imports of unmanufactured asbestos into the United States in 1942 and 1943. Total imports show a moderate advance in 1943. The most striking change, which reflects a marked improvement in the shipping situation, is an increase in imports of the high-grade African fibers of strategic quality to nearly double the quantity imported in 1942. Such large receipts of African asbestos were fortunate in view of the substantial decline in imports of Canadian crudes. The value of imports, which exceeded $23,000,000, was the highest in the history of the industry.

Asbestos (unmanufactured) imported for consumption in the United States, 1942–43, by countries and classes

Country	Crude (including blue fiber)		Mill fibers		Short fibers [1]		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1942								
Africa:								
Southern Rhodesia	8,665	$1,386,782					8,665	$1,386,782
Union of South Africa	20,278	1,929,486					20,278	1,929,486
Australia	35	6,879					35	6,879
Bolivia	16	2,093					16	2,093
Canada	2,933	1,137,110	165,088	$11,410,219	218,600	$5,063,349	386,621	17,610,678
India and Dependencies	17	9,255					17	9,255
U. S. S. R.	673	56,552	2,937	215,925			3,610	272,477
	32,617	4,528,157	168,025	11,626,144	218,600	5,063,349	419,242	21,217,650
1943								
Africa:								
Mozambique	802	106,564					802	106,564
Southern Rhodesia	28,555	3,768,346					28,555	3,768,346
Union of South Africa	24,007	2,379,879			2	61	24,009	2,379,940
Australia	3	1,018					3	1,018
Bolivia	22	1,805					22	1,805
Canada	1,870	708,282	161,783	10,849,793	222,002	5,128,990	385,655	16,687,065
India and Dependencies	65	38,034					65	38,034
U. S. S. R.	302	21,050	842	49,702			1,144	70,752
	55,626	7,024,978	162,625	10,899,495	222,004	5,129,051	440,255	23,053,524

[1] Asbestos, n. e. s., containing not over 15 percent foreign matter.

The following table shows imports and exports of unmanufactured asbestos for the 5-year period 1939–43.

Asbestos (unmanufactured) imported for consumption in and exported from the United States, 1939–43

Year	Imports		Exports	
	Short tons	Value	Short tons	Value
1939	242,561	$9,094,538	2,473	$218,830
1940	246,613	10,034,433	4,474	449,105
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	364	34,355

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

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The following table shows exports of asbestos products in 1942 and 1943.

Manufactured asbestos products exported from the United States, 1942–43, by kinds

Product	1942		1943	
	Quantity	Value	Quantity	Value
Brake lining:				
Molded and semimolded, short tons	1,810	$1,706,624	793	$1,143,327
Not molded, linear feet	749,449	283,900	353,892	195,888
Clutch facing, number	1,432,442	558,515	1,282,190	554,561
Paper, millboard, and roll board, short tons	679	102,660	899	107,060
Pipe covering and cement, do	1,063	135,158	1,362	181,909
Textiles, yarn, and packing, do	1,017	1,154,161	975	1,132,411
Asbestos roofing, squares	97,668	169,331	54,896	305,243
Other asbestos manufactures, except roofing, short tons	3,002	780,725	2,753	639,149
Magnesia and manufactures, do	1,305	225,845	7,135	616,952
		5,116,919		4,876,500

WORLD PRODUCTION

The following table shows production of asbestos throughout the world, by countries, from 1937 to 1943, insofar as figures are available.

World production of asbestos, 1937–43, by countries, in metric tons [1]

[Compiled by B. B. Waldbauer]

Country [1]	1937	1938	1939	1940	1941	1942	1943
Argentina			110	150	84	95	(2)
Australia:							
South Australia	123	49	46	119	152		
Tasmania	2	4			(2)	[3] 300	(2)
Western Australia	43	123	279	364	(2)		
Bolivia	21	21	[4] 2	[4] 71	[4] 211	[4] 58	[4] 22
Brazil		120	45	500	[4] 13	(2)	(2)
Canada [5]	371,767	262,894	330,642	313,504	433,492	398,669	423,831
China	(2)	(2)	(2)	100	(2)	(2)	(2)
Chosen	70	(2)	(2)	(2)	(2)	(2)	(2)
Cyprus (exports)	11,892	5,668	9,970	9,652	(2)	(2)	(2)
Finland [6]	7,260	(2)	(2)	(2)	(2)	(2)	(2)
France	250	(2)	(2)	(2)	(2)	(2)	(2)
Greece	2	85	(2)	(2)	(2)	(2)	(2)
India, British	102	90	266	[7] 1	[7] 32	[7] 15	[7] 59
Indochina	5		(2)	(2)	(2)	(2)	(2)
Italy	6,393	6,860	(2)	(2)	(2)	(2)	(2)
Japan (approximate)	1,000	1,000	1,000	1,000	(2)	(2)	(2)
Kenya Colony		5	(2)	(2)	(2)	(2)	(2)
New Zealand	(2)	(2)	(2)		54	43	(2)
Southern Rhodesia	51,722	53,352	52,900	[4] 52,518	[4] 49,191	[4] 56,546	(2)
Swaziland			7,233	18,873	(2)	(2)	(2)
Turkey	157	668	88	99	146	(2)	(2)
Uganda		53	(2)	(2)	(2)	(2)	(2)
Union of South Africa	25,975	21,025	20,003	24,849	[8] 25,655	[8] 31,351	[9] 24,120
U. S. S. R.	125,000	86,000	(2)	(2)	(2)	(2)	(2)
United States (sold or used by producers)	10,958	9,471	14,024	18,198	22,127	14,044	5,456
Venezuela	(2)	(2)	(2)	20	(2)	(2)	(2)

[1] In addition to countries listed asbestos is produced in Bulgaria, Czechoslovakia, and Madagascar.
[2] Data not available.
[3] Estimate.
[4] Exports.
[5] Exclusive of sand, gravel, and stone (waste rock only), production of which is reported as follows: 1937, 3,611 tons; 1938, 2,975 tons; 1939, 3,535 tons; 1940, 5,880 tons; 1941, 7,669 tons; 1942–43, data not available.
[6] Includes asbestos flour.
[7] Imports into United States.
[8] Preliminary.
[9] January to September, inclusive.

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CANADA

Canadian asbestos consists entirely of chrysotile, and all of it comes from the adjacent production centers of Thetford Mines, Black Lake, East Broughton, Vimy Ridge, and Asbestos in the Province of Quebec. Production has been continuous since 1878, and reserves are still very extensive.

The largest mine in the Quebec area is that of the Canadian Johns-Manville Co., Ltd. Other producers are Asbestos Corporation, Ltd., Johnson's Co., Bell Asbestos Mines, Ltd., Asbestos Crude & Fiber Mines, Ltd., Nicolet Asbestos Mines, Ltd., and Quebec Asbestos Corporation, Ltd.

Short fibers are the most abundant. A very small proportion of the total output consists of spinning fiber, and during recent years a downward trend in this proportion has been noted. This tendency is unfortunate at present, when the spinning grades are in greatest demand. The block-caving method of mining has been employed in the region for some years; and although it is more economical than deep open-pit work, especially for winter operation, the drop in percentage of crudes recovered is attributed to this newer method of mining, chiefly because there is limited opportunity for hand cobbing.

The following figures have been released by the Department of Mines, Province of Quebec.

Sales of asbestos in Canada, 1942–43, by grades

	1942			1943		
	Short tons	Value		Short tons	Value	
		Total	Average per ton		Total	Average per ton
Grade:						
Crudes	2,890	$1,233,184	$426.71	2,016	$888,099	$440.53
Fibers	199,829	15,339,128	76.76	217,889	16,071,843	73.76
Shorts	236,741	6,090,971	25.73	247,291	6,209,563	25.11
	439,460	22,663,283	51.57	467,196	23,169,505	49.59
Rock mined	8,233,516			7,929,469		
Rock milled	6,795,459			6,828,532		

AFRICA

Southern Rhodesia.—No figures for Rhodesian asbestos production have been published since May 1940. Export data, however, are available, and as local sales are quite small exports are an approximate measure of production. It is apparent from the accompanying table that production in 1942 was the highest on record.

Asbestos produced in Southern Rhodesia, 1939–43

Year	Short tons	Value	Year	Short tons	Value
1939	58,313	£1,088,782	1942 [1]	62,332	£1,811,042
1940 [1]	57,891	1,419,566	1943	(2)	(2)
1941 [1]	54,224	1,419,405			

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

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Union of South Africa.—The principal output of asbestos in the Union of South Africa consists of amosite, a variety produced commercially nowhere in the world except in the Transvaal. Crocidolite (blue asbestos) is next in importance. Incomplete figures indicate that the total yield in the Union in 1943 was a little higher than that in 1942 and the highest in the history of the industry. The following table shows production during recent years.

Asbestos produced in the Union of South Africa, 1939–43, by sources

Year	Short tons				Total value
	Transvaal	Cape Province	Natal	Total	
1939	15,827	6,144	79	22,050	[1] £517,535
1940	21,011	6,381	[2]	27,392	[3] 934,417
1941	[4] 21,704	[4] 6,576	[2]	[4] 28,280	[3] 990,756
1942	[4] 27,278	[4] 7,281	[2]	[4] 34,559	[3] 1,348,977
1943	[5] 20,785	[5] 5,803	[2]	[6] 35,000	[1] [6] 660,246

[1] Value of local sales plus value of exports.
[2] Data not available.
[3] Value of exports only.
[4] Partly estimated.
[5] January to September, inclusive.
[6] Preliminary total for year.

The following table shows the tonnage of each variety produced from 1939 to 1943, insofar as data are available.

Asbestos produced in the Union of South Africa, 1939–43, by varieties and sources, in short tons

Variety and source	1939 [1]	1940 [1]	1941 [2]	1942 [2]	1943
Amosite (Transvaal)	11,299	17,767	19,211	24,936	[3] 17,496
Chrysotile (Transvaal)	[4] 612	646	1,658	1,917	[3] 1,321
Blue (Transvaal)	3,983	2,520	776	360	[3] 1,895
Blue (Cape)	6,144	6,381	6,576	7,281	[3] 5,803
Anthophyllite (Transvaal)	12	78	59	65	[3] 73
	22,050	27,392	28,280	34,559	[5] 35,000

[1] Data from Union of South Africa, Department of Mines, Quarterly Reports.
[2] Partly estimated.
[3] January to September, inclusive.
[4] Includes 79 tons produced in Natal.
[5] Preliminary total for year.

Swaziland.—The Havelock mine began production in June 1939 and yielded about 18,000 tons in 1940. No figures are available for later years because of war restrictions, but its output has increased considerably and it probably operated at capacity in 1943. The output consists of chrysotile.

SOVIET RUSSIA

Russian asbestos deposits are extensive, and the quality of the fiber is good. The Soviet Union is unique among all important asbestos-producing countries in that it is also a large consumer of asbestos. No figures for production are available since 1938, when an output of 86,000 tons was reported. A large asbestos-products-manufacturing industry had been established before the war, and it seems probable

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that the industry has been expanded to provide for the automotive needs of the immense army. Asbestos-cement products are doubtless in heavy demand also for rebuilding war-devastated areas. Lack of Russian statistics leaves a wide gap in the world record of this important industry.

OTHER COUNTRIES

Organization of the Australian Blue Asbestos Co., Ltd., capitalized at £100,000, is reported by the foreign press. This company will engage in mining and processing high-grade blue asbestos in the Hamersley Ranges of Western Australia. The output will be marketed through the building materials division of the Colonial Sugar Refining Co. Small quantities of asbestos from this source now reach United States markets.

According to a recent report,[2] the origin of the fiber is quite similar to that of the blue asbestos occurring in South Africa. The deposits are said to be extensive, and with improved transportation facilities an important industry may be developed in this area.

The Bolivian blue asbestos industry has been almost dormant since the loss of its former markets in Japan, but sales to consumers in Argentina were reported in 1943.

No further progress was reported in 1943 on construction of the new mill or development of the chrysotile asbestos property near Tinaquillo, Venezuela.

According to news reports, a promising deposit of asbestos has been located near Yarumal, State of Antioquia, Colombia, South America. No data are available as to the nature or quality of the fiber.

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[2] Miles, Keith R., Part I, The Blue Asbestos Bearing Banded Iron Formations of the Hamersley Ranges, Western Australia; and Foxall, J. S., Part II, The Blue Asbestos Deposits of the Hamersley Range and Their Economic Importance: Western Australia Geological Survey Bull. 100, 1942, 61 pp.

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