ASBESTOS

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SUMMARY OUTLINE

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Asbestos is useful for the manufacture of brake linings, packings, and heat-insulating products because of its fibrous structure and noninflammability. Although it is important in industry, relatively small quantities are domestic material; less than 4 percent of consumers' requirements was mined in the United States in 1933. As the following summary of statistical data shows, the domestic-asbestos industry, although small, gained notably in 1933, with increases of 33 percent in tonnage and 24 percent in value over 1932.

The manufacture of asbestos products, an important industry, also showed growing activity, as apparent consumption of raw asbestos in 1933 increased about 25 percent over that in 1932. Imports, which have primary significance because they constitute about 97 percent of domestic requirements, increased 24 percent in quantity and 57 percent in value in 1933; the striking increase in value is due to the importation of nearly twice as much of the higher-grade fibers (crudes) in 1933 as in 1932.

Salient statistics of the asbestos industry, 1932–33

	1932		1933	
	Short tons	Value	Short tons	Value
Domestic asbestos (chrysotile and amphibole) sold or used by producers [1]	3,559	$105,292	4,745	$130,677
Imports (unmanufactured)	96,754	2,250,200	119,494	3,540,675
Exports (unmanufactured)	1,707	94,936	1,378	88,521
Apparent consumption	98,606	2,260,556	122,861	3,582,831
Exports of asbestos products	(2)	1,608,880	(2)	1,696,546

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

The following table on apparent consumption of raw asbestos, value of products manufactured, and value of products exported

[1] Figures on imports and exports compiled by Claude Galiher, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

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shows the major trends during recent years. The apparent consumption is determined by adding production to imports and subtracting exports. If stocks on hand at the beginning and end of the year were known consumption could be determined more accurately, but the Bureau has no record of such stocks. Bureau of the Census figures for value of asbestos products manufactured in 1933 are not yet available, but moderate recovery is indicated by the substantial increase (25 percent) in raw materials used and by the smaller increase (5½ percent) in value of products exported.

Raw asbestos consumed in the United States and asbestos products manufactured in and exported from the United States, 1924–33

Year	Raw asbestos—apparent consumption	Asbestos products		Year	Raw asbestos—apparent consumption	Asbestos products	
		Manufactured [1] (value)	Exported (value)			Manufactured [1] (value)	Exported (value)
	Short tons				*Short tons*		
1924	182,280	(1)	$2,529,795	1929	264,873	$101,597,171	$4,640,599
1925	230,669	$80,144,936	2,383,325	1930	212,152	(1)	4,193,510
1926	257,875	(1)	3,481,814	1931	137,875	60;574,579	2,606,166
1927	226,365	87,200,889	2,687,086	1932	98,606	(1)	1,608,880
1928	231,984	(1)	3,999,022	1933	122,861	(2)	1,696,546

[1] Figures from Bureau of the Census; collected biennially for odd years.
[2] Figures not yet available.

Market conditions.—The industry has suffered severely during the depression period because asbestos is used primarily in the capital-goods industries; in the turbulent conditions that prevailed during the early months of 1933 activity was at low ebb. Improvement began in June, and a steady increase in demand throughout the latter half of the year resulted in Canadian companies increasing their production schedules materially. The marked recovery in automobile manufacture had a beneficial effect, but the low level of building activity depressed the insulation-roofing and building-material branches of the industry.

Prices.—Price quotations as given in Metal and Mineral Markets indicate a small but consistent increase for all grades of asbestos except Russian fiber, which was quoted at constant prices throughout 1933—No. 2 at $150 to $175 and No. 3 at $125 a ton. The price level of asbestos from other sources remained virtually uniform during the first half of the year but increased gradually during the second half although some grades did not change until December.

The following table shows prices at the beginning and end of 1933 as quoted in the Engineering and Mining Journal Metal and Mineral Markets reports.

Price quotations of asbestos per short ton in January and December 1933

Grade	January	December	Grade	January	December
Canadian:			Canadian—Continued.		
Crude No. 1	$400–$450	$450	Floats	$15	$16–18.50
Crude No. 2	200	200–225	Rhodesian:		
Spinning fiber	80–110	90–135	Crude No. 1	170	210
Magnesia and compressed sheet fibers	80–90	90–100	Crude No. 2	120	160
Shingle stock	45–60	45–65	Vermont:		
Paper stock	30–35	32.50–37.50	Shingle stock	40–45	45
Cement stock	18–20	19–23	Paper stock	30–35	35
			Cement stock	18–22	23

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New developments.—Asbestos-cement products are used increasingly in Europe as roofing, ceilings, partitions, paneling, linings of interior and exterior walls, water pipes, and gutters. It is claimed that the pipes and gutters are waterproof, require no painting, and compare favorably in strength with cast iron. It has been found that wooden flooring may be nailed to a subflooring consisting of concrete to which about 10 percent of asbestos has been added. Asbestos-composition products are becoming popular for floor tile in homes and on ships.

Larger quantities of asbestos are being consumed in the manufacture of awnings and household appliances.

Corrosion-resistant chemical equipment consisting of asbestos and a phenol-formaldehyde condensation product is now on the market.

Interest in synthetic asbestos has increased, but its practical utility apparently has not yet been demonstrated.

Turner & Newall, Ltd., of Great Britain, has acquired controlling interest in Keasbey & Mattison Co., of Ambler, Pa.; the latter company owns the important Bell Asbestos mine in Canada.

Imports.—The following table shows foreign sources of asbestos supplies which are of unusual interest. More than two-thirds of the crude fiber imported in 1933 originated in Africa, chiefly in Rhodesia. Although restrictions on imports from Soviet Russia were lifted on April 5, 1933, by order of the President, no direct imports of crudes from that source were recorded, but small tonnages of mill fiber and shorts were received. Substantial quantities of Russian fiber usually are imported by way of Germany, but in 1933 such imports were very small.

The most striking feature of the import situation is the large increase in the quantity of short fiber from other sources than Canada. Although imports of shorts from Canada were virtually the same (about 64,000 short tons) in 1932 and 1933, imports from other sources increased from 672 to 4,055 tons. More than half of the non-Canadian shorts in 1933 came from Cyprus, and most of the remainder from Italy and Soviet Russia.

Asbestos (unmanufactured) imported into the United States in 1933, by countries and classes

[General imports]

Country	Crude (including blue fiber)		Mill fiber		Stucco and refuse		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Africa:								
British:								
Union of South Africa	233	$20,173					233	$20,173
Other	2,091	214,384					2,091	214,384
Canada	804	167,795	48,112	$2,170,151	63,999	$854,647	112,915	3,192,593
Germany	6	669			36	1,064	42	1,733
Italy	17	8,929			939	7,764	956	16,693
Malta, Gozo, Cyprus					2,274	37,395	2,274	37,395
U.S.S.R. (Russia in Europe)			176	17,339	795	39,439	971	56,778
United Kingdom	1	587			11	339	12	926
	3,152	412,537	48,288	2,187,490	68,054	940,648	119,494	3,540,675

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Exports.—Very little raw asbestos is exported, but substantial quantities of manufactured goods are sold to other countries. The following table shows the types of asbestos products exported in 1932 and 1933.

Manufactured asbestos products exported from the United States, 1932–33, by kinds

Grade	1932		1933	
	Quantity	Value	Quantity	Value
Brake lining:				
Molded and semimolded	(1)	$396,543	(1)	$468,549
Not molded—linear feet	1,959,796	299,220	1,651,425	256,018
Paper, millboard, and roll board—short tons	293	61,062	439	62,851
Pipe covering and cement—do	1,226	136,140	910	93,936
Textile yarn and packing—do	452	431,218	568	510,186
Magnesia and manufactures—do	610	91,117	695	91,836
Asbestos roofing—squares	30,886	59,306	85,532	150,283
Other manufactures, except roofing—short tons	647	134,274	839	62,887

[1] Quantity not recorded.

Code of Fair Competition.—In order to administer effectively its code, established under the National Recovery Administration, the asbestos products-manufacturing industry organized as the Asbestos Institute, comprising the five following divisions: (1) Asbestos paper and allied products, (2) asbestos cement products, (3) asbestos magnesia products, (4) asbestos textile products, and (5) brake linings and related friction products. The institute represents the first organization of the asbestos products-industry as a whole.

A hearing on the code was held October 19, 1933; the code was signed by the President November 1 and became effective November 13, 1933. To create a working organization, each of the five subdivisions elected three members to serve as subcode authorities and another to serve on the code authority. The five members of the code authority then elected a sixth member. The practical effects of code provisions on the industry cannot be judged as yet.

REVIEW BY STATES

Alaska.—Alaska Asbestos, Inc., owners of the Bear Creek mine on Admiralty Island, reported that the property has been equipped fully for operation, including buildings, machinery, and a road to within 1 mile of the quarry. The deposit is said to contain a large supply of good-grade, long-fibered amphibole.

Arizona.—Mining operations were practically suspended in Arizona during 1933. The Ash Creek mine of the Johns-Manville Products Corporation 40 miles northeast of Globe was idle the entire year; sales were made from stocks on hand. There have been no sales from the Bear Canyon mine of the Bear Canyon Asbestos Co. (address Ambler, Pa.) since 1930. A highway from Springerville to Globe, under construction in 1933, will reduce the cost of transportation and encourage greater activity.

California.—No sales of asbestos produced in California are recorded for 1933, but the United Asbestos Corporation has erected a mill and constructed a trestle and track preparatory to operating in 1934 the Phoenix mine 9 miles southwest of Monticello.

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Maryland.—The Powhatan Mining Corporation produced long-fibered asbestos (anthophyllite) in 1933 at the Jenkins mine near Pylesville and fabricated it into chemical filters at its plant at Woodlawn, Baltimore. The company also produces short-fibered material commercially.

Montana.—Peter F. Karst sold amphibole, reported to be ½-inch fiber and No. 1 grade, from his property 20 miles southwest of Gallatin Gateway. Samples from occasional pockets and lenses in this deposit, sent to the Bureau of Mines for examination, were strong, silky fibers of spinning quality. This is the only amphibole asbestos of such quality in the United States known to the Bureau.

Vermont.—Total sales of asbestos (chrysotile) in Vermont in 1933 increased compared with 1932. The entire output was made by the Vermont Asbestos Corporation of America at its property in Lamoille County near Hyde Park.

Washington.—Amphibole was produced in Washington in 1933 by the Asbestos-Talc Products of Washington, Inc., at Burlington for use in asbestos cement. This company also manufactures "Asbesto-Fill", a heat-insulating building material, and "Asbestocite", an article consisting of asbestos fiber and talc and used in roofing paints and plastics.

WORLD PRODUCTION

The chief asbestos-producing areas of the world are Canada, Rhodesia, the Union of South Africa, and the U.S.S.R. (Russia). Relatively small quantities are produced in Cyprus, Italy, Australia, and several other countries.

The following table shows world production by countries for a series of years, insofar as figures are available.

World production of asbestos, 1929–33, in metric tons

Country [1]	1929	1930	1931	1932	1933
Africa:					
Portuguese East Africa		[2] 16		[3]	[3]
Southern Rhodesia	38,677	34,260	21,810	14,302	27,381
Swaziland				5	[3]
Union of South Africa	29,970	17,491	14,221	10,951	14,412
Australia:					
New South Wales			8		[3]
South Australia	1		6	20	[3]
Western Australia	259	144	116	112	[3]
Canada [4]	277,647	219,641	149,047	111,562	141,006
China	277	315	264	[3]	[3]
Cyprus [2]	14,017	5,487	3,628	1,626	[3]
Finland	1,563	1,188	581	756	[3]
France	750	503	[3]	[3]	[3]
Greece	[3]	2	10	[3]	[3]
India, British	324	34	6	91	[3]
Italy	2,847	851	632	1,284	[3]
Japan [5]	1,000	1,000	1,000	1,000	[3]
Turkey	[3]	[3]	4	58	[3]
U.S.S.R. (Russia)	[6] 29,520	54,083	64,674	[3]	[3]
United States	2,862	3,848	2,928	3,229	4,305

[1] In addition to countries listed Madagascar reported production of 545 kilograms of asbestos in 1929. No exploitation of the deposits has been reported since that time.
[2] Exports.
[3] Data not available.
[4] Exclusive of sand and gravel, production of which is reported as follows: 1929, 17,215 tons; 1930, 36,949 tons; 1931, 6,540 tons; 1932, 3,151 tons; 1933, 5,850 tons.
[5] Approximate production.
[6] Year ended Sept. 30.

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CANADA

Asbestos production in Canada during 1933 recovered remarkably, gaining 29 percent in quantity and 71 percent in value over 1932—a year of unusually low output.

Canadian producers took advantage of the quiet years of the depression to improve their processes and equipment. The Asbestos Corporation, Ltd., introduced at the King mine a system of block caving similar to that employed in the large copper mines of Arizona. Both safety and efficiency have been promoted thereby.

The following table shows production figures for 1933 as published in the preliminary report of the Quebec Bureau of Mines.

Production of asbestos in the Province of Quebec for 1933

Designation of grade	Shipments and sales		Average value per ton
	Short tons	Value	
Crudes	1,306	$341,734	$261.66
Fibers	82,605	3,843,887	46.53
Shorts	74,456	1,025,556	13.77
Total	158,367	5,211,177	32.90
Sand, gravel, and stone (waste rock only)	6,445	3,215	.50
Total	164,812	5,214,392	

Quantity of rock mined in 1933: 1,566,919 tons.
Quantity of rock milled in 1933: 1,329,814 tons.
Quantity of tailings re-treated in 1933: 521,930 tons.

AFRICA

Rhodesia.—The Rhodesian industry recovered decidedly in 1933. The tonnage produced was almost double and the value nearly three times that in 1932. Evidently the marketing agreement between Rhodesian and Russian producers brought favorable results. Dividends paid by Turner & Newall, Ltd., which controls most of the output, were increased from 3¾ percent in 1932 to 5 percent in 1933. Earnings were 6.5 percent in 1933 compared with 4.2 percent in 1932. The fiber is high-grade chrysotile occurring in serpentine.

The following table shows Rhodesian production for a series of years.

Asbestos produced in Rhodesia, 1924–33

Year	Short tons	Value	Year	Short tons	Value
1924–28 (average)	33,394	£772,236	1931	24,042	£386,494
1929	42,634	1,186,627	1932	15,766	197,092
1930	37,765	1,070,847	1933	30,182	555,993

Union of South Africa.—Production in the Union of South Africa in 1933 increased 32 percent in quantity and 69 percent in value compared with 1932.

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The following table shows output for several years:

Asbestos produced in the Union of South Africa, 1924–33, by sources

Year	Short tons				Total value
	Transvaal	Cape Province	Natal	Total	
1924–28 (average)	11,652	3,888	----	15,540	£244,301
1929	26,984	6,030	23	33,037	497,393
1930	13,800	5,481	----	19,281	340,795
1931	12,025	3,651	----	15,676	246,583
1932	9,106	2,964	----	12,070	116,401
1933	12,662	3,225	----	15,887	197,120

Cape of Good Hope asbestos is the blue variety (crocidolite) which occurs in banded ironstones occupying a belt extending through Prieska and Kuruman. Both chrysotile and amosite are mined in the Transvaal, the former under unusually favorable conditions in the Barberton district and the latter about 30 miles north of Lydenburg. As noted in the following table each type gained substantially, amosite showing a remarkable increase in tonnage and chrysotile a substantial recovery in value.

Asbestos produced in the Union of South Africa, 1931–33, by varieties and sources

	1931		1932		1933	
	Short tons	Value	Short tons	Value	Short tons	Value
Amosite (Transvaal)	2,087	£20,608	1,391	£13,906	3,090	£31,099
Chrysotile (Transvaal)	9,938	125,439	7,715	45,692	9,572	105,715
Blue (Cape)	3,651	100,536	2,964	56,803	3,225	60,306
	15,676	246,583	12,070	116,401	15,887	197,120

U.S.S.R. (RUSSIA)

The principal asbestos-producing area of the Soviet Union is the Bajenova district, about 90 kilometers northeast of Sverdlovsk (Ekaterinburg). The fiber is the chrysotile variety occurring in serpentine. Although production was almost at a standstill during the revolutionary period recovery has been rapid and extensive in recent years. Definite figures of production in 1932 and 1933 have not yet been obtained. The importance of Soviet Russia as a source of fiber for the United States is uncertain; the significance of the fact that imports of high-grade asbestos were not resumed after import restrictions were removed is not yet apparent. Increasing quantities doubtless are being employed in asbestos-products factories in Russia.

The following table shows production and exports for several years:

Production and exports of Russian asbestos, 1929–33 in metric tons

Year	Production	Exports	Year	Production	Exports
1929	39,942	12,603	1932	(1)	15,915
1930	54,083	15,749	1933	[2] 72,000	(1)
1931	64,674	13,239			

[1] Data not available. [2] Unofficial estimate.

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CYPRUS

Production of short-fiber chrysotile in Cyprus has declined greatly since 1929. As there are no asbestos-products plants on the island the entire output is exported, principally to European countries.

The following table shows exports in recent years:

Asbestos exported from Cyprus, 1929–33

Year	Long tons	Value	Year	Long tons	Value
1929	13,796	£292,971	1932	1,600	£27,214
1930	5,400	116,092	1933	[1] 1,158	[2]
1931	3,571	66,381			

[1] First 6 months.
[2] Data not available.

ITALY

Italy has produced asbestos since ancient times. For many years production consisted entirely of the tremolite variety. Tremolite, well adapted for manufacture of acid filters, occurs in the Susa Valley in western Torino near the French border. It is mined also in the Aosta Valley, northeastern Torino, and near Sondrio, northern Lombardy. In recent years the production has been chiefly chrysotile from the Balangero mine about 20 kilometers north of Turin.

The table of world production on page 1013 shows the output for recent years.

OTHER COUNTRIES

Australia.—Asbestos deposits have been worked in a small way in various parts of Australia. Chrysotile is obtained principally from Western Australia, smaller quantities coming from Queensland, New South Wales, and Tasmania. Crocidolite occurs at several places in South Australia and limited quantities have been produced at Hawker about 250 miles north of Adelaide.

Bulgaria.—Considerable quantities of anthophyllite occur in southern Bulgaria. A production of several hundred tons in 1933 was reported unofficially.

China.—Small quantities of asbestos are obtained from various parts of China. The Laiyuan mines in Chihli probably are the most important. The output is shipped to manufacturing plants in Tientsin. Part of the fiber evidently is of spinning grade.

Newfoundland.—A deposit of chrysotile asbestos discovered near Port au Port is thought to represent a continuation of the Quebec belt. No data on its quality or extent are available.

Turkey.—Small quantities of asbestos have been produced near Kutaia, western Turkey. An output of 58 metric tons valued at about $24 a ton was recorded for 1932. Very promising samples of cross-fiber chrysotile, some of which could be classed as crude No. 1, were sent to the U.S. Bureau of Mines for examination; the source is said to have been a deposit near Sarikamiş, Province of Kars, Turkish Armenia. The percentage of fiber to rock is unusually high, but no data on the extent of the deposit are available.

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