

TALC AND PYROPHYLLITE

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The mineral talc is a hydrous magnesium silicate. A massive talcose rock is called steatite, and an impure massive variety is known as soapstone. Talc is used commercially because of its fragrance retention, luster, purity, softness, and whiteness. Other commercially important properties of talc are its chemical inertness, high dielectric strength, high thermal conductivity, low electrical conductivity, and oil and grease adsorption. Major markets for talc are ceramics, paint, paper, and plastics.

Pyrophyllite is a hydrous aluminum silicate with a structure similar to talc. Such properties as chemical inertness, high dielectric strength, high melting point, and low electrical conductivity make it useful for ceramic and refractory applications.

Legislation and Government Programs

The National Toxicology Program (NTP) of the U.S. Department of Health and Human Services investigated the possible inclusion of "talc, asbestiform" (talc containing asbestiform fibers) and "talc, nonasbestiform" (talc not containing asbestiform fibers) in the 10th report on carcinogens for Congress. Following its review of the health and mineralogical literature, the NTP subcommittee voted five for and five against listing asbestiform talc as reasonably anticipated to be a human carcinogen in its annual report on carcinogens. Several members of the panel did not feel that human and animal data were sufficient to warrant listing in the report. The vote not to list nonasbestiform talc was seven for and three against. In this case, questions arose about possible asbestos contamination of the talc mentioned in several of the health studies cited. As a result of these votes, the panel

recommended against listing asbestiform talc and nonasbestiform talc in its 10th report on carcinogens (U.S. Department of Health and Human Services, Public Health Service, 2001; National Paint and Coatings Association, January 2001, NTP skips over talc, accessed January 8, 2001, at URL http://www.paint.org/ind_issue/current/jan/issue05.htm).

In 2000, the U.S. Department of Defense authorized the disposal of 907 metric tons (t) of block and lump talc, which is the entire uncommitted inventory in that category, from the National Defense Stockpile.

Production

Talc.—In 2000, seven companies operating nine mines in five States produced soapstone, steatite, and talc. All were open pit mines. The producers were, in decreasing order of production, Luzenac America Inc., Wold Minerals Corp. (previously owned by Dal Minerals Co.), Barrett's Minerals Inc., Gouverneur Talc Co., Milwhite Inc., Suzorite Mineral Products Inc. (Zemex Corp.), and Steatite of Southern Oregon. Three other companies, CalTalc Co. in California, Unimin Texas Co. L.P. in Texas, and New World Stone Co. in Virginia worked from stocks. Barrett's Minerals, Gouverneur Talc, Luzenac America, and Wold Minerals were the largest domestic producers, accounting for more than 80% of the tonnage.

In 2000, U.S. mine production was 851,000 t valued at \$22.1 million, compared with 925,000 t valued at \$26.1 million in 1999 (tables 1 and 2). Production decreased in all States except Texas. Montana led all States in the tonnage and value of talc produced, followed by Texas, Vermont, New York, and Oregon. Mines operating in Montana, New York, Texas, and

Talc and Pyrophyllite in the 20th Century

In 1900, domestic production of talc was about 80,000 metric tons and pyrophyllite production was less than 5,000 tons. Prior to 1900, annual production of talc and pyrophyllite were about 50,000 tons and a few hundred tons, respectively. Talc and pyrophyllite were used interchangeably in the early part of the century. Major markets for milled talc and pyrophyllite were paper and talcum powder. Cut and shaped talc (soapstone) was used for gas tips (nozzles), laboratory benches, laundry tubs, metal worker's talc crayons, sinks, tailor's chalk, tiles, and thermal insulation panels. By the late 1920s, however, many new markets emerged, including ceramics, foundry components, lubricants, paints, roofing, rubber, textiles, and wall plaster. Ceramics, which comprised 1% of talc markets in 1931, accounted for 29% of the market by 1973. During the same time period, sales for paint applications decreased from 48% to 15%, sales for paper decreased from 16% to 7%, sales for refractories increased from 1% to 5%, sales for roofing decreased from 11% to 3%,

and sales for rubber decreased from 11% to 3%. Exports accounted for less than 1% of talc sales in 1931 and 15% of sales in 1973. By the 1950s, pyrophyllite had separated itself from talc as a commodity, and its major end-use markets were insecticides (29%), rubber (24%), ceramics (21%), and refractories (13%).

In 2000, domestic production of talc was 851,000 tons, the lowest since 1974. In the past 30 years, talc sales fluctuated between 792,000 tons in 1972 to record high sales of 1.19 million metric tons in 1990. The variations in sales were generally in line with the ups and downs of the U.S. economy. Pyrophyllite production peaked in the early 1960s and then declined through the mid-1980s. Production and sales have been fairly level from the 1980s to the present. In 2000, major domestic talc markets were ceramics (28%), paint (21%), paper (20%), and roofing (8%). Major markets for pyrophyllite were, in decreasing order of consumption, ceramics, refractories, and paint.

Vermont accounted for nearly all the domestic talc production.

Domestic production data were obtained through a voluntary survey of U.S. mining companies conducted by the U.S. Geological Survey (USGS). Survey forms were sent to 12 companies. Responses accounting for approximately 79% of the data are presented in table 1; the remaining data were estimated from reported prior-year data adjusted according to industry trends.

Pyrophyllite.—Piedmont Minerals Co. Inc. and Standard Mineral Co. Inc. operated three mines in North Carolina and Standard Industrial Minerals Inc. operated one mine in California. Production of pyrophyllite decreased slightly from that of 1999.

Domestic production data were acquired through a voluntary USGS survey of the three U.S. companies that mine pyrophyllite. All responded to the survey.

Consumption

Domestic consumption data for talc and pyrophyllite were developed by the USGS from a voluntary survey of U.S. mills. Survey forms were sent to 13 companies operating 17 mills in 9 States for talc and 3 companies operating 3 mills in 2 States for pyrophyllite. Approximately 81% of the talc data presented in table 3 was reported by the companies; the remaining data were estimated from reported prior-year data adjusted according to industry trends. All the pyrophyllite producers responded to the consumption survey.

Talc.—Approximately 831,000 t of talc valued at \$96.1 million was sold or used in 2000, a decrease from 881,000 t valued at \$102 million in 1999. Of the 831,000 t of talc sold or used, producers reported that 732,000 t was sold for domestic use and approximately 99,000 t was exported.

Domestic markets included, in decreasing order of consumption, ceramics (sanitaryware, tiles, etc.), paint, paper, roofing, plastics, rubber, cosmetics, and refractories (table 3). Domestic sales of talc declined by 5% in 2000 compared with that of 1999. The slowdown of growth of the domestic economy had an impact on sales in the last half of 2000. Sales of talc to manufacturers of paint, sanitaryware, roofing, and tile are strongly tied to the housing industry. Initiation of new privately owned housing units declined to 1.59 million in 2000 from 1.67 million in 1999. Shipments of architectural paint, the major paint market for talc, declined to 2.52 million liters in 2000 from 2.56 million liters in 1999. Data on sales of vitreous china plumbing fixtures (commodes, sinks, urinals, water tanks, etc.) are not available for 2000, but shipments of fixtures in 1999 were less than those of 1998. Additionally, the difference between production and shipments of vitreous china plumbing fixtures was greater in 1999 than in 1998, suggesting that production in 2000 could be lower than in 1999 to avoid inventory buildup. Despite lower sales of domestically produced talc to manufacturers of plastic products, shipments of plastics have continued to increase. Shipments in 1999 were slightly more than \$300 billion compared with \$250 billion in 1996. Imports of talc are thought to fill much of the expanding plastics market demand for talc fillers and extenders.

About 75,400 t of talc was reported under the “Other” category by respondents in 2000. Of this amount, 64,500 t was used in animal feed additives, automobile body fillers, caulks, joint compounds, paint and putties, sculpture media, tile flooring, and vinyl sheet flooring. The remainder of the

“Other” category (10,900 t) was used in applications that were not identified by respondents.

Most of the imported talc listed in table 6 was not included in the domestic end-use data listed in table 3. Of the 270,000 t of imported talc, approximately 15,000 to 20,000 t was processed and exported. As with 1999, the large tonnage increase in imports probably could not be absorbed in current markets, and about 35,000 to 45,000 t was held in inventory. An estimate of the end-use breakdown based on countries of origin, ports of entry, importing companies, and regional end-use patterns is plastics, 85,000 t; paint, 40,000 t; ceramics and refractories, 20,000 t; paper, 15,000 t; cosmetics, 10,000 t; rubber, 10,000 t; and unknown, 30,000 t.

Pyrophyllite.—Domestic consumption of pyrophyllite was essentially unchanged from that of 1999. Pyrophyllite was used, in decreasing order of consumption, in ceramics, refractories, paint, insecticides, plastics, and rubber. Ceramic and refractory uses accounted for more than 70% of domestic pyrophyllite sales.

Prices

Talc prices varied depending on the quality and the degree and method of processing. The unit value of crude talc was estimated to be \$26 per metric ton. More than 85% of the crude ore value included in table 1 was estimated because most talc is sold only after crushing and grinding. Following sorting to remove waste, primary crushing, and screening, the unit value of the unmilled talc probably would be on the order of \$50 to \$60 per ton, free on board (f.o.b.) at the mill. The average reported unit value of processed talc was \$116 per ton, unchanged from that of 1999. The average unit values of crude and processed pyrophyllite decreased slightly from those of 1999.

The average free alongside ship (f.a.s.) unit value for exports of unmilled talc was \$236 per ton compared with \$114 per ton in 1999. Large fluctuations in pricing can be expected for the low tonnages of crude shipped annually [5,000 to 15,000 metric tons per year (t/yr)]. Additionally, several of the small export shipments have unit values ranging from \$700 to \$3,552 per ton, suggesting that sculpting-grade talc and talc products such as body powders also may have been included in the export data. The unit value for milled talc exports was \$212 per ton in 2000 compared with \$195 per ton in 1999. The average Customs unit value for imports was \$83 per ton for unground talc (unchanged from 1999), \$146 per ton for ground talc (\$161 per ton in 1999), and \$973 per ton for cut or sawed talc (\$932 per ton in 1999).

Approximate prices for talc ranged from \$87 to \$327 per ton (table 4; Industrial Minerals, 2000d). Quoted prices should be used only as a guideline because actual prices depend on the terms of the contract between seller and buyer. Three of the larger talc producers in the United States announced price increases to compensate for increased fuel costs associated with minerals mining and processing. Deteriorating profit margins also were cited as contributing to the price increase for Luzenac America. Price increases of 2% to 4% were announced by Minerals Technologies Inc., the parent company of Barrett’s Minerals; 5% to 8% by Luzenac America; and 5% to 8% by Zemex Corp., the parent company of Suzorite Mineral Products Inc. (Industrial Minerals, 2000c; North American Minerals News, 2000). Talc producers in Guangxi Province in China

also announced price increases of up to \$2 per ton. The producers cite strong demand and declining reserves in several deposits as the reason for the increase (Industrial Minerals, 2000b).

Foreign Trade

Talc exports increased by 5% in tonnage to 154,000 t and by 21% in value to \$32.8 million. Canada was the leading importer of U.S. talc, followed by Venezuela (19,000 t), Belgium, Mexico, Japan, and the Republic of Korea (5,450 t) (table 5). Much of the talc exported to Mexico is shipped to U.S. affiliates operating across the Mexican border and is not reported by the U.S. Census Bureau. Total talc exported across the Mexican border in 2000, including shipments to U.S. affiliates, exceeded 50,000 t.

Talc imports reported by the U.S. Census Bureau increased by 30% in tonnage to 270,000 t and by 20% in value to \$42.5 million in 2000. As in 1999, the large increase in imports probably could not be absorbed by talc markets. Some of the imported talc was processed and exported. It is likely that some imported talc was processed and stockpiled for future sales. Announced price increases on some of the Chinese talc may have prompted some importers to make larger than normal purchases before the price changes took effect. Canada, China, and Japan supplied 78% of all talc imports (table 6). Most of the talc imported from Japan was likely to have been transshipments from other Southeast Asian countries or from Australia.

Approximately 36% (98,100 t) of talc imported into the United States came through the customs district of New Orleans, LA, almost all of which was unmilled. Of this amount, 89,900 t was imported from China, 8,000 t from Australia, and 236 t from France. The second leading customs district was Houston, TX, with 38,900 t (mainly unmilled talc from China and France), followed by New York, NY, with 34,400 t (mainly milled talc from Japan and Italy); Detroit, MI, with 31,700 t (mainly from Canada); Charleston, SC, with 18,200 t (milled talc mainly from Italy); Duluth, MN, with 13,300 t (milled talc from Canada); and Buffalo, NY, with 10,200 t (milled talc mainly from Canada). The remaining imports were dispersed among the many other customs districts.

World Review

China remained the world's leading producer of talc, followed by the United States, India, Finland, France, and Brazil. The Republic of Korea was the largest producer of pyrophyllite, followed by Japan and Brazil. China, Japan, the Republic of Korea, and the United States produced 61% of the world's talc and pyrophyllite (table 7).

Australia.—WMC Resources Ltd. sold its 50% share of Mondo Minerals Oy to Omya plc. Mondo Minerals was a consolidation of Finnminerals Oy and WMC's Westmin Talc BV. It was operated as a 50-50 joint venture with Omya. WMC still owns the Three Springs talc mine in Western Australia but has decided to sell that operation as well. The company had just inaugurated its new \$11 million micronizing mill in October. WMC's Three Springs operation produces micronized talc for the paint, paper, plastics, and technical ceramics markets (Industrial Minerals, 2000e).

Poland.—Rozmin s.r.o. began studying proposals for mine

construction at its Gemerska Poloma talc deposit in eastern Slovakia. The company anticipated production to begin in mid-2000 at a rate of 80,000 t/yr. The deposit contains an estimated 16 million metric tons of reserves. Rozmin will jointly market the talc with Gebrueder Dorfner GmbH and Co., a German marketing company. The talc will be sold for paint, paper, plastic, and rubber applications (Industrial Minerals, 2000a).

Outlook

While still strong, sales of talc have declined slightly over the past 2 years. An economy that began slowing in early to mid-2000 has contributed to the decline and does not bode well for 2001. Major markets for talc, such as ceramics, paint, and paper, which were projected to grow through 2003, probably will begin to level off. This mirrors a decline in new housing units being built; new home construction uses many products that contain talc. Plastics still offer the greatest opportunity for expansion. Imports will continue to play a larger role in the U.S. talc market, particularly in the plastics markets. No major changes are anticipated in pyrophyllite markets, and consumption probably will not change significantly for the next few years.

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TABLE 1
SALIENT TALC AND PYROPHYLLITE STATISTICS 1/

(Thousand metric tons and thousand dollars)

	1996	1997	1998	1999	2000
United States:					
Mine production, crude:					
Talc	994	1,050	971	925	851
Pyrophyllite	W	W	W	W	W
Total	994	1,050	971	925	851
Value:					
Talc	31,100	33,000	27,300	26,100	22,100
Pyrophyllite	W	W	W	W	W
Total	31,100	33,000	27,300	26,100	22,100
Sold by producers, crude and processed:					
Talc	909	942	870	881	831
Pyrophyllite	W	W	W	W	W
Total	909	942	870	881	831
Value:					
Talc	100,000	111,000	109,000	102,000	96,100
Pyrophyllite	W	W	W	W	W
Total	100,000	111,000	109,000	102,000	96,100
Exports (talc) 2/	192	179	146	147	154
Value	37,900	34,200	26,000	27,200	32,800
Imports for consumption	187	123	165	208	270
Value	20,500	21,100	23,300	35,300	42,500
Apparent consumption 3/	989	994	990	986	967
World, production	9,880	11,100 r/	10,100 r/	10,000 r/	9,640 e/

e/ Estimated. r/ Revised. W Withheld to avoid disclosing company proprietary data.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Excludes powders--talcum (in package), face, and compact.

3/ Production plus imports minus exports plus adjustments in Government and industry stock. Does not include pyrophyllite.

TABLE 2
CRUDE TALC PRODUCED IN THE UNITED STATES, BY STATE 1/ 2/

(Thousand metric tons and thousand dollars)

State	1999		2000	
	Quantity	Value	Quantity	Value
Texas	220	5,000	230	3,940
Other 3/	705	21,100	620	18,100
Total	925	26,100	851	22,100

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Excludes pyrophyllite.

3/ Includes California, Montana, New York, Oregon, and Vermont.

TABLE 3
END USES FOR GROUND TALC 1/ 2/

(Thousand metric tons)

	1999	2000
Ceramics	209	205
Cosmetics	27	21
Insecticides	8	2
Paint	142	152
Paper	167	145
Plastics	64	39
Refractories	2	5
Roofing	60	58
Rubber	19	30
Other 3/	73	75
Total	771	732

See footnotes at end of table.

TABLE 3--Continued
END USES FOR GROUND TALC 1/ 2/

1/ Data are rounded to no more than three significant digits; may not add to totals shown.
2/ Excludes pyrophyllite.
3/ Includes art sculpture, asphalt filler, auto body filler, construction caulks, flooring, joint compounds, and other uses not specified.

TABLE 4
PRICES OF TALC

(Dollars per metric ton)

	Price
New York:	
Paint:	
200 mesh	104
400 mesh	187
Ceramic:	
200 mesh	87
325 mesh	97
Italian, cosmetic-grade	248
Chinese, normal (ex-store):	
UK 200 mesh	284-320
UK 350 mesh	298-327

Source: Industrial Minerals, December 2000.

TABLE 5
U.S. EXPORTS OF TALC 1/ 2/

(Thousand metric tons and thousand dollars)

Country	1999		2000	
	Quantity	Value	Quantity	Value
Belgium	14	1,780	9	1,830
Canada 3/	55	9,910	58	9,920
Japan	7	1,250	7	1,300
Mexico	17	1,780	8	966
Other 4/	54	12,500	72	18,800
Total	147	27,200	154	32,800

1/ Data are rounded to no more than three significant digits; may not add to totals shown.
2/ Excludes powders--talcum (in package), face, and compact.
3/ Probably includes shipments in transit through Canadian ports.
4/ Includes 47 countries in 1999 and 52 countries in 2000.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF TALC, BY COUNTRY 1/

Country	Not crushed or powdered		Crushed or powdered		Cut and sawed		Total unmanufactured	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
1999:								
Brazil	2	\$5	75	\$19	1,230	\$1,070	1,310	\$1,090
Canada	89	37	44,100	11,400	6,220	4,980	50,400	16,500
China	91,900	7,380	1,070	251	579	387	93,500	8,020
France	175	235	21,300	384	5,060	5,180	26,600	5,800
Japan	--	--	15,100	869	6	19	15,100	888
Other 2/	20,000	1,600	892	357	508	1,040	21,400	3,000
Total	112,000	9,260	82,600	13,300	13,600	12,700	208,000	35,300

See footnotes at end of table.

TABLE 6--Continued
U.S. IMPORTS FOR CONSUMPTION OF TALC, BY COUNTRY 1/

Country	Not crushed or powdered		Crushed or powdered		Cut and sawed		Total unmanufactured	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
2000:								
Brazil	80	3	121	19	663	589	864	611
Canada	261	113	58,100	14,300	7,820	6,420	66,200	20,900
China	121,000	9,870	1,120	346	837	723	123,000	10,900
France	7,010	752	474	429	4,580	4,750	12,100	5,930
Japan	--	--	21,900	1,020	214	259	22,100	1,280
Other 2/	14,800	1,070	31,100	345	447	1,480	46,300	2,890
Total	143,000	11,800	113,000	16,500	14,600	14,200	270,000	42,500

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Includes 18 countries in 1999 and 26 countries in 2000.

Source: U.S. Census Bureau.

TABLE 7
TALC AND PYROPHYLLITE: WORLD PRODUCTION, BY COUNTRY AND PRODUCT 1/ 2/

(Metric tons)

Country 3/	1996	1997	1998	1999	2000 e/
Argentina:					
Pyrophyllite	2,180	4,242 r/	3,450 r/	4,000 e/	4,000
Steatite e/	300	300	300	300	300
Talc	11,777	13,380	14,585 r/	14,600 r/ e/	14,600
Australia: e/					
Pyrophyllite	5,000	5,000	5,000	5,000	10,000
Talc	210,000	210,000	210,000	210,000	250,000
Austria, steatite e/	130,000	155,730 4/	156,000	150,000	150,000
Brazil, unspecified e/ 5/	452,180 4/	452,000	452,000	452,000	452,000
Canada, pyrophyllite, soapstone, talc	77,000	73,000	78,000	79,000 e/	79,000
Chile, talc	4,276	3,986	3,772	3,800 e/	3,850
China, unspecified e/	4,000,000	4,100,000	3,800,000	3,900,000	3,500,000
Colombia, pyrophyllite, soapstone, talc e/	14,800	14,832 4/	15,000	15,000	15,000
Egypt, pyrophyllite, soapstone, steatite, talc	41,227	43,627	39,720	40,000 e/	40,000
Finland, talc e/	345,000 4/	350,000	350,000	350,000	360,000
France, crude talc e/	349,270 4/	350,000	325,000	350,000	350,000
Germany, talc (marketable)	10,005	8,819	15,473	15,000 e/	15,000
Guatemala, talc e/	694 4/	700	700	750	740
Hungary, talc e/	1,200	1,200	1,200	1,200	1,200
India:					
Pyrophyllite	143,172	121,566	79,951	85,000 e/	85,000
Steatite	472,001	417,613	447,550	450,000 e/	460,000
Iran, talc e/ 6/	20,000	20,000	20,000	20,000	20,000
Italy, steatite and talc e/	168,000	142,000	140,000	140,000	140,000
Japan:					
Pyrophyllite	913,973	913,822	764,079	694,317 r/	692,998 4/
Talc e/	56,153 4/	53,000	50,000	50,000	50,000
Korea, North, unspecified e/	180,000	180,000	150,000	120,000	120,000
Korea, Republic of:					
Pyrophyllite	780,062	994,366	843,609	754,657 r/	760,000
Talc	19,066	25,751	24,411	15,313 r/	16,000
Macedonia, talc e/	10,000	10,000	10,000	10,000	10,000
Mexico, talc	10,100	13,586	18,843	18,981 r/	19,000
Morocco	13,053	19,850	20,000	20,000 e/	20,000
Nepal, talc 7/	5,323	6,809	5,553 r/	5,400 r/ e/	5,500
Norway, talc e/	28,000 r/	28,000 r/	26,000 r/	26,000	27,000
Pakistan, pyrophyllite	34,095	45,414	48,927	67,670 r/	70,000
Paraguay, unspecified e/	200	200	200	200	200

See footnotes at end of table.

TABLE 7--Continued
TALC AND PYROPHYLLITE: WORLD PRODUCTION, BY COUNTRY AND PRODUCT 1/ 2/

(Metric tons)

Country 3/	1996	1997	1998	1999	2000 e/
Peru: e/					
Pyrophyllite	8,000	8,000	8,000	8,000	8,000
Talc	12,985 4/	13,000	13,000	13,000	13,000
Portugal, talc	8,277	8,236	8,400 e/	8,400 e/	8,000
Romania, talc	10,248	7,578	8,134 r/	8,289 r/	8,200
Russia, talc e/	100,000	90,000	79,000 r/	90,000	100,000
South Africa:					
Pyrophyllite	8,837 r/	10,610 r/	11,500 r/	13,277 r/	12,173 4/
Talc	9,700 r/	12,600 r/	11,300 r/	7,900 r/	5,600 4/
Spain, teatite e/	109,756 4/	110,000	110,000	110,000	100,000
Sweden, talc e/	30,000 4/	25,000	25,000	25,000	26,000
Taiwan, talc	1,500	1,331	73	201 r/	200
Thailand:					
Pyrophyllite	64,330	304,524	40,241	42,000 e/	40,500
Talc	7,238	7,139	2,172 r/	2,000 e/	2,000
Turkey e/	4,000	4,000	5,000	5,000	5,000
United Kingdom, pyrophyllite, soapstone, talc e/	5,322 4/	5,500	5,000	5,000	5,000
United States:					
Pyrophyllite	W	W	W	W	W
Talc	994,000	1,050,000	971,000	925,000	851,000 4/
Uruguay, pyrophyllite, soapstone, talc	898	1,133	972	2,905 r/	1,000
Zambia, talc e/	80	80	80	80	80
Zimbabwe, talc	1,076	1,023	1,039	1,000	1,000
Grand total	9,880,000	11,100,000 r/	10,100,000 r/	10,000,000 r/	9,640,000
Of which:					
Pyrophyllite	1,960,000 r/	2,410,000 r/	1,800,000 r/	1,670,000 r/	1,680,000
Steatite	712,000	684,000	714,000	710,000	710,000
Talc	2,260,000	2,310,000 r/	2,190,000 r/	2,170,000 r/	2,160,000
Unspecified	4,960,000	5,720,000 r/	5,420,000 r/	5,490,000 r/	5,090,000

e/ Estimated. r/ Revised. W Withheld to avoid disclosing company proprietary data; not included in "Totals."

1/ World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

2/ Table includes data available through April 24, 2001.

3/ In addition to the countries listed, the former Czechoslovakia produces talc, but information is inadequate to make reliable estimates of output levels.

4/ Reported figure.

5/ As reported in the Sumário Mineral 1999-2000.

6/ Data based on Iranian fiscal year beginning March 21 of year stated.

7/ Data based on Nepalese fiscal year beginning mid-July of year stated.