

TALC AND PYROPHYLLITE

By Lucy McCartan

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

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

Legislation and Government Programs

The Department of Defense authorized the disposal of 907 metric tons of block and lump talc from the National Defense Stockpile, which is the entire uncommitted inventory in that category. The National Defense Stockpile also contains 988 tons of ground talc. In April 1997, 63 tons of block and lump talc were sold from the 1996 authorization.

Production

Talc.—Eleven companies operating 15 mines in 7 States produced talc, soapstone, and steatite. All but one operation were open pit mines. The producers, listed in decreasing order of production, were Luzenac America Inc., Barrett's Minerals Inc., Gouverneur Talc Co., Dal Minerals Co., Milwhite Inc., United Clays of Texas, Suzorite Mineral Products Inc., Canyon Mines Inc., New Alberene Stone Co., Steatite of Southern Oregon, and NuTech. Luzenac America, Barrett's Minerals, Gouverneur Talc, and Dal Minerals were the largest domestic producers, accounting for over 85% of the market.

U.S. mine production was 1,050,000 tons valued at \$33 million in 1997, which was an increase from 994,000 tons and \$31 million in 1996. (See tables 1 and 2.) Production increased in California, Oregon, Texas, and Vermont and decreased in Montana, New York, and Virginia. Montana led all States in the tonnage and value of talc produced, followed by Texas, Vermont, New York, California, Virginia, and Oregon in decreasing order of production. Mines that operated in Montana, New York, Texas, and Vermont accounted for nearly all of the domestic talc production.

Domestic production data were developed by the U.S. Geological Survey (USGS) from a voluntary survey of U.S. mining companies. Survey forms were sent to 11 companies. All companies responded to the survey.

Pyrophyllite.—Pyrophyllite was mined by two companies

operating three mines in North Carolina and one company operating one mine in California. Piedmont Minerals Co. Inc. and Standard Mineral Co. Inc. operated in North Carolina and Standard Industrial Minerals Inc. mined pyrophyllite in California. Production of pyrophyllite increased from that of 1996. North Carolina accounted for most of the domestic pyrophyllite production.

Domestic production data were developed by the USGS from a voluntary survey of U.S. mining companies. Survey forms were sent to three companies. All companies responded to the survey.

Consumption

Talc.—Slightly more than 942,000 tons of talc valued at \$111 million was sold or used in 1997, an increase from 909,000 tons in 1996. Sales or use of talc increased in Alabama, Montana, Oregon, Texas, Vermont, and Virginia and decreased in California and New York. Of the 942,000 tons of talc sold or used, 807,000 tons reportedly was sold for domestic use and approximately 135,000 tons was exported.

Domestic markets include ceramics (pottery, sanitaryware, tiles, etc.), paper, paint, plastics, roofing, rubber, cosmetics, insecticides, and refractories, in decreasing order of consumption. (See table 3.) Domestic sales to the cosmetics, insecticides, plastics, refractories, roofing, and rubber industries increased in 1997. Major increases came in sales to plastics and rubber manufacturers; sales to both industries have been somewhat volatile in recent years. Talc's properties in plastics ensure its increased use in this market. Talc adds scratch resistance to polypropylene parts for automobiles such as bumpers, dashboards, and trims. Talc also helps thermally stabilize engineered thermoplastics used in nylon parts that are replacing certain engine components. Another important application of talc is as an antiblocking agent in plastic films. Talc enhances ease of separation of adjacent films and therefore permits the production of thinner, more economical film products. In this application, talc is less expensive than synthetic silica and about on a par with diatomaceous earth. Increased use of talc in the plastics and rubber industries has been aided by technologies developed by companies in the United States, which have significantly improved the consistent production of a narrow range of talc particle sizes and for plastics, brightness. These improvements may result in increased exports of fine ground talc to European plastics producers in the future (Sims, 1997).

More than one-fifth of the talc consumed in the United States is used by the paper industry; sales to that market were down 2% in 1997. Talc has no equal in the removal of pitch and stickies in paper production, but it is somewhat less competitive than kaolin in the North American paper filler industry. Use of talc in ceramics has dropped 13% in the last 2 years, probably because

of a shift of some talc producers to higher value markets like plastics, increased importation of ceramic-grade talc from foreign plants, and also because traditional ceramics are now increasingly single-fired. Talc is more beneficial in the more traditional double-firing process than in the single-fired process because of its firing characteristics. Talc continues to be a significant ingredient for ceramic electrical insulators (Sims, 1997). Sales to other industries were slightly up or down.

Approximately 88,000 tons of talc was reported and described under the "Other" category by respondents. Of this amount, respondents reported that 6,240 tons was used in automobile body fillers, 66 tons for sculpture media, and 76,600 tons was used in caulks, joint compounds, paint and putties, vinyl sheet flooring, and tile flooring. The remainder of the "Other" category (5,430 tons) was used in applications that were not identified by respondents. More than 99% of the data presented in table 3 was reported by the companies; the remainder was estimated from reported prior year data adjusted according to industry trends.

Most of the imported talc was not included in the domestic end-use data shown in table 3. Approximately two-thirds of the imported talc was purchased primarily by mineral brokers who do not participate in the USGS canvass. An estimate of the end-use breakdown based on countries of origin, ports of entry, importing companies, and regional end-use patterns is ceramics-refractories, 8,000 tons; cosmetics, 11,000 tons; paint, 13,000 tons; paper, 5,000 tons; plastics, 57,000 tons; rubber, 10,000 tons; and unknown 19,000 tons.

Pyrophyllite.—Domestic consumption of pyrophyllite increased 13% from that of 1996. Sales in North Carolina were 11% higher in 1997 than 1996. Pyrophyllite was used in ceramics, refractories, insecticides, paint, plastics, and rubber applications in decreasing order of consumption. Sales increased for ceramic, plastic, and refractory applications, decreased for paints, and remained unchanged for insecticide and rubber applications. The largest increase in consumption was for refractory uses. Ceramic and refractory uses accounted for over 70% of the pyrophyllite sales.

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 12 companies operating 19 mills in 10 States for talc and 3 companies operating 3 mills in 2 States for pyrophyllite. All companies responded to the survey.

Prices

Talc prices varied depending on the quality and on the degree and method of processing. The unit value of crude talc was estimated to be \$31.50 per ton. Over 50% of the crude ore value included in table 1 was estimated because most producers do not sell crude talc and could not provide a crude ore value. The average reported unit value of processed talc was \$118 per ton. The average unit value of crude and processed pyrophyllite increased slightly in 1997.

Average unit values for exports of unground talc ranged from \$103 per ton to \$363 per ton for total shipments exceeding 100 tons from individual port districts. The average value was \$131 per ton. Unit values for exports of ground talc ranged from \$24 per ton to \$678 per ton with an average of \$198 per ton. The

average unit value for all exported talc was \$190 per ton for all exports. The unit values for the crude talc increased because more low tonnage-high value (exceeding \$600 per ton) shipments were reported in 1997. The unit value for ground talc exports decreased less than 1%. As with imports, some of the high value talc exports probably were finished products such as talcum powder and sculpture-grade material.

Average unit values for imported crude and ground talc ranged from \$29 per ton to \$578 per ton for total shipments exceeding 100 tons for individual port districts. Unit values for cut or sawed talc ranged from \$298 per ton to \$1,227 per ton for shipments exceeding 100 tons. The average unit value for all shipments, including those of 100 tons or less, was \$80 per ton for crude talc; \$163 per ton for ground talc; and \$1,030 per ton for cut or sawed talc. The average unit value for imported crude talc increased 30% because of large imports of talc from China. In 1997, the average value per ton of the 44,400 tons of crude talc imported from China was \$76, an increase from \$54 per ton in 1996. The average unit value for ground talc increased 63%. In general, the values of larger tonnage shipments in all categories were higher than those of 1996. There were also many small shipments (1 to 10 tons) of talc whose unit value exceeded \$500 per ton in 1997. A few shipments were extremely high, exceeding \$2,000 per ton. These were likely to have been shipments of finished products such as talcum powder, sculpture-grade material, or possibly surface-treated talc. The average unit value for all imported talc was \$172 per ton.

Approximate equivalents, in dollars per metric ton, of prices for talc ranged from \$83 to \$371 per ton (Industrial Minerals, 1997). (See table 4.) Quoted prices should be used only as a guideline because actual prices depend on the terms of the contract between seller and buyer.

Foreign Trade

Talc exports decreased 7% in tonnage to 179,000 tons and 10% in value to \$34.2 million. Canada was the largest importer of U.S. talc, followed by Mexico, Indonesia (12,300 tons), Japan (9,400 tons), Nicaragua (5,900 tons), the Republic of Korea (5,100 tons), and Germany (4,400 tons). (See table 5.) Since 1990, data reported by domestic producers concerning exports to Mexico gradually have diverged from the Bureau of the Census data. Based on industry data, exports to Mexico are estimated to be two to three times those reported by the Bureau of the Census.

Talc imports decreased 34% in tonnage to 123,000 tons and increased 3% in value to \$21.1 million. Canada, China, and Japan supplied 95% of all talc imports. (See table 6.) Most of the talc imported from Japan was likely to have been either transshipments from other Southeast Asian countries or Australia or processed in Japan and reexported.

Imports listed by tonnage, source, and port district are: 46,400 tons from China and France through New Orleans-Baton Rouge, LA; 26,000 tons from China, France, and Switzerland through Houston, TX; 12,600 tons from Canada through Buffalo, NY; 11,600 tons (mainly from Canada) through Detroit, MI; 11,200 tons (mainly from Japan and France) through New York-New Jersey; 6,450 tons (mainly from Australia and Hong Kong) through Brownsville, TX; 4,040 tons (mainly from Japan)

through Los Angeles, CA; and 1,350 tons from Italy through Mobile, AL. The remaining imports were scattered among the many other port districts.

World Review

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

Outlook

The talc industry continued its rebound from 1992 when domestic consumption was 902,000 tons. Consumption for the past 3 years has been approximately 1 million tons. Despite increasing talc imports, overall domestic sales of talc probably will continue to remain at the 1-million-ton level in the near future.

No major changes are anticipated in talc markets. Ceramics will continue to be the major domestic market for talc. Plastics, however, should offer the greatest potential for growth. With the growth of plastic markets, the opportunities for sales of talc also have increased. Additionally, producers and processors have continued to improve the performance of talc in polymers, thereby increasing its desirability relative to competing minerals.

The pyrophyllite industry, like the talc industry, is mature and has been relatively stable for many years. In recent years, it has exhibited only slow growth. Again, no major market changes are anticipated, so this slow growth trend is expected to continue. Major domestic end-use markets will continue to be in ceramics

and refractories.

References Cited

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SOURCES OF INFORMATION

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¹Prior to January 1996, published by the U.S. Bureau of Mines.

TABLE 1
SALIENT TALC AND PYROPHYLLITE STATISTICS 1/

(Thousand metric tons unless otherwise specified)

| | 1993 | 1994 | 1995 | 1996 | 1997 | |
|--|-----------|-----------|-----------|----------|-----------|-----------|
| United States: | | | | | | |
| Mine production, crude: | | | | | | |
| Talc | 968 | 935 | 1,060 | 994 | 1,050 | |
| Pyrophyllite | W | W | W | W | W | |
| Total | 968 | 935 | 1,060 | 994 | 1,050 | |
| Value: | | | | | | |
| Talc | thousands | \$27,800 | \$30,400 | \$31,700 | \$31,100 | \$33,000 |
| Pyrophyllite | do. | W | W | W | W | W |
| Total | do. | \$27,800 | \$30,400 | \$31,700 | \$31,100 | \$33,000 |
| Sold by producers, crude and processed: | | | | | | |
| Talc | | 900 | 923 | 901 | 909 | 942 |
| Pyrophyllite | | W | W | W | W | W |
| Total | | 900 | 923 | 901 | 909 | 942 |
| Value: | | | | | | |
| Talc | thousands | \$104,000 | \$116,000 | \$99,900 | \$100,000 | \$111,000 |
| Pyrophyllite | do. | W | W | W | W | W |
| Total | do. | \$104,000 | \$116,000 | \$99,900 | \$100,000 | \$111,000 |
| Exports 2/ (talc) | | 135 | 154 | 183 | 192 | 179 |
| Value | thousands | \$27,200 | \$29,800 | \$37,100 | \$37,900 | \$34,200 |
| Imports for consumption | | 100 | 155 | 146 | 187 | 123 |
| Value | thousands | \$10,800 | \$14,900 | \$14,800 | \$20,500 | \$21,100 |
| Apparent consumption 3/ | | 933 | 936 | 1,020 | 989 | 992 |
| World: Production | | 8,420 r/ | 8,260 r/ | 8,620 r/ | 8,470 r/ | 8,470 e/ |

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

1/ Data are rounded to 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 | 1996 | | 1997 | |
|----------|----------|--------|----------|--------|
| | Quantity | Value | Quantity | Value |
| Oregon | (3/) | 84 | W | W |
| Texas | 225 | 5,100 | 274 | 6,760 |
| Other 4/ | 769 | 25,900 | 774 | 26,200 |
| Total | 994 | 31,100 | 1,050 | 33,000 |

W Withheld to avoid disclosing company proprietary data.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Excludes pyrophyllite.

3/ Less than 1/2 unit.

4/ Includes California, Montana, New York, Oregon (1997), Vermont, and Virginia.

TABLE 3
END USES FOR GROUND TALC 1/ 2/

(Thousand metric tons)

| | 1996 | 1997 |
|--------------|------|------|
| Ceramics | 267 | 235 |
| Cosmetics | 19 | 22 |
| Insecticides | 7 | 10 |
| Paint | 148 | 145 |
| Paper | 180 | 178 |
| Plastics | 42 | 58 |
| Refractories | 1 | 5 |
| Roofing | 39 | 42 |
| Rubber | 3 | 24 |
| Other 3/ | 84 | 88 |
| Total | 791 | 807 |

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Excludes pyrophyllite.

3/ Includes art sculpture, asphalt filler, auto body filler, construction caulks, joint compounds, flooring, and other uses not specified.

TABLE 4
PRICES OF TALC

(U.S. dollars per metric ton)

| | |
|-----------------------------|---------|
| New York: | |
| Paint: | |
| 200 mesh | 110 |
| 400 mesh | 180 |
| Ceramic: | |
| 200 mesh | 83 |
| 325 mesh | 92 |
| Italian, cosmetic-grade | 288 |
| Chinese, normal (ex-store): | |
| UK 200 mesh | 321-363 |
| UK 350 mesh | 338-371 |

Source: Industrial Minerals (London), December 1997.

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

(Thousand metric tons and thousand dollars)

| Country | 1996 | | 1997 | |
|-----------|----------|--------|----------|--------|
| | Quantity | Value | Quantity | Value |
| Belgium | 8 | 1,680 | 2 | 370 |
| Canada 3/ | 65 | 12,200 | 59 | 9,970 |
| Japan | 8 | 1,280 | 9 | 1,550 |
| Mexico | 27 | 3,300 | 28 | 2,810 |
| Other 4/ | 84 | 19,400 | 81 | 19,500 |
| Total | 192 | 37,900 | 179 | 34,200 |

1/ Data are rounded to three significant digits; may not add to totals shown.

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

3/ Probably includes shipments in transit through Canadian ports.

4/ Includes 62 countries in 1996 and 66 countries in 1997.

Source: Bureau of the Census.

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) |
| 1996: | | | | | | | | |
| Brazil | -- | -- | 76 | \$17 | 427 | \$371 | 503 | \$387 |
| Canada | 197 | \$41 | 25,400 | 5,170 | 406 | 322 | 26,000 | 5,530 |
| China | 75,400 | 4,460 | 7,580 | 572 | 782 | 438 | 83,800 | 5,480 |
| France | 42 | 37 | 6,470 | 352 | 4,870 | 4,850 | 11,400 | 5,240 |
| Japan | 1 | 2 | 28,800 | 571 | 1 | 3 | 28,800 | 575 |
| Other 2/ | 34,000 | 2,030 | 1,700 | 322 | 475 | 951 | 36,200 | 3,300 |
| Total | 110,000 | 6,570 | 70,100 | 7,000 | 6,960 | 6,930 | 187,000 | 20,500 |
| 1997: | | | | | | | | |
| Brazil | 23 | 27 | 118 | 25 | 620 | 544 | 761 | 596 |
| Canada | 1 | 1 | 26,100 | 5,540 | 384 | 254 | 26,500 | 5,800 |
| China | 44,400 | 3,320 | 5,170 | 440 | 754 | 498 | 50,300 | 4,260 |
| France | 6,000 | 600 | 658 | 336 | 5,870 | 5,970 | 12,500 | 6,910 |
| Japan | -- | -- | 12,200 | 746 | 3 | 11 | 12,200 | 757 |
| Other 2/ | 19,100 | 1,620 | 1,510 | 389 | 219 | 813 | 20,800 | 2,820 |
| Total | 69,500 | 5,570 | 45,800 | 7,480 | 7,850 | 8,090 | 123,000 | 21,100 |

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes 27 countries in 1996 and 25 countries in 1997.

Source: Bureau of the Census.

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

(Metric tons)

| Country 3/ | 1993 | 1994 | 1995 | 1996 | 1997 e/ |
|--|------------|------------|------------|------------|-----------|
| Argentina: | | | | | |
| Steatite e/ | 840 4/ | 500 | 300 | 300 | 300 |
| Talc | 18,084 r/ | 16,850 r/ | 12,474 r/ | 11,777 r/ | 12,000 |
| Australia: e/ | | | | | |
| Pyrophyllite | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| Talc | 210,000 | 210,000 | 210,000 | 210,000 | 210,000 |
| Austria: Steatite | 136,640 | 130,602 | 131,614 | 130,000 e/ | 130,000 |
| Brazil: Unspecified 5/ | 480,009 | 666,408 | 625,782 | 625,000 | 625,000 |
| Canada: Pyrophyllite, soapstone, talc | 108,000 e/ | 130,000 | 116,000 | 77,000 r/ | 76,000 p/ |
| Chile: Talc | 5,058 | 5,351 | 4,107 r/ | 4,276 r/ | 4,000 |
| China: Unspecified e/ | 2,700,000 | 2,400,000 | 2,400,000 | 2,400,000 | 2,350,000 |
| Colombia: Pyrophyllite, soapstone, talc | 19,550 | 18,000 | 19,248 | 20,000 e/ | 20,000 |
| Egypt: Pyrophyllite, soapstone, steatite, talc | 4,746 | 4,125 | 4,000 e/ | 4,000 e/ | 4,000 |
| Eritrea: Talc 6/ | XX | 3 | -- | -- | -- |
| Finland: Talc | 399,000 | 453,000 | 464,000 r/ | 419,000 r/ | 425,000 |
| France: Talc | 299,900 | 306,300 | 322,300 | 349,270 r/ | 350,000 |
| Germany: Talc (marketable) | 21,152 | 11,583 | 14,170 r/ | 3,552 r/ | 4,000 |
| Greece: Steatite | 1,050 r/ | 500 e/ | 500 e/ | -- r/ | -- |
| Hungary: Talc e/ | 1,800 r/ | 1,500 r/ | 1,150 r/ | 1,200 r/ | 1,200 |
| India: | | | | | |
| Pyrophyllite | 82,269 | 85,335 | 131,137 | 143,172 r/ | 140,000 |
| Steatite | 385,121 | 398,006 | 469,692 r/ | 472,001 r/ | 470,000 |
| Iran: Talc e/ 7/ | 18,000 4/ | 27,000 | 25,000 | 25,000 | 25,000 |
| Italy: Steatite and talc e/ | 142,000 | 139,200 r/ | 136,000 r/ | 168,000 r/ | 160,000 |
| Japan: | | | | | |
| Pyrophyllite | 1,028,399 | 934,007 | 947,713 | 913,973 r/ | 916,000 |
| Talc | 57,229 | 56,120 | 57,269 | 56,153 r/ | 57,000 |
| Korea, North: Unspecified e/ | 180,000 | 180,000 | 180,000 | 180,000 | 180,000 |

See footnotes at end of table.

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

(Metric tons)

| Country 3/ | 1993 | 1994 | 1995 | 1996 | 1997 e/ |
|---|--------------|--------------|---------------|--------------|--------------|
| Korea, Republic of: | | | | | |
| Pyrophyllite | 644,890 | 707,951 | 789,994 | 780,062 r/ | 790,000 |
| Talc | 53,923 | 35,340 | 29,364 | 19,066 r/ | 20,000 |
| Macedonia: Talc e/ | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Mexico: Talc | 14,400 | 14,900 | 11,134 r/ | 11,100 r/ e/ | 12,000 |
| Nepal: Talc e/ 8/ | 1,340 4/ | 1,500 | 1,500 | 1,500 | 1,500 |
| Norway: Talc e/ | 50,000 | 28,000 | 30,000 | 30,000 | 30,000 |
| Pakistan: Pyrophyllite | 46,846 | 37,151 | 35,043 | 34,095 r/ | 34,000 |
| Paraguay: Unspecified e/ | 200 | 200 | 200 | 200 | 200 |
| Peru: e/ | | | | | |
| Pyrophyllite | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 |
| Talc | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| Portugal: Talc | 9,349 | 8,367 | 8,400 e/ | 8,400 e/ | 8,000 |
| Romania: Talc | 9,000 | 8,952 | 9,976 | 10,248 r/ | 10,000 |
| Russia: Talc e/ | 131,688 4/ | 100,000 | 100,000 | 100,000 | 90,000 |
| South Africa | | | | | |
| Pyrophyllite | 4,287 | 5,507 | 5,519 | 2,140 r/ | 2,350 4/ |
| Talc | 8,798 | 8,202 | 9,173 | 16,397 r/ | 22,100 4/ |
| Spain: Steatite e/ | 65,000 | 65,000 | 112,000 r/ 4/ | 100,000 r/ | 100,000 |
| Sweden: Talc e/ | 20,000 r/ | 20,000 r/ | 25,000 r/ | 30,000 r/ 4/ | 25,000 |
| Taiwan: Talc | 5,015 | 4,290 | 3,500 r/ | 1,500 r/ | 1,200 |
| Thailand: | | | | | |
| Pyrophyllite | 43,404 | 55,326 | 76,189 | 75,000 e/ | 75,000 |
| Talc | 7,007 | 8,950 | 4,252 | 4,000 e/ | 4,000 |
| Turkey e/ | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 |
| United Kingdom: Talc, soapstone, pyrophyllite | 5,317 | 5,275 | 4,298 r/ | 5,322 r/ | 5,000 |
| United States: | | | | | |
| Pyrophyllite | W | W | W | W | W |
| Talc | 968,000 | 935,000 | 1,060,000 | 994,000 | 1,050,000 4/ |
| Uruguay: Talc, soapstone, pyrophyllite e/ | 1,500 | 1,500 | 1,000 | 1,000 | 1,000 |
| Zambia: Talc | 62 | 76 | 80 r/ e/ | 80 r/ e/ | 80 |
| Zimbabwe: Talc | 1349 | 2049 | 2,080 | 1,076 r/ | 1,000 |
| Grand total | 8,420,000 r/ | 8,260,000 r/ | 8,620,000 r/ | 8,470,000 r/ | 8,470,000 |
| Of which: | | | | | |
| Pyrophyllite | 1,860,000 r/ | 1,840,000 r/ | 2,000,000 r/ | 1,960,000 r/ | 1,970,000 |
| Steatite | 589,000 r/ | 595,000 | 714,000 r/ | 702,000 r/ | 700,000 |
| Talc | 2,320,000 r/ | 2,270,000 r/ | 2,410,000 r/ | 2,320,000 r/ | 1,320,000 |
| Unspecified | 3,650,000 r/ | 3,550,000 r/ | 3,490,000 r/ | 3,480,000 r/ | 3,430,000 |

e/ Estimated. p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data; not included in "Total." XX Not applicable.

1/ World totals, U.S. data, and estimated data are rounded to three significant digits; may not add to totals shown.

2/ Table includes data available through April 24, 1998.

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 1996-97.

6/ Eritrea became independent from Ethiopia in May 1993; however, information is inadequate to formulate reliable estimates prior to 1994.

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

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