



2006 Minerals Yearbook

TALC AND PYROPHYLLITE

TALC AND PYROPHYLLITE

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In 2006, production of talc increased to 895,000 metric tons (t) valued at \$27.4 million from 856,000 t valued at \$24.4 million in 2005 (table 1). Domestic sales increased to 900,000 t valued at \$81.3 million from 826,000 t valued at \$71.3 million in 2005. Exports decreased to 179,000 t in 2006 from 198,000 t in 2005. Imports increased to 314,000 t in 2006 from 237,000 t in 2005. U.S. apparent consumption increased to 1.03 million metric tons (Mt) in 2006 compared with 895,000 t in 2005. World production of talc and pyrophyllite was 8.92 Mt in 2006 compared with 8.84 Mt in 2005. U.S. production and sales of pyrophyllite decreased in 2006 compared with 2005; data are withheld to avoid disclosing company proprietary data.

Legislation and Government Programs

In 2006, the U.S. Department of Defense authorized the disposal of 867 t of block and lump talc and 1,050 t of ground talc, which was the entire uncommitted inventory, from the National Defense Stockpile (NDS). There were no sales from the NDS in 2006.

Production

Talc.—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 11 companies that mined talc and responses were received from nine companies. Responses accounted for approximately 79% of the production data presented in table 1. Data for nonrespondents were estimated from preliminary reported data based on 9 months of production in 2006, reported prior-year data adjusted according to employment and consuming industry trends, and data obtained from associated milling operations.

In 2006, 8 companies operating 12 mines in 7 States mined soapstone (an impure massive variety of talc), steatite (a massive talcose rock), and talc. All were open pit mining operations. The producers, in decreasing order of production, were Luzenac America Inc., American Talc Co. (formerly Wold Talc Co.), Barretts Minerals Inc. (a subsidiary of Minerals Technologies Inc.), Gouverneur Talc Co., Milwhite Inc., Protech Minerals Inc., New World Stone Co., and Steatite of Southern Oregon. CalTalc Co. did not mine in 2006 but worked from stockpiles. The four leading domestic producers collectively accounted for more than 85% of the U.S. tonnage mined.

In 2006, U.S. mine production increased to 895,000 t valued at \$27.4 million compared with 856,000 t valued at \$24.4 million in 2005 (table 1). Production increased in California, New York, Texas, Vermont, and Virginia. Production in Montana and Oregon was essentially unchanged from 2005. Montana led all States in the tonnage of talc produced, followed by Texas, Vermont, New York, California, Virginia, and Oregon.

Wold Talc Co. changed its name to American Talc Co. in 2006. The company also bought the talc assets of Suzorite Mineral Products Co. (a subsidiary of Zemex Corp.) based in Toronto, Ontario, Canada. The purchase includes the mine and mill properties located near Van Horn, TX. The plant was producing 35,000 metric tons per year (t/yr) for ceramics, plastics, and coatings applications. American Talc Co. already was involved in mining talc for the ceramics industry from a mine also in the Van Horn area (Industrial Minerals, 2006d).

Pyrophyllite.—Domestic production data for pyrophyllite (a hydrous aluminum silicate with a structure similar to talc) were acquired through a voluntary USGS survey of the two U.S. companies that mined pyrophyllite. Both companies responded to the survey. Data are withheld to avoid disclosing company proprietary data.

Piedmont Minerals Co. Inc. and Standard Mineral Co. Inc. operated three mines in North Carolina. Production of pyrophyllite decreased slightly from that of 2005.

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 13 mills in 7 States for talc and 2 companies operating 2 mills in 1 State for pyrophyllite. Responses from eight companies accounted for 80% of the talc data presented in table 2. The remaining data were estimated from preliminary reported data based on 9 months of production in 2006 and reported prior-year data adjusted according to employment and consuming industry trends. Both pyrophyllite producers responded.

Talc.—Sales and use were 900,000 t of talc valued at \$81.3 million in 2006, an increase from 826,000 t valued at \$71.3 million in 2005 (table 1). The value increased at a greater rate than the quantity because producers instituted price increases to cover higher energy and operating costs. Sales of domestically produced talc increased to 760,000 t in 2006 from 693,000 t in 2005. Talc was sold domestically for ceramics (sanitaryware and tiles), paint, paper, other (unspecified) applications, roofing, plastics, rubber, cosmetics, and refractory products, in decreasing order of consumption (table 2). Sales for ceramics, cosmetics, paint, paper, and plastics increased in 2006. Sales in other markets were relatively unchanged.

Sales of talc to manufacturers of ceramics, paint, roofing, and tile generally are tied to the housing industry. Construction starts for new privately owned housing decreased to 1.80 million units in 2006 from 2.07 million units in 2005 (U.S. Census Bureau, 2007b). The value of all construction (residential and commercial) increased to \$1.20 trillion in 2006 from \$1.14 trillion in 2005 (U.S. Census Bureau, 2007a).

Shipments of architectural paint (the major paint market for talc) increased to 3.08 billion liters (812 million gallons) in 2006 from 3.00 billion liters (794 million gallons) in 2005 (U.S. Census Bureau, 2006c). Ceramic tile is a major market for talc, and U.S. producers sell their talc to tile producers that compete with imported ceramic tile. The U.S. International Trade Commission reported that imports of ceramic tile under Harmonized Tariff Schedule of the United States codes 6907.10.00, 6908.10.10, 6908.10.20, and 6908.10.50 decreased in quantity to 30.9 million square meters valued at \$227 million in 2006 from 31.5 million square meters valued at \$218 million in 2005 (U.S. International Trade Commission, 2006).

Most of the 314,000 t of imported talc listed in table 5 was not included in the domestic end-use data listed in table 2. An estimated end-use breakdown of sales of imports in 2006 is plastics, 115,000 t; unknown, 60,000 t (includes imports going into stocks); paint, 45,000 t; cosmetics, 44,000 t; ceramics and refractory products, 25,000 t; paper, 15,000 t; and rubber, 10,000 t.

Net sales of talc products by Minerals Technologies (MTI), increased to \$58.5 million in 2006 from \$54.2 million in 2005. This includes talc imported by the company for processing as well as talc produced at MTI's Montana operation. The company reported variations in talc pricing and other expenses associated with talc imported from China (Minerals Technologies Inc., 2007).

Pyrophyllite.—In 2006, domestic consumption of pyrophyllite decreased from that of 2005; data are withheld to avoid disclosing company proprietary data. Pyrophyllite was used in ceramics, refractory products, paint, and unspecified applications, in decreasing order of consumption. Ceramic and refractory uses accounted for more than 50% of domestic pyrophyllite sales. The largest decline was in sales for refractory products.

Prices

The unit value of crude talc was estimated to be \$31 per metric ton. Most of the talc sold in the United States was 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 in the range of \$50 to \$60 per ton at the mill. The average reported unit value of processed talc was \$90 per ton in 2006, an increase from \$86 per ton in 2005. The average unit value of crude pyrophyllite increased from that of 2005 while that of processed pyrophyllite was essentially unchanged.

The average free alongside ship unit value for exports of unmilled talc decreased to \$213 per ton in 2006 from \$251 per ton in 2005. The relatively high unit value for unmilled talc exports probably results from the inclusion of higher-valued milled talc products or low-tonnage specialty shipments in the export category. The unit value for milled talc exports increased to \$239 per ton in 2006 from \$206 per ton in 2005. The unit value of all exports increased to \$238 per ton in 2006 from \$211 per ton in 2005. The higher unit value resulted from higher prices for milled talc products, which likely factored in energy costs.

The average customs unit value for imports of unground talc was \$162 per ton in 2006, an increase from \$148 per ton in 2005. The average customs value for ground talc was \$151 per ton in 2006, a decline from \$176 per ton in 2005, the difference being largely a lower unit value for imports from Canada. The average customs value for cut or sawed talc was \$933 per ton, an increase from \$876 per ton in 2005. The unit value for all talc imports was \$213 per ton in 2006 compared with \$235 per ton in 2005.

Published prices for talc ranged from \$92 to \$458 per ton (table 3). Prices for pyrophyllite from the Republic of Korea, free on board, were \$59 to \$65 per ton for fiberglass and refractory manufacturing, \$27 to \$44 per ton for ceramic grade, and \$110 to \$115 per ton for filler grade. The price for filler grades from Australia was \$342 per ton (Industrial Minerals, 2006c). 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

The following section summarizes significant trade statistics on talc. Detailed trade statistics, by country and U.S. port districts, are available from the U.S. International Trade Commission on its Interactive Tariff and Trade Dataweb Website (U.S. International Trade Commission, 2006).

Talc exports decreased in tonnage to 179,000 t valued at \$42.6 million in 2006 from 198,000 t valued at \$41.8 million in 2005. Canada was the leading importer of talc from the United States, followed by Mexico and Belgium (table 4). More than 98% of talc exports was milled. Much of the talc exported to Mexico was shipped to United States affiliates operating across the Mexican border and was not reported by the U.S. Census Bureau. Total talc exported to Mexico in 2006, including shipments to U.S. affiliates, probably exceeded 50,000 t.

Talc imports reported by the U.S. Census Bureau increased in tonnage to 314,000 t valued at \$66.7 million in 2006 from 237,000 t valued at \$55.6 million in 2005. Much of this large increase probably went into stocks or was imported to satisfy a one-time demand based on the size of current markets. China was the leading source for imported talc, followed by Canada (table 5).

World Review

World production of talc and pyrophyllite was estimated to be 8.92 Mt in 2006, an increase from 8.84 Mt in 2005. China was the world's leading producer of talc, followed by the United States, India, Finland, Brazil (crude), and France (crude). The Republic of Korea was the leading producer of pyrophyllite, followed by Japan and Brazil. Brazil, China, Finland, France, India, Japan, the Republic of Korea, and the United States produced 83% of the world's talc and pyrophyllite (table 6).

China.—Hong Kong Great Wall Trading Development Ltd., Dalian, China, purchased a talc mine near Dandong from an unspecified source. The talc mine, located on the coast near the border with North Korea, had production capacity of 30,000 metric tons per year (t/yr) (Industrial Minerals, 2006a).

Finland.—Mondo Minerals Oy announced plans to cease talc production at its concentration plant near Kaavi, Luikonlahti. The plant was planned to be sold to Finn Nickel Ltd. Mondo Minerals was expected to continue to process talc at its talc concentrators in Sotkamo and Outokumpu (Suomen Nikkeli, 2006).

France.—Rio Tinto plc reorganized its industrial minerals businesses. Luzenac Group, which has talc mines and mills on four continents, Rio Tinto Borax, and Dampier Salt Ltd., were placed under a common management and began operating as Rio Tinto Minerals. The companies will still sell their products under their current brand names, but Rio Tinto's business resource base, expertise, and infrastructure planned to support all three companies on a global scale (Ceramic Industry, 2006).

India.—Talc producers in India were optimistic about the potential growth in sales associated with a growing demand for paints in India. Per capita usage of paints was 0.74 kilograms (kg) in 2006 compared with 5 kg in Southeast Asia and 26 kg worldwide. With a booming construction industry, low interest rates, a growing economy, and high-technology job opportunities, the paint industry is anticipated to expand at a rate of 10% to 15%. Talc use by the paint industry was 120,000 t or 15% of the total Indian talc market. Sales to the paint industry were growing at an annual rate of 8% to 10%. Despite abundant reserves, producers were struggling with high production costs and transportation costs as well as a lack of equipment required to produce high-value talc grades increasingly demanded by the paint industry (Industry Minerals, 2006b).

Outlook

Based on current trends, U.S. mining and sales of talc probably will remain between 800,000 and 900,000 t for the next few years. Talc imports increased dramatically between 1985 and 2000, leveled off through 2004, but surged again in 2006. Imports now account for about 30% of U.S. apparent consumption with China accounting for a significant portion of the imports since the 1990s. The decline experienced in 2006 for the U.S. dollar may provide some advantage for domestic producers by discouraging imports of talc from China and Europe. With the slowdown in housing construction in 2006, growth in sales of talc for such construction-related applications as adhesives, ceramics, joint compounds, paint, and roofing applications could slow and may even remain unchanged in 2007. The quantity of talc used in plastics probably will again increase with an increase in volume of plastics used in consumer products and as manufacturers attempt to reduce costs associated with rising energy and resin prices. No major changes are expected in the pyrophyllite markets in the near future.

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TABLE 1
SALIENT TALC AND PYROPHYLLITE STATISTICS¹

(Thousand metric tons and thousand dollars)

	2002	2003	2004	2005	2006
United States:					
Mine production, crude:					
Quantity:					
Talc	828	840	833	856	895
Pyrophyllite	W	W	W	W	W
Value:					
Talc	22,200	22,700	23,200	24,400	27,400
Pyrophyllite	W	W	W	W	W
Sold by producers, crude and processed:					
Quantity:					
Talc	764	845	854	826	900
Pyrophyllite	W	W	W	W	W
Value:					
Talc	75,000	75,200	74,800	71,300	81,300
Pyrophyllite	W	W	W	W	W
Exports, talc ²					
Quantity:	166	192	202	198	179
Value:	35,700	39,100	39,600	41,800	42,600
Imports for consumption					
Quantity:	232	237	226	237	314
Value:	52,700	53,500	58,400	55,600	66,700
Apparent consumption ³	894	885	857	895	1,030
World, production	8,030	8,550	8,760	8,840	8,920

NA Not available. W Withheld to avoid disclosing company proprietary data.

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

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

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

TABLE 2
DOMESTICALLY PRODUCED
END USES FOR GROUND TALC¹

(Thousand metric tons)

	2005	2006
Ceramics ²	220	248
Cosmetics	8	10
Insecticides	--	--
Paint	139	153
Paper	114	124
Plastics	36	41
Refractories	1	1
Roofing	58	61
Rubber	21	23
Other ³	95	99
Total	693	760

-- Zero.

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

²Includes tile.

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

TABLE 3
PRICES OF TALC

(Dollars per metric ton)

	Price
New York:	
Paint-grade:	
200 mesh	126
400 mesh	210
Ceramic-grade:	
200 mesh	92
325 mesh	115
Indian, cosmetic-grade	185-195
Chinese, normal (ex-store UK):	
200 mesh	407-456
350 mesh	419-458

Source: Industrial Minerals, December 2006.

TABLE 4
U.S. EXPORTS OF TALC^{1,2}

(Thousand metric tons and thousand dollars)

Country	2005		2006	
	Quantity	Value ³	Quantity	Value ³
Belgium	10	2,250	10	2,110
Canada ⁴	94	14,200	79	14,600
Germany	3	889	4	1,040
Japan	6	1,390	3	724
Mexico	21	5,090	18	4,710
Singapore	2	750	3	1,040
Other ⁵	62	17,300	62	18,400
Total	198	41,800	179	42,600

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

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

³Free alongside ship.

⁴Probably includes shipments in transit through Canadian ports.

⁵Includes 65 countries in 2005 and 66 countries in 2006.

Source: U.S. Census Bureau.

TABLE 5
U.S. IMPORTS FOR CONSUMPTION OF TALC, BY COUNTRY¹

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)
2005:								
Brazil	91	\$45	67	\$17	931	\$939	1,090	\$1,000
Canada	27	31	55,800	17,200	20,300	16,200	76,200	33,400
China	95,200	13,900	1,150	374	1,160	1,190	97,500	15,500
France	19	10	17,400	1,340	536	699	17,900	2,050
Japan	--	--	15,100	809	32	70	15,200	879
Other ²	127	84	28,000	885	807	1,750	28,900	2,720
Total	95,500	14,100	118,000	20,700	23,800	20,800	237,000	55,600
2006:								
Brazil	15	14	153	41	931	939	1,100	994
Canada	42	34	85,200	19,000	16,900	13,900	102,000	33,000
China	139,000	20,700	1,600	814	1,880	1,720	142,000	23,300
France	--	--	28,900	679	530	656	29,400	1,340
Japan	--	--	30,500	1,130	407	311	30,900	1,440
Other ²	4,950	2,460	934	573	2,140	3,670	8,020	6,700
Total	144,000	23,300	147,000	22,300	22,800	21,200	314,000	66,700

-- Zero.

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

²Includes 26 countries in 2005 and 25 countries in 2006.

Source: U.S. Census Bureau.

TABLE 6
TALC AND PYROPHYLLITE: WORLD PRODUCTION, BY COUNTRY AND PRODUCT^{1, 2}

(Metric tons)

Country ³	2002	2003	2004	2005	2006 ^c
Argentina:					
Pyrophyllite	2,341 ^r	4,525 ^r	12,594 ^r	8,470 ^r	8,500
Steatite ^c	300	300	300	300	300
Talc	1,643	1,700	7,620	11,492 ^r	12,000
Australia: ^{e, 4}					
Pyrophyllite	868 ^s	1,000	1,000	1,200	1,200
Talc	173,741 ^s	122,000 ^r	150,000 ^r	154,000 ^r	155,000
Austria, soapstone and talc, crude	138,195	137,596	138,000 ^e	138,000 ^e	140,000
Bhutan, talc	23,118 ^r	23,101 ^r	39,797 ^r	42,791 ^r	45,000
Brazil:					
Pyrophyllite, crude ^c	200,000 ^s	200,000	200,000	200,000	200,000
Talc:					
Crude	348,000	369,000	417,716 ^r	401,124 ^r	401,150 ^p
Marketable product ⁶	5,617	5,593	6,561 ^r	6,981 ^r	7,100 ^p
Canada, pyrophyllite, soapstone, talc ^c	90,000	90,000	90,000	90,000	90,000
Chile, talc	3,537	4,374	2,993	4,201 ^r	4,200
China, unspecified ^c	2,500,000	3,000,000	3,000,000	3,050,000 ^r	3,000,000
Colombia, pyrophyllite, soapstone, talc ^c	15,000	15,000	15,000	15,000	15,000
Egypt, pyrophyllite, soapstone, steatite, talc ^c	40,000	40,000	40,000	40,000	40,000
Finland, talc	416,000	460,000	492,000	542,000	550,000 ^e
France, talc, crude ^c	350,000	350,000	350,000	350,000	350,000
Germany, steatite and talc, marketable	-- ^r	-- ^r	-- ^r	-- ^r	--
Guatemala, talc	568	1,585	2,863	1,631 ^r	1,600
Hungary, talc ^c	500	500	500	500	500
India: ^e					
Pyrophyllite	85,000	86,000	86,000	85,000	86,000
Steatite	550,000	552,000	550,000	545,000	560,000

See footnotes at end of table.

TABLE 6—Continued
TALC AND PYROPHYLLITE: WORLD PRODUCTION, BY COUNTRY AND PRODUCT^{1, 2}

(Metric tons)

Country ³	2002	2003	2004	2005	2006 ^c
Iran, talc ⁷	68,007	65,833	187,465	190,000 ^e	190,000
Italy, steatite and talc ^e	140,000	140,000	140,000	140,000	140,000
Japan:					
Pyrophyllite	416,188	408,435	405,222 ^f	351,111 ^f	350,000
Talc	22,142	24,328	18,253	25,491 ^f	25,000
Korea, North, unspecified ^c	50,000	50,000	50,000	50,000	50,000
Korea, Republic of:					
Pyrophyllite	889,961	912,285	827,895	885,559 ^f	920,000 ^e
Talc	37,863	47,911	79,313	84,471 ^f	89,000
Macedonia, talc	550	550	600 ^e	600 ^e	500
Mexico, talc	111,621	114,870	101,896	64,827 ^f	80,000
Morocco	39,612	1,959	2,000 ^e	2,000 ^e	2,000
Nepal, talc ⁸	2,621	6,905	3,435	5,832 ^f	6,100
Norway, soapstone, steatite, talc ^c	28,000	28,000	28,000	29,000	28,000
Pakistan, pyrophyllite	53,573 ^f	65,813 ^f	52,483 ^f	20,564 ^f	24,000
Paraguay, pyrophyllite, soapstone, talc ^c	200	200	200	200	20
Peru:					
Pyrophyllite	9,514 ^f	12,291 ^f	14,282	14,300 ^f	14,500 ^p
Talc	10,685	10,791	9,548	9,500 ^{f, e}	9,500 ^p
Portugal, talc	8,916 ^f	5,459 ^f	6,231 ^f	5,362 ^f	5,400 ^p
Romania, talc	7,292	10,082	10,000 ^e	10,000 ^e	10,000
Russia, talc ^c	100,000	100,000	100,000	100,000	100,000
Slovakia, talc	2,290	1,000	1,500 ^e	1,500 ^e	1,500
South Africa:					
Pyrophyllite	15,587	14,350	28,987 ^f	60,267 ^f	68,000
Talc	2,511	6,719	8,141 ^f	8,469	11,000
Spain, steatite and talc ^c	115,000 ^f	115,000 ^f	107,829 ^{f, 5}	97,000 ^f	95,000
Sweden, soapstone and talc	15,000	15,000	14,000 ^e	14,000 ^e	14,000
Taiwan, talc	27	466	411	--	--
Thailand:					
Pyrophyllite	103,496	73,556	108,691	105,000 ^{f, e}	104,000
Talc	1,702	8,501	12,592	13,000 ^{f, e}	12,000
Turkey	98	60	60 ^e	100 ^e	105
United Kingdom, pyrophyllite, soapstone, talc	6,194 ^f	6,494 ^f	3,881 ^f	4,000 ^{f, e}	4,000
United States:					
Pyrophyllite	W	W	W	W	W
Talc	828,000	839,799	832,574	856,078	895,215 ⁵
Uruguay, pyrophyllite, soapstone, talc	816	1,095	1,042	1,131 ^f	1,140 ^p
Zimbabwe, talc	911	196	--	--	--
Grand total	8,030,000 ^f	8,550,000 ^f	8,760,000 ^f	8,840,000 ^f	8,920,000
Of which:					
Pyrophyllite	1,780,000	1,780,000 ^f	1,740,000 ^f	1,730,000	1,780,000
Steatite	550,000	552,000	550,000	545,000	560,000
Talc	2,530,000 ^f	2,580,000 ^f	2,840,000 ^f	2,890,000 ^f	2,960,000
Unspecified	3,180,000 ^f	3,640,000 ^f	3,630,000	3,670,000 ^f	3,620,000

^eEstimated. ^pPreliminary. ^fRevised. W Withheld to avoid disclosing company proprietary data; not included in "Total." -- Zero.

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

²Table includes data available through April 23, 2007.

³In addition to the countries listed, Nigeria may produce talc, but information is inadequate to estimate output.

⁴Data based on fiscal year ending June 30 of year stated.

⁵Reported figure.

⁶Direct sales and/or beneficiated (marketable product).

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

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