



2008 Minerals Yearbook

BARITE [ADVANCE RELEASE]

BARITE

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In 2008, primary barite production (sold or used by producers) totaled 648,000 metric tons (t) valued at \$30.9 million, and apparent consumption was 3.21 million metric tons (Mt). Imports were 2.62 Mt and exports were 62,000 t.

Barite is the mineralogical name for barium sulfate. In commerce, the mineral is sometimes referred to as barytes. As used in this report, the term primary barite refers to the first marketable product, which includes crude barite that usually has undergone simple beneficiation methods, such as jigging, tabling, washing, or more complex methods, such as flotation, heavy-media separation, and magnetic separation. Most crude barite requires some upgrading to minimum purity or density levels.

Production

Domestic production and sales data for barite were derived from voluntary responses to the U.S. Geological Survey (USGS) canvass of 31 mines and grinding plants. The USGS received full or partial responses from 22 of the operations, representing 80% of the quantity of barite sold and used by processors. The majority of nonrespondents were grinding mills of various sizes. Estimates were made using prior year data and other industry data. Eight mines were included in the survey—five were producing, two were idle, and one was permanently shut down.

Of the canvassed producing mines, four were in Nevada and one was in Georgia. The idle mines were in Nevada and the closed mine was in Tennessee. There were 24 grinding plants operating at the end of the reporting year. The Georgia mine and three of the Nevada mines had associated nearby grinding plants, while the fourth Nevada mine shipped its ore to its grinding plant in Wyoming. Most Nevada barite ore was ground at nearby company-owned grinding mills, but ore also was shipped to grinding mills in Canada and Wyoming. Some ore was shipped to plants on the U.S. Gulf Coast for grinding. This has been an uncommon practice in recent years because the cost of transport made Nevada barite uncompetitive with imported barite. Import prices have increased substantially in the past few years from \$60 per metric ton for barite from China (including cost, insurance, and freight, U.S. Gulf Coast) in December 2005 to more than \$100 per ton in December 2008 (which was down from its peak in 2007). In addition to the high transport costs, barite demand in the Western United States and Canada was so strong in recent years that Nevada barite producers were able to sell all their production to regional customers and had little or no barite available for shipment to the Gulf Coast.

Crude barite production was 648,000 t in 2008, an increase of 42% compared with that of 2007. The value of domestic production was \$30.9 million, an increase of 50%. The bulk of mine production was from Nevada with a small amount from Georgia. The large increase in Nevada's mine production was

partially the result of strong demand through the third quarter of the year, but also because during 2007 the two largest mines had reduced mine production while shipping significant amounts of crude or run-of-mine material from stocks.

In 2008, there were four active barite mines in Nevada—Big Ledge Mine (Spirit Minerals LP) and Rossi Mine (Halliburton Energy Services-Baroid) in Elko County, and Argenta Mine (Baker Hughes Drilling Fluids) and Greystone Mine (M-I L.L.C. operating as M-I SWACO) in Lander County. Spirit Minerals is a new producer that, after a brief period of mining in December 2007, began regular mining operations at its Big Ledge Mine in the spring of 2008. This involved clearing overburden and stockpiling or processing ore through its Dry Creek jig mill. In addition to these Nevada operations, there was one small barite producer in Georgia—New Riverside Ochre Co., Inc.

Kent Exploration Inc. (Vancouver, Canada) continued work on developing the company's Flagstaff property near Northport, WA. The property contains an open pit barite deposit that has been stripped of overburden and had benches prepared ready for mining. As a result of drilling in 1981 and 1982, it was estimated the deposit contained about 1.2 Mt of barite meeting American Petroleum Institute (API) specifications. Kent Exploration conducted a limited diamond drill program in the fall of 2007, the results of which were similar to the 1981–82 data. In May 2008, the company completed first stage crushing and separation testing, and additional testing indicated that 4.2-specific gravity (SG) product could be achieved through standard dry crushing and dry and wet separation methods (Kent Exploration Inc., 2008a, b). In November, the company reported that it had entered into a sales agreement with Canada's Matovich Mining Industries Ltd. (Montrose, British Columbia), whereby Matovich would purchase approximately 20,000 metric tons per year of 4.1-SG barite for a period of 10 years (Kent Exploration Inc., 2008c). As a result of declining reserves of 4.2-SG barite in North America, 4.1-SG material has become accepted by oil and gas drillers for use in routine drilling operations.

In July, Kent Exploration submitted a mining and reclamation plan to the U.S. Bureau of Land Management (BLM). The Flagstaff property is on Federal land managed by the BLM, which after preparation of an environmental assessment (EA) was to make a decision to approve or disapprove the application. The EA was completed in December and concluded that overall environmental effects of the mining operation would be minor (Kent Exploration Inc., 2008d; U.S. Bureau of Land Management, 2008).

In 2008, there were 13 known facilities on the coast of the Gulf of Mexico (6 in Louisiana and 7 in Texas) that produced barite to API specifications. These stand-alone grinding plants primarily processed crude barite imported from China and

India that was ground to API specifications for the oil and gas drilling market. In Louisiana, there were two grinding plants in the Amelia/Morgan City area, one in Houma, one near the Lake Charles/Westlake area, one in New Iberia, and one near New Orleans. In Texas, there was one grinding plant in Brownsville, three in Corpus Christi, one in Galveston, and two in Houston, at least one of which, in addition to supplying the drilling market, also produced commercial filler-grade barite.

Grinding plants that produce commercial filler-grade barite or chemical-grade barite are located primarily in northern Georgia or in the Mississippi River Valley. There were three mills and one mine in Georgia, and single mills in Illinois, Missouri, and Tennessee. The location of mills near the Mississippi River allowed them to receive imported barite by barge and to ship the finished product by barge, if possible, or by rail or truck to industrial users in the Midwestern United States. CIMBAR Performance Minerals (Cartersville, GA) is the major U.S. supplier of barite for nondrilling uses.

In 2008, the leading companies that mined and ground barite in the United States were also major oil service companies, which included Baker Hughes Drilling Fluids (a division of Baker Hughes Inc.), Baroid Fluid Services (the drilling fluids and industrial barite subsidiary of Halliburton Energy Services, Inc.), and M-I SWACO (a joint venture between Smith International Inc. and Schlumberger Ltd.). Baker Hughes, Halliburton, and M-I SWACO are world renowned and operate in many countries, mining barite and providing drilling sales and services. These three companies operated barite mines with associated beneficiation mills and grinding plants in Nevada and also operated grinding plants in Louisiana and Texas. Spirit Minerals operated a grinding plant in Evanston, WY, which ground crude barite from its Dry Creek jig mill as well as material purchased from other Nevada barite mines and crude barite stockpiled from mining operations in the 1980s.

Excalibur Minerals Inc. (a division of Newpark Resources, Inc. of Houston) was a major barite importer and grinder in Louisiana and Texas for the oil and gas drilling market. The company also operated a grinding plant in Tennessee mostly serving nondrilling markets. There were other, smaller companies near the Gulf of Mexico that received imported barite by ship through ports in Louisiana and Texas. Ambar Drilling Fluids LP in Houma, LA, ground imported barite for its service unit. Milwhite, Inc. also ground imported barite at its plant in Brownsville, TX.

After being ground to API specifications, the barite is transferred directly to containers on barges docked in canals, lakes, and rivers near the plants for bulk delivery to offshore drilling platforms. These near-shore barite staging locations also are convenient to the clusters of onshore areas with significant petroleum production in the Petroleum Administration for Defense (PAD) District 3. The PAD districts were World War II divisions of the oil-producing areas of the United States; these designations continue to be used.

Consumption

In 2008, apparent consumption of barite increased by about 6% to 3.21 Mt compared with that in 2007 (table 1). Ground barite sales decreased by about 5% to 2.84 Mt in 2008 from

2.98 Mt in 2007. In 2008, sales by grinding plants in Louisiana decreased by 2% to 1.28 Mt. Grinding plant sales in Texas decreased by nearly 20% to 822,000 t, while sales by plants in all other States increased by 14% to 742,000 t (table 2). About 2.7 Mt, or 95%, of barite sales from domestic crushers and grinders was for petroleum well-drilling markets, and the remaining 5% was for industrial end uses (table 3).

The leading application for barite is as a weighting agent in natural gas and oil field drilling muds. The density of barite helps in down-hole flow and bit lubrication. An additional benefit of barite is that it does not interfere with magnetic measurements taken in the borehole, either during logging-while-drilling or in separate drill hole logging.

Barite used for drilling petroleum wells can be black, blue, brown, buff, or gray depending on the ore body. Most barite needs to be ground to a small uniform size before it is used as a weighting agent in petroleum well-drilling mud based on specifications set by the API or the former Oil Companies' Materials Association.

The barite is finely ground so that at least 97% of the material, by weight, can pass through a 200-mesh (Tyler) [75-micrometer (μm)] screen, and no more than 30%, by weight, can be less than 6 μm , effective diameter, which is measured using sedimentation techniques. The ground barite also must be dense enough so that its specific gravity is 4.2 or greater, soft enough to not damage the bearings of a tricone drill bit, chemically inert, and containing no more than 250 milligrams per kilogram (mg/kg) of soluble alkaline salts (American Petroleum Institute, 1993, p. 6–11). A small percentage of iron oxide is allowable. Although the current API standard for barite calls for a specific gravity of 4.2, in 2008 the API began examining a proposal to lower the barite specific gravity specification to 4.1. A final vote on the proposal was expected in 2009 (Moores and O'Driscoll, 2009).

Oil and gas prices increased through the first half of 2008, and this helped drive the continued boom in exploration drilling in the United States. Domestic natural gas prices (wellhead) peaked in June at \$10.82 per thousand cubic feet, and oil prices (U.S. spot price) peaked in July at more than \$134 per barrel. By yearend, however, natural gas prices had fallen to \$5.87 per thousand cubic feet and oil prices had plummeted to less than \$32 per barrel (U.S. Department of Energy, Energy Information Administration, 2009c, d). In 2008, about 80% of drilling was for natural gas, and even though the natural gas price did not decrease as greatly as that for oil, the decrease was still large enough to discourage some exploration. The average monthly U.S. drill rig count, which peaked in September at 2,014, had by December dropped to 1,782 (Baker Hughes Inc., 2009). These factors resulted in a sharp decrease in barite consumption in the fourth quarter.

The Western States (primarily Colorado and Wyoming) accounted for more than 30% of the total natural gas reserves in the United States as of 2007 (U.S. Department of Energy, Energy Information Administration, 2009a). These reserves are mostly in unconventional tight-gas or coal bed formations, and it is the exploration of such formations that has been driving demand for Nevada barite in recent years. Exploration drilling in the Western United States and Western Canada (Alberta and

British Columbia) has fueled interest in developing new barite mines in the West.

In 2008, sales of domestic and imported barite sold for industrial uses decreased slightly to 131,000 t (table 3). Industrial end uses such as barium chemicals (the largest by volume is barium carbonate), filler in paint and plastics, and powder coatings all require the barite to be ground to a small uniform size. The size depends on the use, but for paint- and plastic-grade material, it averages about 2 to 3 μ m. Barite-containing materials that are used for sound reduction in engine compartments are gaining market share among automotive manufacturers. Barite also is used in the base coat of automobile finishes for smoothness and corrosion resistance and continues to be used in friction products for automobiles and trucks.

Barite that is used as an aggregate in “heavy” cement or radiation-shielding cement is crushed and screened to sizes ranging from 4.75 millimeters (0.187 inches) to 3.75 centimeters (1.5 inches) for the coarse grade. New Riverside Ochre (Cartersville, GA) is the leading supplier of barite aggregate.

Stocks

The USGS does not collect stocks data from either mines or grinding mills. However, according to industry contacts, large year-end stocks had accumulated at Gulf of Mexico grinding plants as a result of the sharp decline in drilling in the fourth quarter. Barite imports were at high levels in September through November, and owing to the normal lead time involved in importing barite from China, it was not until December that a reduction in barite purchases was evident.

Foreign Trade

After a dip in 2007, barite exports rebounded to 62,000 t in 2008. The majority of exports went to Canada (89%) in the form of crude barite, which was ground in Canada and then consumed for oil and gas drilling in the western provinces of Alberta, British Columbia, and Saskatchewan. The bulk of the remaining exports went to Mexico (4%) and Trinidad and Tobago (4%) (table 4).

Assignment of the correct harmonized tariff schedule (HTS) number by importers is sometimes problematic. As a result, in prior years, adjustments were made in an attempt to classify imports of crude natural barite, ground barite, and other sulfates of barium by type and use. These adjustments involved separating, by unit value, imports intended for use in drilling muds (crude and ground barite), and all other uses (other sulfates of barium). Beginning in 2008 this practice was discontinued, and the data shown in table 5 for 2008 are as reported by the U.S. Census Bureau.

Combined imports of crude and ground natural barite increased slightly to 2.61 Mt, with China accounting for 96% of the total. Imports for the several forms of barite reported under the HTS nomenclature “Other sulfates of barium” decreased by about 13% compared with those of 2007, to 13,900 t (table 5).

There is a tariff on U.S. imports of crude barite equal to \$1.25 per metric ton, but there is no tariff on imports of ground barite.

As a result, some of the major importers of crude barite have applied for and received foreign trade zone (FTZ) status for their grinding mills in the United States. In 2007, M-I SWACO received FTZ approvals for the company’s grinding plants in Amelia, LA, and Galveston, TX. In 2008, Baker Hughes received FTZ approvals for its grinding plants in Morgan City, LA, and Corpus Christi, TX. In addition, in December, Halliburton received FTZ approvals for its grinding plants in Westlake, LA, and Corpus Christi, TX. This means that the ground barite produced by these mills will be reported as imports for consumption and not crude barite received from foreign suppliers (U.S. Department of Commerce, Import Administration, 2009).

Prices

The average sales value for primary barite from mines and their associated beneficiation plants in the United States increased to about \$47.60 per metric ton, an increase of about 5% compared with that of 2007 (table 1). The average sales value for drilling-grade barite ground in Louisiana increased to about \$101 per ton, while the sales value for drilling-grade barite ground in Texas increased to about \$120 per ton. The average value for all grades ground in Texas increased to \$126 per ton. The sales value of barite ground in other States was unchanged at \$114 per ton compared with the 2007 values (table 2). Barite for barium chemicals, filler and extender, and glass decreased by 8% to \$308 per ton for 2008 compared with that of 2007 (table 3).

December U.S. published import prices for barite from Chinese, API grade, lump, including cost, insurance, and freight, U.S. Gulf Coast, were in a range of \$95 to \$110 per ton. This was a decrease of \$10 to \$15 per ton compared with prices in the same period in 2007. The price for Indian barite decreased also; December 2008 import prices were listed in the range of \$106 to \$130 per ton compared with \$143 per ton in December 2007. Chemical-grade barite from China, however, increased to \$140 per ton compared with a range of \$100 to \$105 per ton in December 2007 (Industrial Minerals, 2008c).

World Review

Mexico.—Blackfire Exploration Ltd. (Calgary, Alberta, Canada), through its wholly owned subsidiary Blackfire Exploration Mexico S de RL de CV, began production of drilling-grade barite from its Payback Mine in the State of Chiapas in southern Mexico. Production was from a high-grade vein 12 meters (m) wide and 1,200 m in length by surface mining at a rate of 5,000 metric tons per month (t/mo), but plans are to ramp up production to 20,000 t/mo by the end of 2009. The company anticipated mining underground within 2 years. Blackfire described the deposit as being the largest high-grade barite deposit in North America. The mine is located in the far south of the State near the Port of Chiapas, which is on the Pacific Ocean. Main roads serving the mine site were in place, but infrastructure improvements were still needed at the port (Industrial Minerals, 2008a, b; 2009).

Outlook

Long-term U.S. demand for oil and gas is expected to continue to drive domestic exploration. The global recession of 2008–09 has resulted in dramatic decreases in energy consumption and associated fuel prices. By mid-year 2009, natural gas prices had decreased to less than \$3.50 per thousand cubic feet, a nearly 70% decrease compared with those of mid-year 2008. Since about 80% of domestic drilling is for natural gas, future demand for barite in the United States depends mainly on rising natural gas consumption and higher natural gas prices. Lower prices and reduced demand have resulted in a marked decrease in exploration drilling. Energy consumption is expected to increase as the economy improves and business output increases, which is expected to provide upward pressure on demand and prices.

In the future, the United States is likely to turn increasingly toward the use of natural gas in an attempt to reduce carbon emissions because burning natural gas emits only about 55% of the carbon dioxide emitted by burning coal to produce an equal amount of energy (U.S. Department of Energy, Energy Information Administration, 2009b). Increased natural gas use may be bolstered by recent increases in the Nation's estimated gas reserves, which have surged by 35% since 2006, according to a study released in June 2009 by the Potential Gas Committee. Much of this increase is owing to new and advanced exploration, well drilling, and completion technologies, which allows recovery of natural gas from active and newly developing shale-gas fields (Potential Gas Committee, 2009).

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TABLE 1
SALIENT BARITE STATISTICS¹

(Thousand metric tons and thousand dollars)

	2004	2005	2006	2007	2008
United States:					
Barite, primary:					
Sold or used by producers:					
Quantity	532	489	589	455	648
Value	18,700	17,600	23,500	20,600	30,900
Exports:					
Quantity	70	93	72	15	62
Value	6,400	9,930	12,100	6,300	10,500
Imports for consumption: ²					
Quantity	2,000	2,690	2,550	2,600	2,620
Value	109,000	162,000	160,000	193,000	208,000
Consumption, apparent ³	2,460	3,080	3,070	3,040	3,210
Crushed and ground, sold or used by processors: ⁴					
Quantity	2,440	2,720	3,040	2,980	2,840
Value	208,000	238,000	289,000	308,000	317,000
World, production	7,670 ^r	7,770 ^r	7,920 ^r	7,710 ^r	8,050

^rRevised.

¹Data are rounded to no more than three significant digits.

²Includes crude, ground, and other barite imports.

³Sold or used plus imports minus exports.

⁴Includes imports.

TABLE 2
CRUSHED AND GROUND BARITE SOLD OR USED BY PROCESSORS
IN THE UNITED STATES, BY STATE^{1,2}

State	2007			2008		
	Number of plants	Quantity (thousand metric tons)	Value (thousands)	Number of plants	Quantity (thousand metric tons)	Value (thousands)
Louisiana	6	1,300	\$125,000	6	1,280	\$129,000
Texas	8	1,020	109,000	7	822	104,000
Other ³	10	649	74,000	11	742	84,900
Total	24	2,980	308,000	24	2,840	317,000

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

²Includes imports.

³Includes California (2008), Georgia, Illinois, Missouri, Nevada, Tennessee, and Wyoming (2008).

TABLE 3
CRUSHED AND GROUND BARITE SOLD OR USED BY PROCESSORS
IN THE UNITED STATES, BY USE^{1,2}

(Thousand metric tons and thousand dollars)

Use	2007		2008	
	Quantity	Value	Quantity	Value
Barium chemicals, filler and/or extender, glass	134	\$45,100	131	\$40,400
Well drilling	2,850	263,000	2,710	277,000
Total	2,980	308,000	2,840	317,000

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

²Includes imports.

TABLE 4
U.S. EXPORTS OF NATURAL BARIUM SULFATE (BARITE), BY COUNTRY¹

Country	2007		2008	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Angola	192	\$66	--	--
Belgium	41	36	--	--
Canada	11,900	2,380	54,800	\$8,240
China	49	53	43	16
Colombia	23	15	--	--
Japan	694	3,060	26	136
Mexico	1,210	387	2,750	1,010
Singapore	45	8	--	--
Taiwan	32	21	--	--
Trinidad and Tobago	825 ^r	218 ^r	2,600	714
Venezuela	20 ^r	4 ^r	--	--
Other	34 ^r	54 ^r	1,360	415
Total	15,000	6,300	61,600	10,500

^rRevised. -- Zero.

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

Source: U.S. Census Bureau.

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

Country	2007		2008	
	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)
Crude:				
Canada	100	\$3	--	--
China	2,500,000	174,000	1,860,000	\$151,000
Germany	601	32	--	--
India	44,200	3,580	48,500	7,180
Japan	--	--	1	6
Korea, Republic of	235	6	--	--
Mexico	314	11	10,400	867
Morocco	--	--	3,870	307
Netherlands	--	--	1	2
Total	2,540,000	178,000	1,920,000	160,000
Ground:				
Belgium	--	--	--	--
Canada	--	--	672	191
China	35,500	3,230	656,000	32,300
Germany	--	--	787	650
Mexico	--	--	3,310	540
Morocco	--	--	4,530	295
Switzerland	--	--	22,200	1,030
United Kingdom	--	--	21	13
Total	35,500	3,230	688,000	35,000
Other sulfates of barium:				
Belgium	5	6	--	--
Canada	296	46	--	--
China	2,960	1,250	4,650	2,900
Germany	9,280	7,630	5,940	6,430
India	2	4	--	--
Italy	2,440	1,740	2,220	1,790
Japan	640	1,780	726	1,610
Mexico	--	--	20	14
Netherlands	10	15	--	--
Spain	222	206	302	200
United Kingdom	18	10	--	--
Total	15,900	12,700	13,900	12,900

-- Zero.

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

²Cost, insurance, and freight value.

Source: U.S. Census Bureau data; 2007 data were adjusted by the U.S. Geological Survey.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF BARIUM CHEMICALS¹

	2007		2008	
	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)
Chloride	51	\$53	255	\$310
Oxide, hydroxide, peroxide	3,760	7,250	6,360	9,860
Carbonate, precipitated	3,220	2,740	3,340	2,410

¹Data are rounded to no more than three significant digits.

²Cost, insurance, and freight value.

Source: U.S. Census Bureau.

TABLE 7
BARITE: WORLD PRODUCTION, BY COUNTRY^{1,2}

(Metric tons)

Country	2004	2005	2006	2007	2008
Afghanistan ^{e,3}	2,000	1,500	1,500	1,500	1,500
Algeria	47,945	52,813	64,787	63,098	60,088
Argentina	2,762	3,355	6,276	37,979 ^r	4,000
Australia ^e	20,000	20,000	21,000	16,000	16,000
Bolivia	5,774	11,379	8,943 ^r	8,245 ^r	8,000 ^e
Bosnia and Herzegovina ^e	65	160	190 ⁴	37 ^{r,4}	40
Brazil, beneficiated	49,046	39,545	19,151	13,311 ^r	13,500 ^p
Bulgaria ^{e,5}	75,400	76,600	74,500	51,000	40,000 ^e
Burma	2,224	2,058	2,930	6,813 ^r	5,679
Canada	20,601	23,000 ^r	20,000 ^r	9,000 ^r	12,000 ^p
Chile	31 ^e	91	375	77	--
China ^e	3,900,000	4,200,000	4,400,000	4,400,000	4,600,000
Colombia ^e	600	600	600	600	600
Ecuador	3,695	--	--	--	--
Egypt ^e	500	500	500	500	500
France ^e	82,000	82,000	30,000	--	--
Germany, marketable Ba ₂ SO ₄	93,624	88,591	85,524	88,265	76,700 ^e
Guatemala	70	181	--	--	-- ^e
India ^e	1,100,000	1,200,000	950,000	1,000,000	1,100,000
Iran ³	275,607	231,184	230,000 ^e	240,000 ^e	240,000 ^e
Italy	9,698	4,722	5,000 ^e	5,000 ^e	5,000 ^e
Kazakhstan ⁶	115,000	95,000	95,000 ^e	95,000 ^e	95,000 ^e
Korea, Republic of	50	--	--	--	--
Laos	10,470	28,500	29,000 ^e	29,000 ^e	29,000 ^e
Malaysia	--	--	-- ^r	-- ^r	--
Mexico	306,668	268,657	206,106	185,921	140,066
Morocco ⁵	313,000	335,000	506,000 ^e	485,000 ^e	500,000
Nigeria ^{e,7}	6,000	6,000	6,300	5,000 ^r	5,000
Pakistan	44,207	42,087	45,169 ^r	44,000	43,000
Peru	3,606	17,300 ^r	23,800 ^r	27,369 ^r	42,660
Poland	3,183	2,357	2,143 ^r	2,200 ^r	2,200 ^e
Russia ^e	63,000	63,000	63,000	63,000	63,000
Saudi Arabia	15,000	--	--	--	--
Slovakia, concentrate	12,000 ^r	13,000 ^r	16,000 ^r	11,000 ^r	11,000 ^e
Spain, marketable Ba ₂ SO ₄	40,776	37,000	45,001	40,000 ^e	--
Thailand	211,278	3,989	4,549	4,500 ^e	4,500
Tunisia	1,813	--	--	--	--
Turkey	134,504	157,179	200,000 ^e	150,000 ^e	150,000 ^e
United Kingdom ^e	61,000	62,000	50,000	55,000	50,000
United States ⁸	532,000	489,000	589,000	455,000	648,000
Vietnam	101,040	116,000	120,000 ^e	120,000 ^e	80,000 ^e
Total	7,670,000 ^r	7,770,000 ^r	7,920,000 ^r	7,710,000 ^r	8,050,000

^eEstimated. ^pPreliminary. ^rRevised. -- 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 June 24, 2009.

³Data are for fiscal year beginning March 21 of that stated.

⁴Reported figure.

⁵Estimated marketable production based on export data.

⁶Estimated marketable barite, however, reported figures are as follows, in metric tons: 2004—310,700; 2005—06—251,000; and 2007—08—not available.

⁷Considerably more barite is produced, but it is considered to be commercially unusable.

⁸Sold or used by producers.