



2009 Minerals Yearbook

BARITE [ADVANCE RELEASE]

BARITE

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In 2009, primary barite production (sold or used by producers) totaled 383,000 metric tons (t) valued at \$19.9 million, and apparent consumption was 1.77 million metric tons (Mt). Imports were 1.43 Mt and exports were 49,000 t.

Barite is the mineralogical name for barium sulfate. In commerce, the mineral is sometimes referred to as barytes. 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 7 mines and 25 grinding plants. The USGS received full or partial responses from 6 mines and 21 grinding mills, representing 80% of the quantity of ground barite sold. Most of the nonrespondents were grinding mills. Estimates were made using prior year data and other industry data. Seven mines were included in the survey—five were producing and two were idle.

Of the canvassed producing mines, four were in Nevada, and one was in Georgia; the idle mines were in Nevada. There were 25 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. Although import prices for barite from China have increased substantially in the past few years, shipments of barite to the Gulf Coast remain rare. Demand in the Western United States and Western Canada was so strong in recent years that Nevada barite producers were able to sell all their production to western customers.

Crude barite production was 383,000 t in 2009, a decrease of 41% compared with that of 2008. The value of domestic production was \$19.9 million, a decrease of 36%. The bulk of mine production was from Nevada, with a small amount from Georgia. The large decrease in Nevada's mine production was caused by the sharp downturn in gas exploration when natural gas prices dropped as a result of the recession and economic downturn.

In 2009, there were four active barite mines in Nevada—Big Ledge Mine (NOV Minerals LP, formerly 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. In addition to these Nevada operations, there was one small barite producer in Georgia—New Riverside Ochre Co., Inc.

Canada's Bravo Ventures Group Inc. (Vancouver, British Columbia) announced that it had signed an option agreement with Baker Hughes (Houston, TX) whereby Baker Hughes could acquire 100% of any barite ore at Bravo's Shoshone Pediment gold project in the Battle Mountain-Eureka gold trend in central Nevada. Bravo's plans involved targeting two potential gold occurrences, both located below the barite beds. The Bravo property is adjacent to properties Baker Hughes plans to mine for barite, so this agreement potentially would provide additional barite ore to supplement production from its own mining operations (Bravo Ventures Group, Inc., 2009).

Kent Exploration Inc. (Vancouver, British Columbia, Canada) announced that it received mine plan approval from the U.S. Bureau of Land Management for the company's Flagstaff, WA, barite property. The approved mine plan allows the mining of a maximum of about 91,000 metric tons per year (t/yr) (100,000 short tons per year) of barite from the historic open pit mine on the property. CE Minerals produced about 77,000 t (85,000 short tons) of barite from the site in the early 1980s and reported a remaining resource of approximately 1.1 Mt (1.2 million short tons) grading 4.2 specific gravity. During the first year of operation, Kent Exploration planned to test the economics of the project by crushing, separating, and upgrading to 4.1 specific gravity the estimated 27,000 t (30,000 short tons) of existing stockpiled barite ore. The company had already signed a supply agreement with a customer for 18,000 t/yr (20,000 short tons per year) (Kent Exploration Inc., 2009).

In 2009, 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 operated 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.

The fourth active barite producer in Nevada was Spirit Minerals LP (Wells, NV), which was acquired by National Oilwell Varco Inc. (Houston, TX) in May 2009 and renamed NOV Minerals LP (National Oilwell Varco Inc., 2010a, p. 9). NOV Minerals operated a grinding plant in Evanston, WY,

which ground crude barite from its Dry Creek jig mill and crude barite stockpiled from mining operations in the 1980s.

In 2009, there were 14 grinding operations on the coast of the Gulf of Mexico (6 in Louisiana and 8 in Texas) that produced barite to American Petroleum Institute (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. Baker Hughes had single plants in Morgan City, LA, and Corpus Christi, TX. M-I SWACO (M-I LLC) operated single mills in Amelia, LA, and Galveston, TX. Baroid (Halliburton) had two plants in Louisiana at Lake Charles and New Orleans, and a single plant in Corpus Christi, TX. In late 2009, Halliburton started construction of a new grinding mill in Larose, LA. Larose is in Lafourche Parish, and the new plant location was designed to allow for easy transport of barite to Halliburton's wharf facilities at Port Fourchon that support offshore oil drilling operations in the Gulf of Mexico (Schmidt, 2009).

In addition to the barite mining companies, there were a number of other companies that operated grinding mills primarily designed to process imported crude barite. These included Excalibur Minerals Inc. (a division of Newpark Resources, Inc. of Houston), a major barite importer and grinder with one mill in New Iberia, LA, and two mills in Texas at Corpus Christi and Houston. These mills primarily supplied 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. These included Milwhite, Inc. and U.S. Clay LP (each with a single plant in Brownsville, TX) and Ambar Drilling Fluids LP in Houma, LA. At yearend, National Oilwell Varco was negotiating to acquire Ambar; the deal was expected to be finalized in early 2010 (National Oilwell Varco Inc., 2010b).

Grinding plants that produced commercial filler-grade barite or chemical-grade barite were located primarily in the Southeast, Midwest, and Texas. Only four companies reported sales of barite for nondrilling uses, and by far the leading producer was CIMBAR Performance Minerals, Inc. (Cartersville, GA), which operated two grinding mills in Georgia, one in Missouri, and one in Texas. In October, CIMBAR expanded into the Midwest and added to its product line by acquiring Barretts Minerals Inc.'s multi-mineral processing plant in Mt. Vernon, IN. The plant will produce barite in addition to calcium carbonate and talc (CIMBAR Performance Minerals, Inc., 2009a). In addition, CIMBAR expanded annual milling capacity at its Houston, TX, plant by about 362,000 t (400,000 short tons) to expand the company's presence in the drilling market (CIMBAR Performance Minerals, Inc., 2009b).

Consumption

In 2009, apparent consumption of barite decreased by 45% to 1.77 Mt compared with that in 2008 (table 1). Ground barite sales decreased by 27% to 2.08 Mt in 2009 from 2.84 Mt in 2008. In 2009, sales by grinding plants in Louisiana decreased by 28% to 921,000 t. Grinding plant sales in Texas decreased by 31% to 569,000 t, while sales by plants in all other States

decreased by 20% to 591,000 t (table 2). About 1.96 Mt, or 94%, of barite sales from domestic crushers and grinders was for petroleum well-drilling markets, and the remaining 6% 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 to suppress high formation pressures and prevent blowouts. As a well is drilled, the bit passes through various formations, each with different characteristics. The deeper the hole, the more barite is needed as a percentage of the total mud mix. 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 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, and it was anticipated that a revised API Specification 13A, Specification for Drilling Fluids Materials, would be issued in 2010 (Moores and O'Driscoll, 2009). The API standard does not address heavy-metal impurities, but barite derived from base-metal deposits may contain heavy metals such as cadmium and mercury and discharges of these may be regulated under environmental law. For example, U.S. environmental regulations pertaining to offshore drilling allow drilling waste discharges containing barite only if the barite contains less than 3 parts per million cadmium and 1 part per million mercury (Drilling Waste Management Information System, undated).

With the contraction of the U.S. economy in 2009, energy demand was significantly reduced and this resulted in lower oil and gas prices compared with their peaks in the summer of 2008. Reduced energy demand and lower energy prices were reflected in 2009 by the large decrease in domestic oil and gas drilling. Natural gas prices (wellhead), which had peaked in June 2008 at \$10.82 per thousand cubic feet, continued to slide in 2009, dropping to a low of \$2.92 per thousand cubic feet in September before recovering somewhat to \$4.44 per thousand cubic feet in December. Oil prices (U.S. spot price) nearly doubled from their low point of less than \$32 per barrel in January 2009 to nearly \$70 per barrel in December 2009, but this was still 40% below its peak of \$134 per barrel in June 2008 (U.S. Department of Energy, Energy Information Administration, 2010a, b).

The sharp decrease in oil and gas prices discouraged exploration. The weekly U.S. drill rig count in 2009 hit a low of 876 in late summer before recovering to 1,189 at yearend. This was still significantly lower than the 2008 yearend count of 1,721. The average monthly drill rig count for 2009 was 1,086 or nearly 800 operating rigs less than that of 2008. Much of the rig count decrease was in gas exploration, which was reflected by the percentage of drill rigs exploring for natural gas decreasing to 65% from about 80% in 2008 (Baker Hughes Inc., 2010). These factors caused the sharp decrease in barite consumption in 2009 compared with that of 2008.

In 2009, sales of domestic and imported barite sold for industrial uses decreased by 10% to 118,000 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 μm . 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.

Foreign Trade

Barite exports in 2009 were 49,300 t, a 20% decrease compared with those of 2008. Most exports went to Canada (77%) 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 Brazil (10%) and Mexico (9%) (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 and 2009 are as reported by the U.S. Census Bureau.

Combined imports of barite decreased by 45% compared with those of 2008. Imports totaled only 1.42 Mt, which was the lowest annual import total in a decade. China continued to be the primary source accounting for 93% of the total crude and ground material. Imports for the several forms of barite reported under the HTS nomenclature “Other sulfates of barium” were 10,600 t, or a decrease of about 24% compared with those of 2008 (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. In 2009, Excalibur Minerals submitted an application for FTZ status for its Corpus Christi, TX, grinding mill, but had not received approval by yearend. FTZ status 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, 2010).

Transportation

In recent years, more than 80% of U.S. barite consumption has been supplied by imports (primarily from China). Most barite imports are shipped in handymax-size bulk carriers (typically 35,000- to 60,000-t deadweight tonnage). After being ground to API specifications, barite is transferred directly to containers on barges docked in canals, lakes, and rivers near the grinding mills 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.

Prices

The average sales value for primary barite from mines and their associated beneficiation plants in the United States increased to \$51.90 per metric ton, an increase of 9% compared with that of 2008 (table 1). The average sales values for drilling-grade barite ground in Louisiana and Texas increased significantly, although these large increases may not reflect the true change in values. After analyzing the 2008 data, it is thought that some of the 2008 reported value data and estimates were too low. Compared with those of 2008, the average sales value for drilling-grade barite ground in Louisiana increased to about \$145 per ton, while the sales value for drilling-grade barite ground in Texas increased to about \$162 per ton. The average value for all grades ground in Texas increased to \$170 per ton, while the sales value of barite ground in other States increased to \$130 per ton (table 2). Barite for barium chemicals, filler and extender, and glass increased by 12% to \$346 per ton for 2009 compared with that of 2008 (table 3).

December U.S. published import prices for barite from China, API grade, lump, including cost, insurance, and freight, U.S. Gulf Coast, were in a range of \$94 to \$108 per ton or essentially unchanged from those of 2008. The price for Indian barite, however, decreased significantly; December 2009 import prices were listed in the range of \$97 to \$99 per ton compared with a range of \$106 to \$130 per ton in December 2008. The price of chemical-grade barite from China decreased from \$140 per

ton in December 2008 to a range of \$92 to \$114 per ton in December 2009 (Industrial Minerals, 2009).

World Review

Ireland.—Sunrise Diamonds Plc (Macclesfield, United Kingdom) announced that it had been granted a prospecting license for barite, base metals, gold, platinum, and silver at a former barite mine near Bantry in County Cork. The mine was worked from 1864 to 1922 and supplied barite to the local Irish paint industry. Drilling performed in the 1980s suggested that the barite ore was more extensive than previously thought. The company was targeting the Derryginagh barite deposit for possible production of high-value white barite, which is used as a filler in paints and plastics (Crain's Manchester Business, 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 resulted in dramatic decreases in energy consumption and associated fuel prices. The United States economic recovery has been slow and energy consumption and fuel prices have remained low as a result. At yearend 2009, about 65% of domestic drilling was for natural gas, and future demand for barite in the United States will likely depend mainly on rising natural gas consumption and higher natural gas prices. 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. The U.S. economy is expected to increase at a modest rate through 2011, and natural gas prices are expected to edge upward in response. The monthly number of operating drill rigs was steadily increasing from its low point in the summer of 2009, which indicated increasing demand for barite.

In the future, natural gas' share of U.S. power generation is likely to increase because of relatively low natural gas prices and the prospect of stricter environmental controls on powerplant emissions. These conditions may result in power companies deferring coal-fired powerplants and building cleaner gas-fired plants in their place. 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 (PGC). The PGC consists of volunteer members from the natural gas industry, government, and academic institutions, who biennially assess the size and location of the nation's natural gas resource base. Much of this increase in gas reserves is the result of new and advanced exploration, well drilling, and well completion technologies, which allows recovery of natural gas from active and newly developing shale-gas fields (Potential Gas Committee, 2009). A switch from coal to natural gas in new powerplants would likely provide a boost to domestic drilling and increase the demand for barite.

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TABLE 1
 SALIENT BARITE STATISTICS¹

(Thousand metric tons and thousand dollars)

	2005	2006	2007	2008	2009
United States:					
Barite, primary:					
Sold or used by producers:					
Quantity	489	589	455	648	383
Value	17,600	23,500	20,600	30,900	19,900
Exports:					
Quantity	93	72	15	62	49
Value	9,930	12,100	6,300	10,500	10,200
Imports for consumption: ²					
Quantity	2,690	2,550	2,600	2,620	1,430
Value	162,000	160,000	193,000	208,000	129,000
Consumption, apparent ³	3,080	3,070	3,040	3,210	1,770
Crushed and ground, sold or used by processors: ⁴					
Quantity	2,720	3,040	2,980	2,840	2,080
Value	238,000	289,000	308,000	317,000	307,000
World, production	7,870 ^r	7,960 ^r	7,730 ^r	8,200 ^r	6,130 ^e

^eEstimated. ^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	2008			2009		
	Number of plants	Quantity (thousand metric tons)	Value (thousands)	Number of plants	Quantity (thousand metric tons)	Value (thousands)
Louisiana	6	1,280	\$129,000	6	921	\$134,000
Texas	7	822	104,000	8	569	96,000
Other ³	11	742	84,900	12	591	77,100
Total	24	2,840	317,000	26	2,080	307,000

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

²Includes imports.

³Includes Georgia, Illinois, Missouri, Nevada, Tennessee, and Wyoming.

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	2008		2009	
	Quantity	Value	Quantity	Value
Barium chemicals, filler and/or extender, glass	131	40,400	118	40,800
Well drilling	2,710	277,000	1,960	266,000
Total	2,840	317,000	2,080	307,000

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	2008		2009	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Brazil	31	\$27	4,930	\$1,270
Canada	54,800	8,240	37,700	7,020
India	248	68	--	--
Japan	604	136	--	--
Mexico	2,750	1,010	4,310	1,200
Mozambique	--	--	812	201
Oman	250	99	858	152
Trinidad and Tobago	2,600	714	92	38
Venezuela	--	--	202	64
Other ^{2,3}	294 ^r	226 ^r	341	214
Total	61,600	10,500	49,300	10,200

^rRevised. -- Zero.

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

²Includes countries with full year quantities of less than 200 metric tons.

³Includes China, Costa Rica (2009), Ecuador, Israel (2008), Italy (2009), Republic of Korea (2008), Lebanon (2009), Malaysia, New Zealand (2009), Russia (2008), Taiwan (2009), and Thailand.

Source: U.S. Census Bureau.

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

Country	2008		2009	
	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)
Crude:				
Canada	--	--	621	\$17
China	1,860,000	\$151,000	502,000	54,000
India	48,500	7,180	41,800	3,540
Japan	1	6	6	13
Mexico	10,400	867	5,590	465
Morocco	3,870	307	21,800	1,930
Netherlands	1	2	--	--
Total	1,920,000	160,000	572,000	60,000
Ground:				
Canada	672	191	--	--
China	656,000	32,300	826,000	55,400
Germany	787	650	569	548
India	--	--	23,800	1,790
Japan	--	--	88	225
Mexico	3,310	540	764	129
Morocco	4,530	295	--	--
Switzerland	22,200	1,030	--	--
United Kingdom	21	13	--	--
Total	688,000	35,000	851,000	58,100
Other sulfates of barium:				
Brazil	--	--	78	39
Canada	--	--	1	2
China	4,650	2,900	3,550	2,230
Germany	5,940	6,430	4,870	6,020
Italy	2,220	1,790	1,540	1,340
Japan	726	1,610	527	1,220
Mexico	20	14	--	--
Spain	302	200	14	12
Switzerland	--	--	2	4
United Kingdom	--	--	(3)	3
Total	13,900	12,900	10,600	10,900

-- Zero.

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

²Cost, insurance, and freight value.

³Less than ½ unit.

Source: U.S. Census Bureau.

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

	2008		2009	
	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)
Chloride	255	\$310	466	\$551
Oxide, hydroxide, peroxide	6,360	9,860	2,890	5,050
Carbonate, precipitated	3,340	2,410	814	649

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	2005	2006	2007	2008	2009 ^e
Algeria	52,813	64,787	63,098	60,088	60,000
Argentina	3,355	6,276	37,979	3,170 ^r	4,000
Australia ^e	20,000	21,000	16,000	16,000	16,000
Bolivia	11,379	8,943	8,245	10,900 ^r	1,780
Brazil, beneficiated	39,545	19,151	13,311	7,321 ^r	7,500 ^p
Bulgaria ^{e,3}	76,600	74,500	51,000	40,000	14,300
Burma	2,058	2,930	6,813	5,679	7,623
Canada	23,000	20,000	9,000	12,000	15,000
China ^e	4,200,000	4,400,000	4,400,000	4,600,000	3,000,000
France ^e	82,000	30,000	--	--	--
Germany	88,591	85,524	88,265	78,941 ^r	75,000
India ^e	1,200,000	950,000	1,000,000	1,100,000	1,200,000
Iran ^{e,4}	231,184 ⁵	246,000	249,495 ^{r,5}	296,000 ^r	200,000
Italy ^e	4,722 ⁵	5,000	5,000	5,000	3,500
Kazakhstan ^{e,6}	95,000 ⁵	95,000	95,000	95,000	95,000
Laos ^e	28,500 ⁵	29,000	29,000	29,000	29,000
Mexico	268,657	206,106	185,921	140,066	151,791
Morocco ³	335,000	506,000 ^e	492,000 ^r	573,000 ^r	430,000
Nigeria ^{e,7}	6,000	6,300	5,000	5,000	5,000
Pakistan	42,087	45,169	44,000	43,000	42,000
Peru	17,300	23,800	27,369	42,660	27,875
Russia ^e	63,000	63,000	63,000	63,000	63,000
Slovakia, concentrate	13,000	16,000	11,000	12,950	13,000
Spain	38,000 ^r	45,000 ^r	35,000 ^r	--	--
Thailand	101,186 ^r	96,469 ^r	8,631 ^r	9,180 ^r	9,000
Turkey	157,179	161,993 ^r	184,041 ^r	170,000 ^{r,e}	150,000
United Kingdom ^e	62,000	50,000	55,000	50,000	50,000
United States ⁸	489,000	589,000	455,000	648,000	383,000
Vietnam ^e	116,000	90,000	90,000	80,000	70,000
Other ⁹	4,789	4,708	1,664	2,958	2,950
Total	7,870,000 ^r	7,960,000 ^r	7,730,000 ^r	8,200,000	6,130,000

^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, 2010.

³Estimated marketable production based on export data.

⁴Data are for fiscal year beginning March 21 of that stated.

⁵Reported figure.

⁶Estimated marketable barite, however, reported figures are as follows, in metric tons: 2005–06—251,000; and 2007–09—not available.

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

⁸Crude barite sold or used by producers.

⁹Includes Afghanistan, Bosnia and Herzegovina, Chile, Colombia, Egypt, Guatemala, and Poland.