

## BARITE

(Data in thousand metric tons unless otherwise noted)

**Domestic Production and Use:** Domestic producers of crude barite sold or used for grinding an estimated 640,000 tons in 2011 valued at about \$40 million, a decrease in production of about 3% compared with that of 2010. Most of the production came from four major mines in Nevada followed by a significantly smaller sales volume from a single mine in Georgia. In 2011, an estimated 2.7 million tons of barite (from domestic production and imports) was sold by crushers and grinders in 10 States. Nearly 95% of the barite sold in the United States was used as a weighting agent in gas- and oil-well drilling fluids. The majority of Nevada crude barite was ground in Nevada and Wyoming and then sold primarily to gas-drilling customers in Colorado, New Mexico, North Dakota, Utah, and Wyoming. Crude barite was shipped to a Canadian grinding mill in Lethbridge, Alberta, which supplies the Western Canada drilling mud market. The barite imports to Louisiana and Texas ports mostly went to offshore drilling operations in the Gulf of Mexico and to onshore operations in Louisiana, Oklahoma, and Texas.

Barite is also used as a filler, extender, or weighting agent in products such as paints, plastics, and rubber. Some specific applications include its use in automobile brake and clutch pads and automobile paint primer for metal protection and gloss, and to add weight to rubber mudflaps on trucks and to the cement jacket around underwater petroleum pipelines. In the metal casting industry, barite is part of the mold-release compounds. Because barite significantly blocks x-ray and gamma-ray emissions, it is used as aggregate in high-density concrete for radiation shielding around x-ray units in hospitals, nuclear powerplants, and university nuclear research facilities. Ultrapure barite consumed as liquid is used as a contrast medium in medical x-ray examinations.

<b>Salient Statistics—United States:</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011<sup>e</sup></b>
Sold or used, mine	455	648	383	662	640
Imports for consumption	2,600	2,620	1,430	2,110	2,200
Exports	15	62	49	109	94
Consumption, apparent <sup>1</sup> (crude and ground)	3,040	3,210	1,770	2,660	2,700
Consumption <sup>2</sup> (ground and crushed)	2,980	2,840	2,080	2,570	2,800
Price, average value, dollars per ton, f.o.b. mine	45.20	47.60	51.90	56.30	61.00
Employment, mine and mill, number <sup>e</sup>	330	350	330	350	350
Net import reliance <sup>3</sup> as a percentage of apparent consumption	85	80	78	75	78

**Recycling:** None.

**Import Sources (2007–10):** China, 95%; India, 3%; and other, 2%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations 12-31-11</b>
Crude barite	2511.10.5000	\$1.25 per metric ton.
Ground barite	2511.10.1000	Free.
Oxide, hydroxide, and peroxide	2816.40.2000	2% ad val.
Other chlorides	2827.39.4500	4.2% ad val.
Other sulfates of barium	2833.27.0000	0.6% ad val.
Carbonate	2836.60.0000	2.3% ad val.

**Depletion Allowance:** 14% (Domestic and foreign).

**Government Stockpile:** None.

**Events, Trends, and Issues:** In 2011, the number of drill rigs operating in the United States increased rather rapidly. In late February, there were 1,699 rigs operating, but by November the number had increased to near record levels of 2,026. Most of this increase was by rigs drilling for oil—the number of rigs drilling for oil increased to 1,133 in November 2011 from 765 in December 2010.

With the dramatic increase in U.S. natural gas reserves in recent years, domestic drilling for natural gas was expected to increase in the long term. This will be dependent on the strength of demand, which would be dictated by the health of the U.S. economy and the price of natural gas. Too little demand and there is no motivation to explore, and too low a price and exploration becomes uneconomic. With large reserves of shale gas, the United States is expected to shift more of its energy usage to natural gas and away from coal. This implies continued high levels of drilling and resulting strong demand for barite.

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Supplies of barite from China were tight in 2011 owing to the lingering impacts of severe weather in barite mining regions, depletion of reserves in Guangxi Province, increased fuel costs, and increased domestic demand in China. These factors and strong demand for barite in world markets resulted in sharply higher prices for Chinese barite. According to Industrial Minerals magazine, crude barite, drilling grade, free on board China, was in the range of \$72 to \$75 per metric ton at yearend 2010 but had increased to \$109 to \$110 per metric ton in October 2011.

In 2010, severe weather adversely affected barite production in India, but production had recovered by spring 2011. India's State-owned producer, which produces most of India's barite, effectively controls India's barite production, export levels, and prices. India also increased crude barite export prices in 2011, almost doubling prices to \$138 to \$140 per metric ton in October 2011, from \$72 to \$74 per metric ton at yearend 2010.

**World Mine Production and Reserves:** The barite reserve estimate for India has been revised based on new information.

	Mine production		Reserves <sup>4</sup>
	2010	2011 <sup>e</sup>	
United States	662	640	15,000
Algeria	60	60	29,000
China	4,000	4,000	100,000
Germany	50	50	1,000
India	1,100	1,100	32,000
Iran	200	200	NA
Kazakhstan	<sup>5</sup> 200	200	NA
Mexico	134	154	7,000
Morocco	<sup>6</sup> 650	650	10,000
Pakistan	49	50	1,000
Russia	60	60	12,000
Turkey	250	250	4,000
United Kingdom	50	50	100
Vietnam	85	85	NA
Other countries	300	300	24,000
World total (rounded)	7,850	7,800	240,000

**World Resources:** In the United States, identified resources of barite are estimated to be 150 million tons, and undiscovered resources include an additional 150 million tons. The world's barite resources<sup>4</sup> in all categories are about 2 billion tons, but only about 740 million tons is identified resources.

**Substitutes:** In the drilling mud market, alternatives to barite include celestite, ilmenite, iron ore, and synthetic hematite that is manufactured in Germany. None of these substitutes, however, has had a major impact on the barite drilling mud industry.

<sup>e</sup>Estimated. NA Not available.

<sup>1</sup>Sold or used by domestic mines + imports – exports.

<sup>2</sup>Imported and domestic barite, crushed and ground, sold or used by domestic grinding establishments.

<sup>3</sup>Defined as imports – exports + adjustments for Government and industry stock changes.

<sup>4</sup>[See Appendix C for resource/reserve definitions and information concerning data sources.](#)

<sup>5</sup>Estimated marketable barite; however, reported production figures are significantly higher.

<sup>6</sup>Estimated marketable production based on export data.