

BARITE

(Data in thousand metric tons, unless otherwise noted)

Domestic Production and Use: Barite sales in 1996 increased strongly from the 1995 level of 540,000 tons to about 650,000 tons, and the value increased accordingly to about \$30 million. Sales came from six States, with slightly less than 80% of the total coming from Nevada. The second largest producing State was Georgia. A small mine in Tennessee restarted for several months. About 1.3 million tons of ground barite from both domestic production and imports was sold in 1996 as reported by the domestic grinders and crushers. Nearly 90% of the barite sold in the United States was used as a weighing agent in oil- and gas-well-drilling fluids, mostly in the Gulf of Mexico region with much smaller amounts used in the Pacific coast, western Canada, and Alaska areas. Industrial end uses for barite include an additive to cement, rubber, and urethane foam as a weighing material. Barite is also used in automobile paint primer for metal protection and gloss, "leaded" glass, and as the raw material for barium chemicals. In the metal casting industry, barite is part of the mold-release compounds. Barite has become part of the friction products (brake and clutch pads) for transportation vehicles. Because barite strongly reduces x-rays and γ rays, it is used in cement vessels that contain radioactive materials, gastro-intestinal x-ray "milkshakes," and the faceplates and funnelglass of cathode-ray tubes used for television sets and computer monitors.

Salient Statistics—United States:	1992	1993	1994	1995	1996^e
Sold or used, mine	326	315	583	543	650
Imports for consumption: Crude barite	323	766	1,010	960	1,300
Ground barite	31	38	58	80	60
Other	12	11	13	10	10
Exports	12	18	14	16	18
Consumption, apparent ¹ (crude barite)	668	1,100	1,640	1,570	1,930
Consumption ² (ground and crushed)	999	1,090	1,250	1,210	1,600
Price, average value, dollars per ton, mine	60.22	61.16	37.22	41.00	50.00
Employment, mine and mill ^e , number	350	330	350	400	350
Net import reliance ³ as a percent of apparent consumption	52	72	64	65	66

Recycling: None.

Import Sources (1992-95): China, 65%; India, 24%; Mexico, 6%; Morocco, 2%; and other, 3%.

Tariff: Item	Number	Most favored nation (MFN) 12/31/96	Non-MFN⁴ 12/31/96
Crude barite	2511.10.5000	\$1.25/mt	\$3.94/mt.
Ground barite	2511.10.1000	\$1.92/mt	\$7.38/mt.
Witherite	2511.20.0000	1.8% ad val.	30% ad val.
Oxide, hydroxide, and peroxide	2816.30.0000	2% ad val.	10.5% ad val.
Other sulfates	2833.27.0000	0.6¢/kg ad val.	4.2¢/kg ad val.
Other chlorides	2827.38.0000	4.2% ad val.	28.5% ad val.
Other nitrates	2834.29.5000	3.5% ad val.	10% ad val.
Carbonate	2836.60.0000	2.3% ad val.	8.4% ad val.

Depletion Allowance: 14% (Domestic), 14% (Foreign).

Government Stockpile: None.

Events, Trends, and Issues: The demand for barite increased following modest expansions in the economies of the United States and other industrialized countries. Barite is used primarily in petroleum well drilling and historically has had a positive relationship to petroleum price trends and drill rig usage. Worldwide barite consumption grew modestly as there was an overcapacity in the oil producing countries, centered in the Organization of Petroleum Exporting Countries (OPEC). Several of the OPEC countries withheld production to maintain stable prices in petroleum and gas markets. Due to relatively long lead times in this industry, it was rational to explore and develop while in overcapacity.

In the United States drilling in the Gulf of Mexico for deeper natural gas deposits in Louisiana, south Texas, offshore Texas, and Oklahoma continued unabated. The demand for jack up and semisubmersible drilling rigs in the Gulf of Mexico was strong. This demand followed a price increase of 14% for light sweet crude futures from the first week of January 1996 to the week of July 19, 1996. Contrarily, natural gas prices decreased by 9% over the same time period. The rotary rig count in the United States rose from 762 for the week of December 22, 1995, to 790 in the week of July

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19, 1996. The rig count continued to climb through the rest of the year, reaching 819 rigs in the week of October 4, 1996.

In the United States reported barite prices rose due to a change in the mix of material sold from the mines and mills. That is, more ground barite was sold through the mine-located and independent mills relative to the amount of crude and jigged ore sold directly from the mines.

Imports for consumption of lower cost foreign barite were double domestic production. The major sources of imported barite have high-grade deposits, relatively low labor costs, and relatively low cost (per ton-mile) of ocean transportation to the gulf coast grinding plants. Often the cost of ocean transportation from other continents is lower per ton than the cost of rail transportation from Georgia and Missouri to the end-use regions. Nevada mines, crushers, and grinders are competitive in the California market, and are trying to reenter the Gulf of Mexico market through negotiated railroad tariff reductions. Over the past several years, China and India have had problems supplying low-cost barite into the Gulf coast but not enough to encourage domestic owners of Missouri barite mines to reopen any of those mines.

The Environmental Protection Agency (EPA) deleted barium sulfate from the category "barium compounds" on the list of toxic chemicals for which reporting was required under section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA). The action was based on EPA's conclusion that barium sulfate met the deletion criteria of EPCRA section 313(d)(3). By promulgating this rule, EPA was relieving facilities of their obligation to report releases of barium sulfate that occurred during the 1993 reporting year, and releases that occur in subsequent years.

The principal environmental impact of chemically inert barite is the land disturbance normally associated with mining. Mud pits at petroleum well drilling sites, which contain some barite, are treated according to the chemical content other than barite. The mud in the pits may be dewatered and covered, dewatered and spread over the ground, or transported to special waste handling facilities according to the base drilling fluid (water or oil).

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ⁵	Reserve base ⁵
	1995	1996 ^e		
United States	543	650	28,000	60,000
Canada	57	60	11,000	14,600
China	1,500	1,500	35,000	150,000
France	70	70	2,000	2,500
Germany	150	145	1,000	1,500
India	575	550	28,000	32,000
Iran	150	150	NA	NA
Ireland	60	60	1,000	1,500
Kazakstan	150	150	NA	NA
Mexico	248	230	7,000	8,500
Morocco	265	270	10,000	11,000
Romania	105	100	NA	NA
Thailand	50	50	9,000	15,000
Turkey	158	155	4,000	20,000
United Kingdom	85	80	100	600
Other countries	190	195	20,000	161,000
World total (may be rounded)	4,356	4,415	170,000	500,000

World Resources: In the United States, identified resources of barite are estimated to be 150 million tons, and hypothetical resources include an additional 150 million tons. The world's barite resources in all categories are about 2 billion tons, but only about 550 million tons are identified.

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

^eEstimated. NA Not available.

¹Sold or used by domestic mines - exports + imports.

²Domestic and imported crude barite sold or used by domestic grinding establishments.

³Defined as imports - exports + adjustments for Government and industry stock changes.

⁴See Appendix B.

⁵See Appendix C for definitions.