

BAUXITE AND ALUMINA¹

(Data in thousand metric dry tons, unless otherwise noted)

Domestic Production and Use: Domestic ore, which for many years has accounted for less than 1% of the U.S. requirement for bauxite, was mined by one company from surface mines in Alabama and Georgia; virtually all of it was used in the production of nonmetallurgical products, such as abrasives, chemicals, and refractories. Thus, nearly all bauxite consumed in the United States was imported; of the total, about 95% was converted to alumina. Also, the United States imported about one-half of the alumina it required. Of the total alumina used, about 90% went to primary aluminum smelters and the remainder to nonmetallurgical uses. Annual alumina capacity was 5.1 million tons, with four Bayer refineries in operation at yearend.

Salient Statistics—United States: ²	1995	1996	1997	1998	1999^e
Production, bauxite, mine	W	W	NA	NA	NA
Imports of bauxite for consumption ³	10,900	10,800	11,300	11,600	9,500
Imports of alumina ⁴	4,000	4,330	3,830	4,050	4,200
Exports of bauxite ³	120	154	97	108	170
Exports of alumina ⁴	1,040	918	1,270	1,280	1,100
Shipments of bauxite from Government stockpile excesses ³	874	612	1,430	3,300	2,000
Consumption, apparent, bauxite and alumina (in aluminum equivalents) ⁵	4,330	4,380	4,210	5,000	4,600
Price, bauxite, average value U.S. imports (f.a.s.) dollars per ton	24	27	25	23	22
Stocks, bauxite, industry, yearend ⁹	1,730	1,930	2,260	1,860	1,500
Net import reliance, ⁶ bauxite and alumina, as a percent of apparent consumption	99	100	100	100	100

Recycling: None.

Import Sources (1995-98):⁷ Bauxite: Guinea, 38%; Jamaica, 30%; Brazil, 17%; Guyana, 9%; and other, 6%. Alumina: Australia, 72%; Suriname, 8%; Jamaica, 7%; and other, 13%. Total: Australia, 33%; Guinea, 21%; Jamaica, 20%; Brazil, 10%; and other, 16%.

Tariff: Import duties on bauxite and alumina were abolished in 1971 by Public Law 92-151. Only imports from non-normal-trade-relations nations were dutiable. Countries that supplied commercial quantities of bauxite or alumina to the United States during the first 8 months of 1999 had normal-trade-relations status.

Depletion Allowance: 23% (Domestic), 15% (Foreign).

Government Stockpile:

Material	Stockpile Status—9-30-99⁸				
	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1999	Disposals FY 1999
Bauxite, metal grade:					
Jamaica-type	7,320	2,370	7,320	2,030	1,350
Suriname-type	2,280	1,870	2,280	1,520	1,520
Bauxite, refractory-grade, calcined	45	59	4	29	⁹ 29

Events, Trends, and Issues: World output of bauxite and alumina for 1999 increased slightly to accommodate the modest increase in world primary aluminum metal production.

Domestic alumina production, however, decreased owing to the closure of Kaiser Aluminum & Chemical Corp.'s, Gramercy, LA, refinery. On July 5, the digestion area of the refinery was damaged in an explosion. As of October 1999, Kaiser had begun the first phase of rebuilding the damaged portion of the plant. Demolition and site preparation work were scheduled to be completed by yearend 1999, and the company hoped to have the plant operating at a partial production level by mid-2000 and at full production by yearend 2000.¹⁰

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Spot prices for metallurgical-grade alumina, as published by Metal Bulletin, drifted upward during the first half of the year and then rose dramatically following the explosion at Gramercy. The published price range began the year at \$145 to \$160 per ton. By the end of June, the price range had increased slowly to \$155 to \$165 per ton. By the end of October, however, the price had risen to \$260 to \$280 per ton.

The revised fiscal year (FY) Annual Materials Plan (AMP) submitted by the Defense National Stockpile Center proposed the sale of 3.56 million dry metric tons of metallurgical-grade bauxite (2.03 million tons of Jamaica-type and 1.52 million tons of Suriname-type) during the period October 1, 1999, to September 30, 2000. In addition, the revised FY 2000 AMP provided for the sale of 4,060 calcined metric tons of refractory-grade bauxite from the National Defense Stockpile. These are the maximum amounts that could be sold under the new AMP and not necessarily the amounts that would actually be offered for sale.

World Bauxite Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ¹¹	Reserve base ¹¹
	1998	1999 ^e		
United States	NA	NA	20,000	40,000
Australia	44,600	46,500	3,200,000	7,000,000
Brazil	11,700	11,800	3,900,000	4,900,000
China	8,200	8,500	720,000	2,000,000
Guinea	15,000	15,000	7,400,000	8,600,000
Guyana	2,600	1,800	700,000	900,000
India	5,700	7,000	1,500,000	2,300,000
Jamaica	12,600	11,600	2,000,000	2,000,000
Russia	3,450	3,500	200,000	200,000
Suriname	4,000	3,700	580,000	600,000
Venezuela	5,100	4,500	320,000	350,000
Other countries	8,950	9,000	4,100,000	4,700,000
World total (rounded)	122,000	123,000	25,000,000	34,000,000

World Resources: Bauxite resources are estimated to be 55 to 75 billion tons, located in South America (33%), Africa (27%), Asia (17%), Oceania (13%), and elsewhere (10%). Domestic resources of bauxite are inadequate to meet long-term demand, but the United States and most other major aluminum-producing countries have essentially inexhaustible subeconomic resources of aluminum in materials other than bauxite.

Substitutes: Bauxite is the only raw material used in the production of alumina on a commercial scale in the United States. However, the vast U.S. resources of clay are technically feasible sources of alumina. Other domestic raw materials, such as anorthosite, alunite, coal wastes, and oil shales, offer additional potential alumina sources. Although it would require new plants using new technology, alumina from these nonbauxitic materials could satisfy the demand for primary metal, refractories, aluminum chemicals, and abrasives. Synthetic mullite, produced from kyanite and sillimanite, substitutes for bauxite-based refractories. Although more costly, silicon carbide and alumina-zirconia substitute for bauxite-based abrasives.

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

¹See also Aluminum. As a general rule, 4 tons of dried bauxite are required to produce 2 tons of alumina, which, in turn, provide 1 ton of primary aluminum metal.

²Includes U.S. Virgin Islands.

³Includes all forms of bauxite, expressed as dry equivalent weights.

⁴Calcined equivalent weights.

⁵The sum of U.S. bauxite production and net import reliance (all in aluminum equivalents).

⁶Defined as imports - exports + adjustments for Government and industry stock changes (all in aluminum equivalents). Treated as separate commodities, the net import reliance equaled 100% for bauxite and 42% for alumina in 1999. For the years 1995-98, the net import reliance ranged from about 99% to 100% for bauxite and from 33% to 42% for alumina.

⁷Aluminum equivalents.

⁸See Appendix B for definitions.

⁹Dry equivalent weight—44,600 metric tons.

¹⁰Kaiser Aluminum and Chemical Corp., [n.d.], Gramercy photos, accessed November 3, 1999, at URL <http://www.kaiseral.com>.

¹¹See Appendix C for definitions.