

## BAUXITE AND ALUMINA<sup>1</sup>

(Data in thousand metric dry tons, unless noted)

**Domestic Production and Use:** In 1995, three companies operated surface bauxite mines in Alabama and Georgia. Virtually all domestic ore was consumed in the production of nonmetallurgical products, such as abrasives, chemicals, proppants, and refractories. Approximately 95% of the total bauxite consumed in the United States during 1995 was converted to alumina. Primary aluminum smelters received approximately 90% of the alumina supply. Annual alumina capacity was 5.6 million tons, with four Bayer refineries in operation at yearend.

<b>Salient Statistics—United States:</b> <sup>2</sup>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995<sup>e</sup></b>
Production, bauxite, mine	W	W	W	W	W
Imports of bauxite for consumption <sup>3</sup>	12,300	11,400	11,900	11,200	10,000
Imports of alumina <sup>4</sup>	4,590	4,700	3,940	3,120	3,900
Exports of bauxite <sup>3</sup>	58	68	92	137	130
Exports of alumina <sup>4</sup>	1,350	1,140	1,240	1,040	650
Shipments of bauxite from Government stockpile excesses	—	437	565	5	150
Consumption, apparent, bauxite and alumina (in aluminum equivalents) <sup>5</sup>	4,610	4,860	4,510	3,840	4,000
Price, bauxite, dollars per ton, f.o.b. mine	15-18	15-18	15-24	15-24	15-18
Stocks, bauxite, industry, yearend	2,600	2,300	1,600	1,600	1,000
Employment, bauxite mine	35	35	35	35	20
Net import reliance, <sup>6</sup> bauxite and alumina as a percent of apparent consumption	100	100	100	99	99

**Recycling:** None.

**Import Sources (1991-94):**<sup>7</sup> Bauxite: Guinea, 34%; Jamaica, 30%; Brazil, 14%; Guyana, 13%; and other, 9%. Alumina: Australia, 73%; Jamaica, 10%; Suriname, 6%; and other, 11%. Total: Australia, 33%; Jamaica, 21%; Guinea, 19%; Brazil, 9%; and other, 18%.

**Tariff:** Import duties on bauxite and alumina were abolished in 1971 by Public Law 92-151. Only imports from non-most-favored nations were dutiable. Countries that supplied commercial quantities of bauxite or alumina to the United States during the first 8 months of 1995 had most-favored-nation status.

**Depletion Allowance:** 22% (Domestic), 14% (Foreign).

### **Government Stockpile:**

#### Stockpile Status—9-30-95

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposals Jan.-Sept. 95
Bauxite, metal grade:				
Jamaica-type	11,100	739	10,900	<sup>8</sup> 610
Suriname-type	4,980	—	4,980	—
Bauxite, refractory-grade, calcined	208	21	146	<sup>9</sup> 11

**Events, Trends, and Issues:** World output of bauxite and alumina for 1995 increased to accommodate the increase in world primary aluminum metal production.

U.S. alumina plant engineered capacity remained essentially unchanged from that of yearend 1994. However, capacity utilization decreased as a result of the temporary closure of a 635,000-ton-per-year alumina plant in St. Croix, VI.

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Spot prices for metallurgical-grade alumina, as published by Metal Bulletin, increased dramatically during the first three quarters of 1995. The price range began the year at \$127 to \$130 per ton. By the end of September, the price range had increased to \$320 to \$340 per ton. In early October, the price had decreased slightly to a range of \$290 to \$310 per ton.

The fiscal year 1996 Annual Materials Plan (AMP) submitted by the Defense National Stockpile Center proposed the sale of 915,000 dry metric tons of metallurgical-grade bauxite (610,000 tons of Jamaican-type and 305,000 tons of Suriname-type) during the period October 1, 1995 to September 30, 1996. In addition, the FY 1996 AMP provided for the sale of 81,000 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 <sup>10</sup>	Reserve base <sup>10</sup>
	1994	1995 <sup>e</sup>		
United States	W	W	20,000	40,000
Australia	41,700	42,700	5,600,000	7,900,000
Brazil	8,120	8,500	2,800,000	2,900,000
Greece	1,600	1,600	600,000	650,000
Guinea	14,400	14,500	5,600,000	5,900,000
Guyana	2,100	2,100	700,000	900,000
Hungary	900	900	300,000	300,000
India	5,400	5,500	1,000,000	1,200,000
Jamaica	11,700	12,000	2,000,000	2,000,000
Suriname	3,440	3,400	580,000	600,000
Venezuela	4,790	5,000	320,000	350,000
Other countries	12,700	12,400	3,500,000	5,100,000
World total (rounded)	<sup>11</sup> 107,000	<sup>11</sup> 109,000	23,000,000	28,000,000

**World Resources:** Bauxite resources are estimated to be 55 to 75 billion tons, 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.

<sup>e</sup>Estimated. W Withheld to avoid disclosing company proprietary data.

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

<sup>2</sup>Includes U.S. Virgin Islands.

<sup>3</sup>Includes all forms of bauxite, expressed as dry equivalent weights.

<sup>4</sup>Calcined equivalent weights.

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

<sup>6</sup>Defined as imports - exports + adjustments for Government and industry stock changes (all in aluminum equivalents).

<sup>7</sup>Aluminum equivalents.

<sup>8</sup>Sold under long-term contract commenced in 1993.

<sup>9</sup>Dry equivalent weight—16,500 metric tons.

<sup>10</sup>See Appendix C for definitions.

<sup>11</sup>Excludes U.S. production.