# BAUXITE AND ALUMINA[1]

(Data in thousand metric dry tons unless otherwise noted)

**Domestic Production and Use:** Nearly all bauxite consumed in the United States was imported; of the total, about 95% was converted to alumina. Of the total alumina used, about 90% went to primary aluminum smelters and the remainder went to nonmetallurgical uses. Annual alumina capacity was 5.75 million tons, with all four Bayer refineries operating during the year. Domestic bauxite was used in the production of nonmetallurgical products, such as abrasives, chemicals, and refractories.

| Salient Statistics—United States:[2] | 2000 | 2001 | 2002 | 2003 | 2004[e] |
|---|---|---|---|---|---|
| Production, bauxite, mine | NA | NA | NA | NA | NA |
| Imports of bauxite for consumption[3] | 9,030 | 8,670 | 7,710 | 8,860 | 10,600 |
| Imports of alumina[4] | 3,820 | 3,100 | 3,010 | 2,310 | 1,600 |
| Exports of bauxite[3] | 147 | 88 | 52 | 89 | 70 |
| Exports of alumina[4] | 1,090 | 1,250 | 1,270 | 1,090 | 1,400 |
| Shipments of bauxite from Government stockpile excesses[3] | 1,100 | 3,640 | 297 | 1,710 | 66 |
| Consumption, apparent, bauxite and alumina (in aluminum equivalents)[5] | 3,840 | 3,670 | 2,860 | 3,240 | 2,600 |
| Price, bauxite, average value U.S. imports (f.a.s.) dollars per ton | 23 | 23 | 20 | 19 | 22 |
| Stocks, bauxite, industry, yearend[3] | 1,300 | 1,740 | 1,280 | 960 | 900 |
| Net import reliance,[6] bauxite and alumina, as a percentage of apparent consumption | 100 | 100 | 100 | 100 | 100 |

**Recycling:** None.

**Import Sources (2000-03):**[7] Bauxite: Guinea, 36%; Jamaica, 35%; Guyana, 11%; Brazil, 10%; and other, 8%. Alumina: Australia, 57%; Suriname, 22%; Jamaica, 10%; and other, 11%. Total: Australia, 26%; Jamaica, 24%; Guinea, 20%; Suriname, 10%; and other, 20%.

**Tariff:** Import duties on bauxite and alumina were abolished in 1971 by Public Law 92-151. Duties can be levied only on such imports from nations with non-normal trade relations. However, all countries that supplied commercial quantities of bauxite or alumina to the United States during the first 8 months of 2004 had normal-trade-relations status.

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

**Government Stockpile:**

**Stockpile Status—9-30-04[8]**

| Material | Uncommitted inventory | Committed inventory | Authorized for disposal | Disposal plan FY 2004 | Disposals FY 2004 |
|---|---|---|---|---|---|
| Bauxite, metal grade: | | | | | |
| Jamaica-type | — | 4,120 | — | — | — |
| Suriname-type | — | 224 | — | — | — |
| Bauxite, refractory-grade, calcined | — | 38 | — | 68 | 66 |

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**Events, Trends, and Issues:** World production of bauxite and alumina increased compared with that of 2003. Based on production data from the International Aluminium Institute, world alumina production during the first 2 quarters of 2004 increased 7% compared with that for the same period in 2003.

In February, the Defense National Stockpile Center announced the sale of approximately 41,700 calcined tons (41,000 calcined long tons) of refractory-grade bauxite from the National Defense Stockpile (NDS). The material was awarded to Harbison-Walker Refractories Co. for approximately $3.5 million. This completed the sale of refractory-grade bauxite from the NDS.[9]

Increased demand and limited supply caused spot prices for metallurgical-grade alumina, as published by Metal Bulletin, to rise dramatically during the first half of the year. The published price range began the year at $330 to $350 per ton. By the beginning of April, the price range had increased to $470 to $490 per ton. The price range then began a downward slide through mid-September to a year-to-date low of $310 to $330 per ton, before rebounding to $375 to $395 per ton through the end of the month.

**World Bauxite Mine Production, Reserves, and Reserve Base:**

| | Mine production | | Reserves[10] | Reserve base[10] |
|---|---|---|---|---|
| | 2003 | 2004[e] | | |
| United States | NA | NA | 20,000 | 40,000 |
| Australia | 55,600 | 56,000 | 4,400,000 | 8,700,000 |
| Brazil | 13,100 | 18,500 | 1,900,000 | 2,500,000 |
| China | 12,500 | 15,000 | 700,000 | 2,300,000 |
| Greece | 2,420 | 2,400 | 600,000 | 650,000 |
| Guinea | 15,500 | 15,500 | 7,400,000 | 8,600,000 |
| Guyana | 1,500 | 1,700 | 700,000 | 900,000 |
| India | 10,000 | 10,000 | 770,000 | 1,400,000 |
| Jamaica | 13,400 | 13,500 | 2,000,000 | 2,500,000 |
| Russia | 4,000 | 5,000 | 200,000 | 250,000 |
| Suriname | 4,220 | 4,200 | 580,000 | 600,000 |
| Venezuela | 5,200 | 5,500 | 320,000 | 350,000 |
| Other countries | 8,500 | 9,000 | 3,700,000 | 4,400,000 |
| World total (rounded) | 146,000 | 156,000 | 23,000,000 | 33,000,000 |

**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 U.S. 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-base refractories. Although more costly, silicon carbide and alumina-zirconia substitute for bauxite-base abrasives.

[e]Estimated. NA Not available. — Zero.
[1]See also Aluminum. As a general rule, 4 tons of dried bauxite is required to produce 2 tons of alumina, which, in turn, provides 1 ton of primary aluminum metal.
[2]Includes U.S. Virgin Islands.
[3]Includes all forms of bauxite, expressed as dry equivalent weights.
[4]Calcined equivalent weights.
[5]The sum of U.S. bauxite production and net import reliance.
[6]Defined 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 4% for alumina in 2004. For the years 2000-03, the net import reliance was 100% for bauxite and ranged from 22% to 36% for alumina.
[7]Aluminum equivalents.
[8]See Appendix B for definitions.
[9]Defense Logistics Agency, 2004, Stockpile accepts refractory grade bauxite offers: Fort Belvoir, VA, Defense Logistics Agency news release, February 12, 1 p.
[10]See Appendix C for definitions.