

PHOSPHATE ROCK

(Data in thousand metric tons, unless otherwise noted)

Domestic Production and Use: Phosphate rock ore was mined by nine firms in four States, and upgraded to an estimated 33.3 million tons of marketable product valued at \$895 million, f.o.b. mine. Florida and North Carolina accounted for 85% of total domestic output, with the remainder produced in Idaho and Utah. More than 95% of the U.S. phosphate rock ore mined was used to manufacture wet-process phosphoric acid and superphosphoric acid, which were used as intermediates in the manufacture of granular and liquid ammonium phosphate fertilizers and animal feed supplements. More than 50% of the wet-process phosphoric acid produced was exported in the form of upgraded granular diammonium and monoammonium phosphate (DAP and MAP, respectively) fertilizer, triple superphosphate fertilizer, and merchant-grade phosphoric acid. The balance of the phosphate rock mined was used to manufacture elemental phosphorus, which was used to produce high-purity phosphoric acid and phosphorus compounds for use in a variety of industrial and food-additive applications.

Salient Statistics—United States:	1999	2000	2001	2002	2003^e
Production, marketable	40,600	38,600	31,900	36,100	33,300
Sold or used by producers	41,600	37,400	32,800	34,700	34,800
Imports for consumption	2,170	1,930	2,500	2,700	2,500
Exports	272	299	9	39	5
Consumption ¹	43,500	39,000	35,300	37,400	37,300
Price, average value, dollars per ton, f.o.b. mine ²	30.56	24.14	26.82	27.47	26.93
Stocks, producer, yearend	6,920	8,170	7,510	8,860	7,500
Employment, mine and beneficiation plant, number ^e	7,200	6,300	6,000	5,800	5,500
Net import reliance ³ as a percentage of apparent consumption	7	1	9	3	10

Recycling: None.

Import Sources (1999-2002): Morocco, 99%; and other, 1%.

Tariff: Item	Number	Normal Trade Relations 12/31/03
Natural calcium phosphates:		
Unground	2510.10.0000	Free.
Ground	2510.20.0000	Free.

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

Government Stockpile: None.

Events, Trends, and Issues: After a slight recovery in 2002, phosphate rock production dropped in 2003 owing to the closure of one mine in Idaho for the entire year and a 5-month closure of a mine in Florida combined with an effort to reduce stocks of phosphate rock by several other producers. Consumption, sales, and usage of phosphate rock were about the same as in 2002. Phosphoric acid and elemental phosphorus production also were about the same. Production and exports of DAP, the primary phosphate fertilizer, were down substantially because of lower sales to China.

The operator of the closed mine in Idaho also closed its associated purified phosphoric acid (PPA) plant that had opened in 2001 to replace its elemental phosphorus facility. The closure was necessitated by a restructuring program that included closing its sodium tripolyphosphate plant, which was supplied exclusively by the PPA facility. Its joint-venture partner purchased the PPA facility for manufacturing merchant-grade phosphoric acid for fertilizer use.

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Domestic fertilizer consumption is projected to remain flat in 2004 based on projected planted acreage for major crops and average weather conditions. Phosphate rock production is likely to remain below capacity in the Florida, as companies reduce stocks and adjust production to meet demand and to extend the lifespan of existing mines.

The several new mines that are planned to open in the next 5 years would be replacements for existing mines and probably would not have a significant impact on annual production capacity. However, the permitting procedures for new mines in Florida have become increasingly difficult because of opposition from local governments and the public concerning the potential affect on the environment. Phosphate rock and fertilizer production is expected to remain steady in Idaho and Utah because output in the region only is used domestically.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ⁴	Reserve base ⁴
	2002	2003 ^e		
United States	36,100	33,300	1,000,000	4,000,000
Australia	2,025	2,200	77,000	1,200,000
Brazil	4,850	4,960	260,000	370,000
Canada	1,000	1,200	25,000	200,000
China	23,000	24,000	6,600,000	13,000,000
Egypt	1,500	1,500	100,000	760,000
India	1,250	1,250	90,000	160,000
Israel	3,500	4,000	180,000	800,000
Jordan	7,180	7,200	900,000	1,700,000
Morocco and Western Sahara	23,000	24,000	5,700,000	21,000,000
Russia	10,700	11,000	200,000	1,000,000
Senegal	1,500	1,500	50,000	160,000
South Africa	2,910	2,500	1,500,000	2,500,000
Syria	2,400	2,400	100,000	800,000
Togo	1,280	2,100	30,000	60,000
Tunisia	7,750	7,700	100,000	600,000
Other countries	4,830	7,000	800,000	2,000,000
World total (rounded)	135,000	138,000	18,000,000	50,000,000

World Resources: Foreign reserve data were derived from information received from Government sources, individual companies, and independent sources. Reserve data for China are based on official government data and include deposits of low-grade ore. Domestic reserve data were based on U.S. Geological Survey and individual company information. Phosphate rock resources occur principally as sedimentary marine phosphorites. The largest deposits are found in northern Africa, China, the Middle East, and the United States. Significant igneous occurrences are found in Brazil, Canada, Russia, and South Africa. Large phosphate resources have been identified on the continental shelves and on seamounts in the Atlantic Ocean and the Pacific Ocean, but cannot be recovered economically with current technology.

Substitutes: There are no substitutes for phosphorus in agriculture.

^eEstimated.

¹Defined as sold or used + imports – exports.

²Marketable phosphate rock, weighted value, all grades, domestic and export.

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

⁴See Appendix C for definitions.