PHOSPHATE ROCK

(Data in thousand metric tons unless otherwise noted)

<u>Domestic Production and Use</u>: Phosphate rock ore was mined by 6 firms at 12 mines in 4 States, and upgraded to an estimated 29.7 million tons of marketable product valued at \$1.17 billion, f.o.b. mine. Florida and North Carolina accounted for more than 85% of total domestic output; the remainder was produced in Idaho and Utah. Marketable product refers to beneficiated phosphate rock with phosphorus pentoxide (P_2O_5) content suitable for phosphoric acid or elemental phosphorus production. More than 95% of the U.S. phosphate rock mined was used to manufacture wet-process phosphoric acid and superphosphoric acid, which were used as intermediate feedstocks in the manufacture of granular and liquid ammonium phosphate fertilizers and animal feed supplements. Approximately 37% of the wet-process phosphoric acid produced was exported in the form of upgraded granular diammonium and monoammonium phosphate (DAP and MAP, respectively) fertilizer, merchant-grade phosphoric acid, and triple superphosphate fertilizer. The balance of the phosphate rock mined was for the manufacture of elemental phosphorus, which was used to produce phosphorus compounds for a variety of food-additive and industrial applications.

Salient Statistics—United States:	<u>2003</u>	<u>2004</u>	<u>2005</u>	2006	2007 ^e
Production, marketable	35,000	35,800	36 <u>,100</u>	30,100	29,700
Sold or used by producers	36,400	36,500	35,200	30,200	31,000
Imports for consumption	2,400	2,500	2,630	2,420	2,800
Exports	64			_	
Consumption ¹	38,800	39,000	37,800	32,600	33,800
Price, average value, dollars per ton, f.o.b. mine ²	27.01	27.79	29.61	30.49	39.30
Stocks, producer, yearend	7,540	7,220	6,970	7,070	5,000
Employment, mine and beneficiation plant, number ^e	2,900	2,700	2,700	2,500	2,350
Net import reliance ³ as a percentage of					
apparent consumption	9	7	7	7	14

Recycling: None.

Import Sources (2003-06): Morocco, 99%; and other, 1%.

<u>Tariff</u>: Item Number Normal Trade Relations 12-31-07

Natural calcium phosphates:

 Unground
 2510.10.0000
 Free.

 Ground
 2510.20.0000
 Free.

Depletion Allowance: 14% (Domestic and foreign).

Government Stockpile: None.

PHOSPHATE ROCK

Events, Trends, and Issues: In 2007, U.S. phosphate rock production fell below 30 million tons for the first time in more than 40 years, owing to lower production in Florida. Additionally, phosphate companies in Florida used a substantial amount of phosphate rock from stocks. One mine in Florida reopened after being closed for 18 months, but its output was offset by mine closures that occurred in 2006. China has surpassed the United States as the leading producer of phosphate rock in the world.

Domestic consumption of phosphate rock increased slightly because of higher phosphoric acid output. Domestic consumption of phosphate fertilizers was predicted to increase from 4 million tons P_2O_5 to about 4.3 million metric tons in 2008 because of higher corn planting, primarily for ethanol production.

The United States remained the world's leading consumer, producer, and supplier of phosphate fertilizers; however, its share of the world market has been shrinking. Phosphate fertilizer production increasingly is being located in the large consuming regions of Asia and South America, reducing the need for imported fertilizers to these regions. U.S. exports of phosphate fertilizer to China and India, the two largest consumers of phosphate fertilizers, have dropped significantly since 2000. Exports of DAP to India rebounded slightly in 2005-06 owing to temporary plant closures in India and increased consumption, but dropped by about 30% from 2006 to 2007 because of increased foreign competition. Export tonnage of P_2O_5 contained in phosphate fertilizers decreased by about 20% in 2007 compared with that of 2006.

World Mine Production, Reserves, and Reserve Base:

World Wille Floudction, Neserves, and Neserve Base.								
	Mine p	roduction	Reserves⁴	Reserve base⁴				
	2006	<u>2007^e</u>						
United States	30,100	29,700	1,200,000	3,400,000				
Australia	2,300	2,200	77,000	1,200,000				
Brazil	5,800	6,000	260,000	370,000				
Canada	550	500	25,000	200,000				
China	30,700	35,000	6,600,000	13,000,000				
Egypt	2,200	2,300	100,000	760,000				
Israel	2,950	3,000	180,000	800,000				
Jordan	5,870	5,700	900,000	1,700,000				
Morocco and Western Sahara	27,000	28,000	5,700,000	21,000,000				
Russia	11,000	11,000	200,000	1,000,000				
Senegal	600	800	50,000	160,000				
South Africa	2,600	2,700	1,500,000	2,500,000				
Syria	3,850	3,800	100,000	800,000				
Togo	1,000	1,000	30,000	60,000				
Tunisia	8,000	7,700	100,000	600,000				
Other countries	7,740	8,000	890,000	2,200,000				
World total (rounded)	142,000	147,000	18,000,000	50,000,000				

<u>World Resources</u>: Foreign reserve data were derived from information received from Government sources, individual companies, and independent sources. Reserve data for China were based on official government data and included deposits of low-grade ore. Production data for China do not include small "artisanal" mines. 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 sedimentary 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. — Zero.

¹Defined as phosphate rock 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.