

PHOSPHATE ROCK

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: Phosphate rock ore was mined by 5 firms at 11 mines in 4 States and processed into an estimated 27.1 million tons of marketable product valued at \$2.4 billion, f.o.b. mine. Florida and North Carolina accounted for about 80% 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 45% of the wet-process phosphoric acid produced was exported in the form of upgraded granular diammonium and monoammonium phosphate (DAP and MAP, respectively) fertilizer, and merchant-grade phosphoric acid. 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:	2010	2011	2012	2013	2014^e
Production, marketable	25,800	28,100	30,100	31,200	27,100
Used by producers	28,100	28,600	27,300	28,800	28,100
Imports for consumption	2,400	3,350	3,080	2,560	2,570
Consumption ¹	30,500	32,000	30,400	31,300	30,600
Price, average value, dollars per ton, f.o.b. mine ²	76.69	96.64	102.54	91.11	90.00
Stocks, producer, yearend	5,620	4,580	6,700	9,000	6,800
Employment, mine and beneficiation plant, number ^e	2,300	2,260	2,230	2,170	2,100
Net import reliance ³ as a percentage of apparent consumption	16	13	3	1	15

Recycling: None.

Import Sources (2010–13): Morocco, 74%; and Peru, 26%.

Tariff: Item	Number	Normal Trade Relations 12–31–14
Natural calcium phosphates:		
Unground	2510.10.0000	Free.
Ground	2510.20.0000	Free.

Depletion Allowance: 14% (Domestic and foreign).

Government Stockpile: None.

Events, Trends, and Issues: U.S. phosphate rock production was estimated to have been lower in 2014 compared with that of 2013, owing to producers drawing from higher than average inventories and the closure of a mine in Florida. Domestic consumption decreased because of lower phosphoric acid and fertilizer production. World production was estimated to be slightly lower in 2014 because of lower output from China.

The leading U.S. phosphate rock producer completed its acquisition of the phosphate assets of another producer in central Florida, adding a fertilizer plant, mine, and processing facility to its assets. The company also closed the last phosphate rock mine in Polk County, FL, in June. This reduced U.S. phosphate rock annual production capacity from 34.7 million tons to 32.7 million tons at 10 active mines. A new mine opened in Idaho in late 2013 as replacement for a mine that had been exhausted. The two other active phosphate rock companies in Idaho are developing new mines to replace existing mines that will be mined out over the next several years. The new mines will be located near the existing facilities in Caribou County, ID.

A Canadian company continued development of a new underground phosphate rock mine in Bear Lake County in southeastern Idaho at the site of several underground phosphate rock mines that operated intermittently from 1907–76. The company expected to begin production in 2015, with an annual production capacity of 900,000 tons.

PHOSPHATE ROCK

World phosphate rock production capacity was projected to increase gradually from 225 Mt in 2014 to 258 Mt in 2018. Most of the increase was planned to occur from expansion of existing mines in Morocco and development of a new mine in Saudi Arabia. The rest of the increase was expected from expansion of existing mines in Jordan, Kazakhstan, Peru, Russia, and Tunisia.

World consumption of P_2O_5 contained in fertilizers was projected to increase from 42.2 Mt in 2014 to 45.9 Mt in 2018, with the largest growth occurring in Asia and South America.

World Mine Production and Reserves: Reserves for Australia were revised by Geoscience Australia to include new mines under development. Reserves for Egypt were revised based on information reported by producers. Canadian reserves were revised to include a new mine under development in Quebec.

	Mine production		Reserves ⁴
	2013	2014 ^e	
United States	31,200	27,100	1,100,000
Algeria	1,500	1,500	2,200,000
Australia	2,600	2,600	1,030,000
Brazil	6,000	6,750	270,000
Canada	400	--	76,000
China ⁵	108,000	100,000	3,700,000
Egypt	6,500	6,000	715,000
India	1,270	2,100	35,000
Iraq	250	250	430,000
Israel	3,500	3,600	130,000
Jordan	5,400	6,000	1,300,000
Kazakhstan	1,600	1,600	260,000
Mexico	1,760	1,700	30,000
Morocco and Western Sahara	26,400	30,000	50,000,000
Peru	2,580	2,600	820,000
Russia	10,000	10,000	1,300,000
Saudi Arabia	3,000	3,000	211,000
Senegal	800	700	50,000
South Africa	2,300	2,200	1,500,000
Syria	500	1,000	1,800,000
Togo	1,110	1,200	30,000
Tunisia	3,500	5,000	100,000
Vietnam	2,370	2,400	30,000
Other countries	2,580	2,600	300,000
World total (rounded)	225,000	220,000	67,000,000

World Resources: Some world reserves were reported only in terms of ore and grade. 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, Finland, 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. Dredge mining of phosphate rock deposits offshore of Namibia and New Zealand were planned to start before 2020. World resources of phosphate rock are more than 300 billion tons.

Substitutes: There are no substitutes for phosphorus in agriculture.

^eEstimated.

¹Defined as phosphate rock sold or used + imports.

²Marketable phosphate rock, weighted value, all grades.

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

⁴See [Appendix C](#) for resource/reserve definitions and information concerning data sources.

⁵Production data for large mines only.