



# 2014 Minerals Yearbook

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## PHOSPHATE ROCK [ADVANCE RELEASE]

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# PHOSPHATE ROCK

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In 2014, U.S. phosphate rock consumption, production, stocks, and trade were all lower than those in 2013. Domestic production of marketable phosphate rock was 19% lower than that in 2013. World phosphate rock production was estimated to be 218 million metric tons (Mt), a 4% decrease from that of 2013. Reported domestic use of phosphate rock decreased to 26.7 Mt from 28.8 Mt in 2013 because of lower production of phosphoric acid. Producer stocks of phosphate rock decreased to 5.9 Mt, 35% less than at yearend 2013 (table 3). U.S. apparent consumption decreased by 9% to 29.1 Mt in 2014 from 31.9 Mt in 2013 (table 1).

Phosphorus is an essential element for plant and animal nutrition and is consumed primarily as a principal component of nitrogen-phosphorus-potassium (NPK) fertilizers. Phosphate rock minerals are the only significant global resource of phosphorus. In this report (unless noted otherwise), mine production is reported in terms of marketable production, which refers to beneficiated phosphate rock with a suitable phosphorus pentoxide ( $P_2O_5$ ) content for wet-process phosphoric acid or elemental phosphorus manufacturing. Percentages have been calculated using unrounded data.

Domestic production of phosphoric acid for agricultural use in 2014 decreased to 7.57 Mt  $P_2O_5$  from 8.22 Mt in 2013. Combined production of diammonium phosphate (DAP) and monoammonium phosphate (MAP), the major fertilizer products manufactured from phosphoric acid, was 4.66 Mt  $P_2O_5$ , which was 6% lower than that in 2013 (Fertilizer Institute, The, 2015a).

## Production

The U.S. Geological Survey obtained domestic phosphate rock production data from monthly and semiannual voluntary canvasses of all five companies that mined phosphate rock. All companies responded to the canvasses, representing 100% of production data. In 2014, phosphate rock was produced at six mines in Florida, three in Idaho, and one each in North Carolina and Utah (table 2).

The U.S. phosphate industry is concentrated in central Florida in the counties of Hardee, Hillsborough, Manatee, and Polk. In 2014, the mines in Florida accounted for 65% of domestic annual production capacity. The Mosaic Company operated five mines in the region; however, it closed the Hookers Prairie Mine in July because its reserves had been depleted. Hookers Prairie was the last phosphate rock mine to operate in Polk County (Green Markets, 2014d). PCS Phosphate Co., Inc. operated one mine in Hamilton County in northern Florida (table 2).

In March 2014, Mosaic completed its acquisition of all CF Industries Holdings Inc. phosphate assets in Florida, which included the South Pasture Mine in Hardee County and a phosphate plant in Plant City (Green Markets, 2014a).

In Beaufort County, NC, PCS Phosphate operated a large integrated production facility that included a mine, as well as animal feed, fertilizer, and phosphoric acid plants.

In the Western Phosphate Field of Idaho, Montana, Utah, and Wyoming, four mines were active in 2014—three in Idaho and one in Utah (table 2). In Idaho, phosphate rock was mined in Caribou County by Nu-West Industries, Inc. (a subsidiary of Agrium Inc., Calgary, Alberta, Canada), P4 Production, LLC (a subsidiary of Monsanto Co.), and J.R. Simplot Co; Simplot also operated the Vernal Mine in Uintah County, UT.

Stonegate Agricom Ltd. (Toronto, Ontario, Canada) continued to develop the Paris Hills phosphate project in Bear Lake County in southeastern Idaho. The company planned to open an underground phosphate rock mine in a 1,010-hectare area where three mines operated intermittently during the 20th century. The Bloomington Canyon Mine operated from 1942 to 1943 and 1973 to 1975, the Consolidated Mine operated from 1930 to 1932, and the Paris Canyon Mine operated from 1917 to 1926 (Jasinski and others, 2004). In May 2013, Stonegate obtained mineral leases for the Paris Hills phosphate project and expected to receive all permits and begin mining by early 2015; however, the company suspended development activity in January 2015 owing to financial constraints. Stonegate had planned to produce an average of 904,000 metric tons per year (t/yr) of phosphate rock for about 19 years (Green Markets, 2015).

## Consumption

Phosphate rock was used primarily for production of wet-process phosphoric acid for fertilizer applications, which accounted for more than 90% of domestic consumption. The remainder was used for animal feed supplements, direct application to soil, and elemental phosphorus production. Domestic apparent consumption of phosphate rock was 29.1 Mt compared with 31.9 Mt in 2013 (table 1).

All phosphate rock mining companies were vertically integrated, having one or more fertilizer plants, usually located near the mine. No sales of domestically mined phosphate rock were reported by producers. Mosaic was the leading company with about 54% of domestic phosphoric acid production and 11% of world output. In 2014, the company operated four wet-process phosphoric acid plants and four fertilizer plants in Florida and one of each in Louisiana (Mosaic Company, The, 2015, p. 5–6).

PCS had phosphoric acid and fertilizer production facilities near its mines in Florida and North Carolina. In Idaho, Simplot sent ore from its Smoky Canyon Mine by slurry pipeline to its fertilizer plant in Pocatello, ID; Simplot sent ore by pipeline from the Vernal Mine in Utah to its plant in Rock Springs, WY.

Two companies—Mississippi Phosphates Corp. (Pascagoula, MS) and PCS Nitrogen, Inc. (Geismar, LA)—manufactured wet-process phosphoric acid using imported

phosphate rock from Morocco. Mississippi Phosphates produced phosphate fertilizer products for domestic and export markets. In November, Mississippi Phosphates declared bankruptcy and permanently closed its production facility in December. The company planned to sell its assets in 2015, but the phosphate plant was not expected to reopen (Green Markets, 2014c).

PCS Nitrogen sold some merchant-grade phosphoric acid to Innophos Holdings, Inc., which had a nearby facility for upgrading into high-purity phosphoric acid for technical- and food-grade applications (Innophos Holdings, Inc., 2015, p. 4).

Monsanto operated the only elemental phosphorus plant in the United States in Soda Springs, ID. The company used elemental phosphorus to manufacture phosphorus trichloride, which was used as a chemical intermediary for the production of glyphosate-base herbicides (Monsanto Co., 2014, p. 6). In other countries, elemental phosphorus was used chiefly to manufacture high-purity phosphoric acid by burning the phosphorus in water, producing what is known as thermal acid. Worldwide, there has been a gradual shift to manufacturing high-purity phosphoric acid from wet-process acid, which has lower production costs and none of the hazardous waste disposal issues that are associated with elemental phosphorus. Thermal acid, however, still accounts for more than 50% of annual world production capacity of high-purity phosphoric acid, primarily in China. The only other operating elemental phosphorus facilities in the world were in Kazakhstan and Vietnam.

The United States is considered a mature market for phosphate fertilizers, with average annual consumption of slightly more than 4.0 Mt from 1992 through 2012. Fertilizer consumption information is collected by the American Association of Plant Food Officials on a crop year (July 1 to June 30) basis. The data for crop year 2012 (July 1, 2011, to June 30, 2012) indicated that consumption of  $P_2O_5$  in fertilizers was 3.95 Mt compared with 3.90 Mt in crop year 2011 (Slater and Kirby, 2014, p. 6).

## Transportation

In Florida and North Carolina, crude phosphate rock ore was sent by slurry pipeline from the mines to the processing plants. All beneficiated phosphate rock was used internally to manufacture wet-process phosphoric acid; the beneficiated phosphate rock was sent by conveyers to acid plants. In central Florida, animal feed products, fertilizers, and phosphoric acid were sent by rail to domestic customers or to the Port of Tampa for export. The Port of Tampa handles the largest volume of fertilizer materials in the United States.

In northern Florida, PCS Phosphate transported its fertilizer products by rail to consumers; some materials, however, were sent by rail to the PCS Phosphate port facility at Morehead City, NC, for export. PCS transported products from its Aurora, NC, complex to the Port of Morehead City by barge for export or delivery by rail to domestic consumers. Phosphoric acid producers along the Gulf of Mexico received imported phosphate rock by ship and transported their products by barge on the Mississippi River and its tributaries or by rail to domestic consumers. In Idaho and Utah, phosphate rock was transported to the processing facility from the mine via rail, slurry pipeline, and truck.

## Prices

Price data were collected through the semiannual canvass of producers and reflected the value of phosphate rock used for production of phosphoric acid and elemental phosphorus. Because phosphate rock produced in the United States is all used internally, it is not a good indicator of actual world price trends. The total value of phosphate rock used in the United States decreased by 18% from that of 2013, and the average unit value decreased by 11% to \$80.31 per metric ton from \$90.72 per ton in 2013 (table 1). No standard domestic or world price for phosphate rock exists. Average ranges of world prices were published in various industry trade journals based on a sample of transactions. The average unit value of \$99.75 per metric ton of imported phosphate rock was determined based on the U.S. Census Bureau customs value and included cost, insurance, and freight (table 1). The import price was in range of average world prices.

## Foreign Trade

U.S. producers reported no exports of phosphate rock in 2014 (table 1). The United States is the leading importer of phosphate rock in the world. In 2014, about 75% of imported phosphate rock was from Peru with the rest from Morocco. In 2014, U.S. imports were estimated to be 2.39 Mt, down from 3.17 Mt in 2013. This reflected the closure of the Mississippi Phosphates plant, which used imported rock from Morocco, and Mosaic importing more phosphate rock from Peru. All imported phosphate rock was consumed by phosphoric acid producers along the Gulf of Mexico—Mississippi Phosphates (Mississippi), Mosaic (Louisiana), and PCS Nitrogen (Louisiana). U.S. import tonnage of other phosphate fertilizers was insignificant compared with exports of the same materials (tables 5–7, 9).

The United States is the leading exporter of phosphate fertilizers in the world, accounting for about 15% of world  $P_2O_5$  contained in processed phosphate exports in 2014. In total, exports of phosphoric acid and phosphate fertilizers decreased by 7% from 2013, in terms of  $P_2O_5$  content (Fertilizer Institute, The, 2015b). India was the leading destination for U.S. phosphate exports (tables 5–7).

## World Review

World production of phosphate rock decreased by 4% in 2014 compared with that of 2013. China (100 Mt), Morocco (30 Mt), and the United States (25.3 Mt) were the leading producing countries, accounting for 71% of the world total (table 10). In 2014, major projects were under development in Morocco (capacity expansion) and Saudi Arabia (new mining operation). New mines were under various stages of development in Angola, Australia, Brazil, Canada, Congo (Brazzaville), Guinea-Bissau, Jordan, Kazakhstan, Mali, Mozambique, New Zealand, Peru, and Uganda. Expansion of production capacity was planned in Egypt, Senegal, South Africa, Tunisia, and Togo. However, many of the projects were not expected to begin operations until after 2016 (Prud'homme, 2015).

**Kazakhstan.**—In July, MCC EuroChem OJSC started production at its new mine in the Zhambyl region in southern

Kazakhstan. The mine has an annual production capacity of 600,000 metric tons (t) and the company expected to produce around 120,000 t in 2015 and ramp up to full capacity in 2016. The ore was processed at the EuroChem facility in Russia (Green Markets, 2014b).

**Morocco.**—OCP S.A. continued with expansion of its Khouribga and Gantour Mines, which will increase production capacity from 30 million metric tons per year (Mt/yr) to 50 Mt/yr by 2018. In October 2014, OCP completed a slurry pipeline to transport phosphate rock concentrate from the Khouribga mining complex to Jorf Lasfar for processing into phosphoric acid or export. The 187-kilometer pipeline can transport up to 38 Mt/yr of concentrate. A new 450,000-t/yr phosphoric acid plant was completed in conjunction with the pipeline (Fertilizer International, 2015b).

**Russia.**—North-Western Phosphorous Company AO (NWPC) (a subsidiary of JSC Acron) began construction of a 1-Mt/yr-capacity expansion to its Oleniy Ruchey Mine in the Murmansk Region. NWPC began production at the mine in 2013 and ramped up to full capacity of 1.1 Mt/yr by mid-2014. The company planned to complete the expansion by 2017 (JSC Acron, 2015, p. 15).

**Saudi Arabia.**—Ma'aden Phosphate Co. (MPC) continued development of the Umm Wu'al Phosphate Mine on the Al Khabra deposit. The mine was part of the Wa'ad Al Shamal phosphate project joint venture among MPC (60%), Mosaic (25%), and Saudi Arabian Basic Industries Corp. (15%). The project was to include the phosphate rock mine and beneficiation plant and production facilities for phosphoric acid, animal feed, purified phosphoric acid, sodium tripolyphosphate, and sulfuric acid. The phosphate products would be sent by rail to Ras Al Khair to be processed into fertilizers. Existing fertilizer plants would be expanded at Ras Al Khair as part of the project. Production capacity was planned to be 5.3 Mt/yr of phosphate concentrate, 1.5 Mt/yr of phosphoric acid, and 3.5 Mt/yr of phosphate fertilizers. The project was expected to be completed in late 2016 (Fertilizer International, 2015a).

## Outlook

World phosphate rock supply is projected to increase to 258 Mt/yr in 2018 from 218 Mt/yr in 2014. Global production capacity is projected to increase to 313 Mt/yr in 2018 from 250 Mt/yr in 2014. The increase will be from a combination of new mines and expansions of existing operations. The bulk of the new capacity will be in Morocco and Saudi Arabia (Fertilizer International, 2015a). U.S. production capacity will likely remain the same through 2016. Three new mines are planned in Idaho, but two would be as replacements for existing mines and would not significantly change domestic production capacity. Two mines are under development in Florida, but neither has been permitted.

The projected increases in annual production capacity for phosphate rock will supply the associated increase in phosphoric acid and fertilizer production. World population growth ensures the need for phosphate fertilizer to grow crops for food and biofuels. According to the International Fertilizer Industry Association, world consumption of  $P_2O_5$  in all uses is projected to increase slightly during the next several years to 48 Mt in

2018 from 44 Mt in 2014. Phosphoric acid production capacity is expected to increase gradually to 62 Mt  $P_2O_5$  in 2018 from 56 Mt  $P_2O_5$  in 2014 (Fertilizer International, 2015a).

Domestic production of phosphate rock in 2015 is expected to be higher than that in 2014, but consumption is expected to be slightly lower owing to a projected decrease in phosphoric acid production and phosphate fertilizer production.

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TABLE 1  
 SALIENT PHOSPHATE ROCK STATISTICS<sup>1</sup>

(Thousand metric tons and thousand dollars unless otherwise specified)

	2010	2011	2012	2013	2014
United States:					
Mine production (crude ore)	106,000	129,000	150,000	139,000	112,000
Marketable production:					
Quantity:					
Gross weight	25,800	28,100	30,100	31,200	25,300
P <sub>2</sub> O <sub>5</sub> content	7,400	8,160	8,590	8,930	7,110
Value	1,980,000	2,720,000	3,080,000	2,850,000	1,990,000
Value, average <sup>2</sup>	76.69	96.64	102.54	91.11	78.59
Used by producers:					
Quantity:					
Gross weight	28,100	28,600	27,300	28,800	26,700
P <sub>2</sub> O <sub>5</sub> content	8,000	8,320	7,720	8,200	7,540
Value	2,210,000	2,850,000	2,620,000	2,610,000	2,150,000
Value, average	78.50	99.61	96.12	90.72	80.31
Imports for consumption: <sup>3</sup>					
Quantity, gross weight	2,780 <sup>r</sup>	3,750 <sup>r</sup>	3,570	3,170	2,390
Value, cost, insurance, and freight	235,000 <sup>r</sup>	477,000 <sup>r</sup>	481,000	382,000	238,000
Value, average	84.55 <sup>r</sup>	127.36 <sup>r</sup>	134.67	120.73 <sup>r</sup>	99.75
Consumption, apparent, gross weight <sup>4</sup>	30,900 <sup>r</sup>	32,400 <sup>r</sup>	30,900 <sup>r</sup>	31,900 <sup>r</sup>	29,100
Stocks, December 31, producers	5,620	4,580	6,700	9,000	5,880
World, production, gross weight	183,000 <sup>r</sup>	200,000 <sup>r</sup>	215,000 <sup>r</sup>	226,000 <sup>r,e</sup>	218,000 <sup>e</sup>

<sup>r</sup>Estimated. <sup>r</sup>Revised.

<sup>1</sup>Data are rounded to no more than three significant digits, except average values per metric ton.

<sup>2</sup>Average value based on the used-by-producer values.

<sup>3</sup>Source: U.S. Census Bureau.

<sup>4</sup>Expressed as used by producer plus imports.



TABLE 2  
ACTIVE PHOSPHATE ROCK MINES IN THE UNITED STATES IN 2014

Owner	Mine	County and State
Mosaic Company, The	Four Corners	Hillsborough/Manatee, FL.
Do.	Hookers Prairie <sup>1</sup>	Polk, FL.
Do.	South Fort Meade	Hardee, FL.
Do.	South Pasture	Do.
Do.	Wingate	Manatee, FL.
Nu-West Industries, Inc. (Agrium Inc.)	Rasmussen Ridge	Caribou, ID.
P4 Production, LLC. (Monsanto Co.)	Blackfoot Bridge	Do.
PCS Phosphate Co., Inc.	Aurora	Beaufort, NC.
Do.	Swift Creek	Hamilton, FL.
Simplot, J.R., Co.	Smoky Canyon	Caribou, ID.
Do.	Vernal	Uintah, UT.

Do. Ditto.

<sup>1</sup>Closed July 2014.

TABLE 3  
PRODUCTION OF PHOSPHATE ROCK IN THE UNITED STATES, BY PERIOD<sup>1</sup>

(Thousand metric tons and thousand dollars)

Period	Mine production, crude ore		Marketable production, beneficiated			Ending stocks, rock
	Rock	P <sub>2</sub> O <sub>5</sub> content	Rock	P <sub>2</sub> O <sub>5</sub> content	Value <sup>2</sup>	
2013:						
January–June	71,700	7,510	16,300	4,680	1,590,000	8,770
July–December	67,200	6,950	14,900	4,250	1,250,000	9,000
Total	139,000	14,500	31,200	8,930	2,850,000	XX
2014:						
January–June	57,100	6,090	13,000	3,680	999,000	7,940
July–December	54,700	5,970	12,300	3,430	988,000	5,880
Total	112,000	12,100	25,300	7,110	1,990,000	XX

XX Not applicable.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Based on the per ton sold or used values.

TABLE 4  
PHOSPHATE ROCK SOLD OR USED BY PRODUCERS  
IN THE UNITED STATES, BY PERIOD<sup>1</sup>

(Thousand metric tons and thousand dollars)

Period	Rock	P <sub>2</sub> O <sub>5</sub> content	Value <sup>2</sup>
2013:			
January–June	14,300	4,100	1,380,000
July–December	14,500	4,100	1,230,000
Total	28,800	8,200	2,610,000
2014:			
January–June	12,900	3,630	992,000
July–December	13,800	3,910	1,160,000
Total	26,700	7,540	2,150,000

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Free on board mine.

TABLE 5  
U.S. EXPORTS OF DIAMMONIUM PHOSPHATE<sup>1,2</sup>

(Thousand metric tons and thousand dollars)

Country	2013		2014	
	Quantity	Value	Quantity	Value
Argentina	253 <sup>r</sup>	107,000 <sup>r</sup>	105	45,400
Australia	102	48,600	131	54,900
Brazil	583	255,000 <sup>r</sup>	421	182,000
Canada	109 <sup>r</sup>	36,700 <sup>r</sup>	130	45,100
China	163	62,200	59	19,500
Colombia	114 <sup>r</sup>	50,500 <sup>r</sup>	136	63,800
India	709	315,000	614	278,000
Japan	206 <sup>r</sup>	91,400 <sup>r</sup>	163	74,900
Mexico	229 <sup>r</sup>	100,000 <sup>r</sup>	237	106,000
Peru	135 <sup>r</sup>	59,900 <sup>r</sup>	176	77,300
Other	595 <sup>r</sup>	263,000 <sup>r</sup>	332	145,000
Total	3,200 <sup>r</sup>	1,390,000	2,500	1,090,000

<sup>r</sup>Revised.

<sup>1</sup>Presentation of annual data is based on the top 10 quantities (gross weight) of the leading countries in 2014.

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 6  
U.S. EXPORTS OF MONOAMMONIUM PHOSPHATE<sup>1,2</sup>

(Thousand metric tons and thousand dollars)

Country	2013		2014	
	Quantity	Value	Quantity	Value
Argentina	240 <sup>r</sup>	108,000 <sup>r</sup>	145	63,500
Australia	168	73,500	257	110,000
Brazil	433	193,000 <sup>r</sup>	647	287,000
Canada	702	391,000	773	396,000
Colombia	103	45,800	127	58,800
Japan	119 <sup>r</sup>	52,100 <sup>r</sup>	101	48,500
Mexico	62	24,800	41	19,900
Peru	11	5,790 <sup>r</sup>	21	9,170
Uruguay	41	18,100 <sup>r</sup>	21	7,510
Other	34 <sup>r</sup>	15,400 <sup>r</sup>	24	11,000
Total	1,910 <sup>r</sup>	928,000 <sup>r</sup>	2,160	1,010,000

<sup>r</sup>Revised.

<sup>1</sup>Presentation of annual data is based on the top 9 quantities (gross weight) of the leading countries in 2014.

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 7  
U.S. EXPORTS OF PHOSPHORIC ACID<sup>1,2</sup>

(Thousand metric tons and thousand dollars)

Country	2013		2014	
	Quantity	Value	Quantity	Value
Brazil	113	40,500	83	29,900
Canada	11	3,400 <sup>r</sup>	7	2,110
India	611 <sup>r</sup>	190,000 <sup>r</sup>	445	143,000
Mexico	90	26,800	80	23,700
Other	2	736 <sup>r</sup>	8	2,620
Total	827 <sup>r</sup>	262,000 <sup>r</sup>	623	201,000

<sup>r</sup>Revised.

<sup>1</sup>Excludes superphosphoric acid tonnage.

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 8  
U.S. EXPORTS OF ELEMENTAL PHOSPHORUS<sup>1</sup>

Country	2013		2014	
	Quantity (metric tons)	Value <sup>2</sup> (thousands)	Quantity (metric tons)	Value <sup>2</sup> (thousands)
Brazil	15,700 <sup>r</sup>	\$51,100 <sup>r</sup>	15,500	\$50,600
Canada	1,210	3,290	1,260	3,490
Mexico	30	57	37	74
Netherlands	2,800	5,420	3,030	6,040
Other	478 <sup>r</sup>	2,060	244	634
Total	20,200 <sup>r</sup>	62,000 <sup>r</sup>	20,100	60,800

<sup>r</sup>Revised.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Free alongside ship values.

Source: U.S. Census Bureau.



TABLE 9  
U.S. IMPORTS FOR CONSUMPTION OF PHOSPHATE ROCK AND PHOSPHATIC  
MATERIALS<sup>1</sup>

(Thousand metric tons and thousand dollars)

Phosphatic materials	2013		2014	
	Quantity	Value <sup>2</sup>	Quantity	Value <sup>2</sup>
Phosphate rock:				
Unground	2,690	325,000 <sup>r</sup>	2,120	193,000
Ground	476	57,500 <sup>r</sup>	268	45,400
Total	3,170	382,000	2,390	238,000
Dicalcium phosphate	10	18,200	11	13,800
Elemental phosphorus	15	54,000	16	59,400
Normal superphosphate	1	460	3	1,070
Triple superphosphate	236	105,000	432	180,000
Diammonium phosphate	142	74,600	404	198,000
Monoammonium phosphate	669	342,000	959	467,000
Fertilizer containing nitrates and phosphates	10	1,270	21	11,900
Phosphoric acid	2	548	1	263

<sup>r</sup>Revised.

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>Declared cost, insurance, freight values.

Sources: U.S. Census Bureau.

TABLE 10  
PHOSPHATE ROCK: WORLD PRODUCTION, BY COUNTRY<sup>1,2</sup>

(Thousand metric tons)

Commodity and country <sup>3</sup>	Gross weight					P <sub>2</sub> O <sub>5</sub> content				
	2010	2011	2012	2013 <sup>c</sup>	2014 <sup>c</sup>	2010	2011	2012	2013 <sup>c</sup>	2014 <sup>c</sup>
Algeria	1,525	1,287	1,250 <sup>r</sup>	1,151 <sup>4</sup>	1,500	458 <sup>e</sup>	386 <sup>e</sup>	375 <sup>e</sup>	345	444
Australia <sup>e</sup>	2,600	3,169 <sup>r,4</sup>	2,850 <sup>r,4</sup>	2,500 <sup>r</sup>	2,600	600	800 <sup>r,4</sup>	730 <sup>r,4</sup>	632 <sup>r</sup>	640
Brazil, concentrate	6,192	6,738	6,740	6,136 <sup>r,4</sup>	6,040 <sup>4</sup>	2,179	2,374	2,388	2,148 <sup>r,4</sup>	2,175 <sup>4</sup>
Canada <sup>e</sup>	900 <sup>r</sup>	900 <sup>r</sup>	650 <sup>r</sup>	300 <sup>r</sup>	--	325 <sup>r</sup>	325 <sup>r</sup>	230 <sup>r</sup>	111 <sup>r</sup>	--
Chile:										
Apatite	9	14	9	12 <sup>4</sup>	12	3	4	3	4 <sup>4</sup>	4
Guano	1	2	1	3 <sup>4</sup>	3	NA	NA	NA	NA	NA
Phosphorite	41	--	6	--	--	NA	--	NA	--	--
China	68,000	81,000	95,300	108,000	100,000	20,400	24,000	28,500	32,000	30,000
Colombia	45	30	30	25 <sup>r</sup>	25	14	9	9	9	9
Egypt, beneficiated	3,435	4,746	6,236	5,922 <sup>4</sup>	5,500	1,030	1,400	1,835	1,777 <sup>4</sup>	1,650
Finland	817	870	858	877 <sup>4</sup>	900	289 <sup>e</sup>	307 <sup>e</sup>	302 <sup>e</sup>	309	329
India <sup>e</sup>	1,900 <sup>r</sup>	1,900 <sup>r</sup>	1,150	1,200	1,100	500 <sup>r</sup>	500 <sup>r</sup>	330 <sup>r</sup>	300	300
Indonesia <sup>e</sup>	1	1	1	1	1	(5)	(5)	(5)	(5)	(5)
Iran <sup>e</sup>	210	98 <sup>4</sup>	100	100	100	80 <sup>r</sup>	37 <sup>r</sup>	33 <sup>r</sup>	38 <sup>r</sup>	38
Iraq, beneficiated	139	122	250	350 <sup>r</sup>	200	42	37	75	105 <sup>r</sup>	67
Israel	3,135	3,105	3,514	3,578 <sup>4</sup>	3,357 <sup>4</sup>	860 <sup>e</sup>	850 <sup>e</sup>	942 <sup>r,e</sup>	960	900
Jordan	6,529	7,594	6,383	5,399 <sup>4</sup>	7,144 <sup>4</sup>	2,090	2,430	2,043	1,728 <sup>4</sup>	2,286 <sup>4</sup>
Kazakhstan <sup>e</sup>	1,600	1,600	1,600	1,600	1,600	350	350	350	350	350
Korea, North <sup>e</sup>	300	300	300	300	300	95	95	95	95	95
Mexico	1,507	1,691	1,700	1,757 <sup>4</sup>	1,700	452	507	517	473 <sup>4</sup>	473
Morocco <sup>6</sup>	26,603	28,052	27,060	26,400 <sup>4</sup>	30,000	8,500	8,977	8,659	8,448 <sup>4</sup>	9,000
Pakistan	88	31	69	58 <sup>4</sup>	60	16	6	12	10 <sup>4</sup>	11
Peru <sup>7</sup>	791 <sup>r</sup>	2,544 <sup>r</sup>	3,209 <sup>r</sup>	3,546 <sup>r,4</sup>	3,801 <sup>4</sup>	245 <sup>r</sup>	774 <sup>r</sup>	975 <sup>r</sup>	1,075 <sup>r,4</sup>	1,155 <sup>4</sup>
Philippines	2	3	3	3 <sup>4</sup>	4	1	1	1	1 <sup>4</sup>	1
Russia <sup>e,8</sup>	10,600 <sup>r</sup>	10,300 <sup>r</sup>	10,300 <sup>r</sup>	11,000 <sup>r</sup>	11,000	4,000	3,900 <sup>r</sup>	3,900 <sup>r</sup>	4,160 <sup>r</sup>	4,160
Saudi Arabia	1,000	1,000	3,000	2,810 <sup>r,4</sup>	3,000	330	330	975 <sup>r</sup>	915 <sup>r</sup>	975
Senegal	1,079	1,411	1,416 <sup>r</sup>	900 <sup>r</sup>	900	312	362	363	260 <sup>r</sup>	297
South Africa	2,494	2,565	2,243 <sup>r</sup>	2,132 <sup>4</sup>	2,164 <sup>4</sup>	935	962	829 <sup>r</sup>	780 <sup>r,4</sup>	800
Sri Lanka	50	51	52	53 <sup>4</sup>	50	18	18	18	19	18
Syria	3,167	3,541	1,534	1,000 <sup>4</sup>	1,234	950	1,062	460	300 <sup>4</sup>	370
Tanzania	17	18 <sup>e</sup>	20	20	20	5	5 <sup>e</sup>	6	6	6
Thailand	36	3	2	2	2	11	1	1	1	1
Togo	695	866	1,159 <sup>r,9</sup>	1,214 <sup>r,4</sup>	1,200	250	310 <sup>e</sup>	420 <sup>r,e</sup>	440 <sup>r</sup>	435
Tunisia, washed	8,149	2,479	2,762	3,283 <sup>4</sup>	3,784 <sup>4</sup>	2,110 <sup>e</sup>	719 <sup>e</sup>	750 <sup>e</sup>	1,050	1,210
United States	25,800	28,100	30,100	31,200 <sup>4</sup>	25,300 <sup>4</sup>	7,400	8,160	8,590	8,930 <sup>4</sup>	7,110 <sup>4</sup>
Uzbekistan <sup>e</sup>	800	800	800	850	800	187	187	187	198	187
Venezuela	85	168	162	98 <sup>4</sup>	100	23	45	44	27	27
Vietnam	2,325	2,395	2,365	2,400	2,700	680	720	710	720	800
Zimbabwe, concentrate <sup>e</sup>	63	60	24	20 <sup>r</sup>	20	20	19	8	7 <sup>r</sup>	7
World total	183,000 <sup>r</sup>	200,000 <sup>r</sup>	215,000 <sup>r</sup>	226,000 <sup>r</sup>	218,000	55,800 <sup>r</sup>	61,000 <sup>r</sup>	65,700 <sup>r</sup>	68,700 <sup>r</sup>	66,300

<sup>e</sup>Estimated. <sup>r</sup>Revised. NA Not available. -- Zero.

<sup>1</sup>World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes data available through June 24, 2016. Figures are from official country sources where available.

<sup>3</sup>In addition to the commodities listed, Burkina Faso, Mali, Nauru, Nigeria, and Venezuela produced phosphate rock, and France and Luxembourg made basic Thomas converter slag, but information is inadequate to estimate output.

<sup>4</sup>Reported figure.

<sup>5</sup>Less than ½ unit.

<sup>6</sup>Includes production from Western Sahara.

<sup>7</sup>Source: Vale S.A.

<sup>8</sup>Estimated based on reported production in company reports.

<sup>9</sup>Reported by the Direction Générale de la Statistique et de la Comptabilité Nationale.