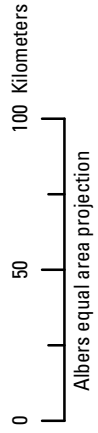
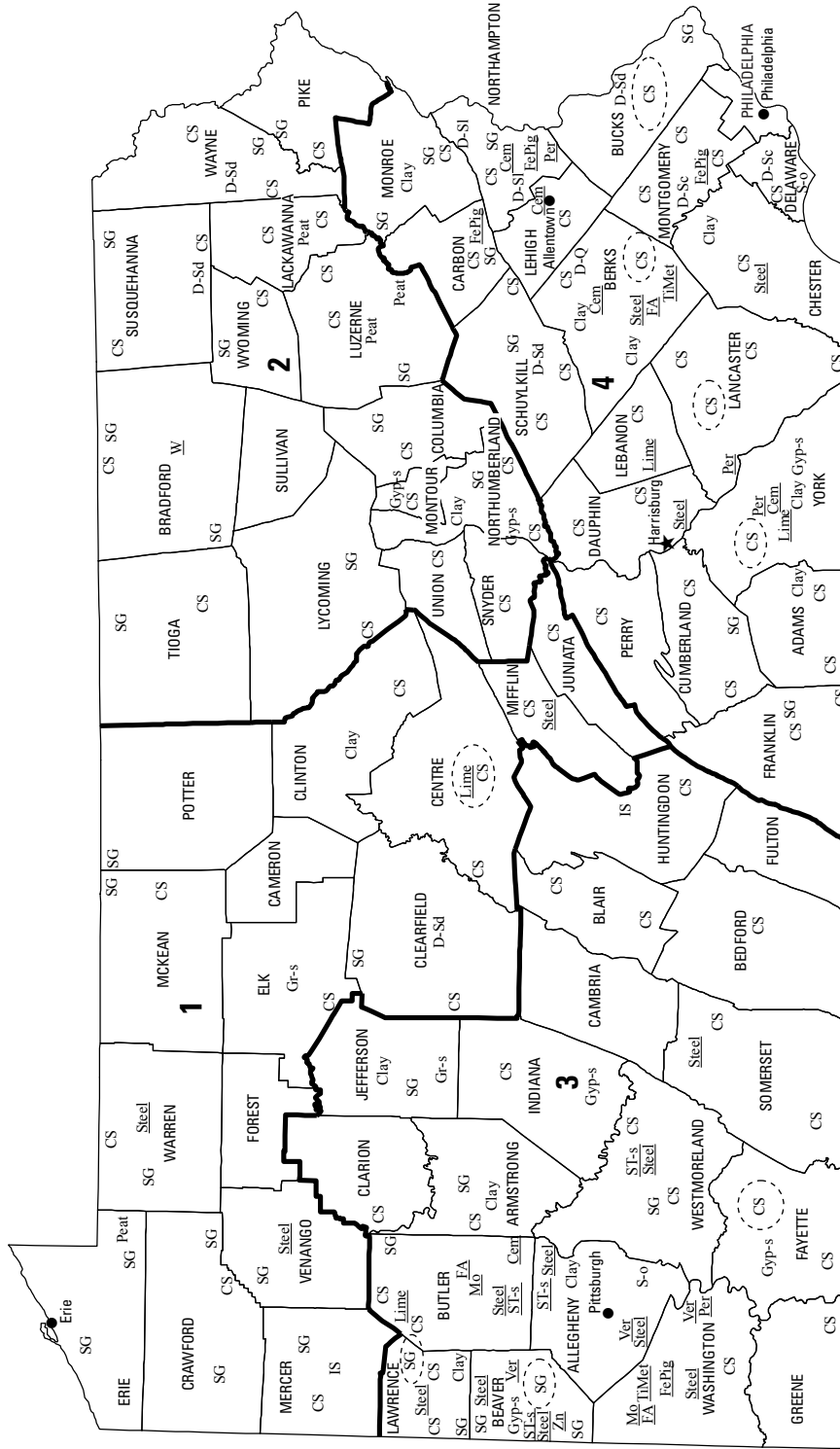




2012–2013 Minerals Yearbook

PENNSYLVANIA

PENNSYLVANIA



LEGEND

- County boundary
- ★ Capital
- City
- 1— Crushed stone/sand and gravel district boundary

MINERAL SYMBOLS
(Principal producing areas)

- Cem Cement plant
- Clay Common clay
- CS Crushed stone
- D-Q Dimension quartzite
- D-Sc Dimension schist
- D-Sd Dimension sandstone
- D-Sl Dimension slate
- FePig Iron oxide pigments plant
- FA Ferroalloys plant
- Gr-s Synthetic graphite
- Gyp-s Synthetic gypsum
- IS Industrial sand
- Lime Lime plant
- Mo Molybdenum plant
- Peat Peat
- Per Perlite plant
- S-o Sulfur (oil)
- SG Construction sand and gravel
- ST-s Stainless steel plant
- Steel Steel plant
- TiMet Titanium metal plant
- W Tungsten plant
- Ver Vermiculite plant
- Zn Zinc plant
- Concentration of mineral operations

Source: Pennsylvania Bureau of Topographic and Geologic Survey/U.S. Geological Survey (2012–13).

THE MINERAL INDUSTRY OF PENNSYLVANIA

This chapter has been prepared under a memorandum of understanding between the U.S. Geological Survey and the Pennsylvania Bureau of Topographic and Geologic Survey for collecting information on all nonfuel minerals.

In 2013, the value of the nonfuel mineral production¹ in the Commonwealth of Pennsylvania increased to \$1.51 billion,² 2.0% of the total U.S. nonfuel mineral production, ranking it 15th in the Nation. In 2012, the corresponding value was \$1.47 billion,² 1.95% of the U.S. total nonfuel mineral production, again ranking it 15th among the 50 States. In 2013, on a per capita basis, nonfuel mineral production in Pennsylvania had a value of \$118 compared with the national average of \$238. In 2012, the per capita value was \$115 compared with the national average of \$241.

The value of nonfuel mineral production in Pennsylvania for the years 2006 through 2013 was as follows (in billions of dollars):² \$1.74 (2006), \$1.86 (2007), \$1.97 (2008), \$1.63 (2009), \$1.66 (2010), \$1.54 (2011), \$1.47 (2012), and \$1.51 (2013).

In 2013, there were 3,097 employees in nonfuel mineral mines in Pennsylvania and 2,079 in mills and preparation plants. In 2012, the corresponding numbers were 3,248 in nonfuel mineral mines and 2,100 in mills and preparation plants (U.S. Mine Safety and Health Administration, 2013, p. 14; 2014, p. 14). In 2013, the average annual wage in Pennsylvania for all mining was \$67,158 compared with \$48,785 for all industries. In 2012, the corresponding figures were \$66,703 and \$48,140, respectively (National Mining Association, unpub. data, February 4, 2016).

In 2013, the leading mineral commodities in Pennsylvania, in descending order of value, were crushed stone, portland cement, and lime (table 1). On the basis of quantity in 2013, the State ranked second in crushed stone production out of 50 producing States and seventh in both portland cement and lime out of 34 and 33 producing States, respectively. Data for peat and industrial sand were withheld at the State level to protect company proprietary data, but the State was not a major producer of either one. In 2013, industrial sand sold or used by producers in the Middle Atlantic States that produced industrial sand (New Jersey, New York, and Pennsylvania) increased 6% in quantity and 11% in value compared with 2012; nationally, the increases were 23% and 30%, respectively. Peat production, from two active operations in 2013 and three in 2012, was combined with that from peat operations in other northeastern States that produced peat (Maine, New Jersey, and New York). In 2013, production quantity at all six peat operations combined was 50% less than 2012 when there were eight peat operations.

¹The terms “nonfuel mineral production” and related “values” encompass variations in meaning, depending upon the mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All USGS mineral production data published in this chapter are those available as of February 2016. Data in this report are rounded to three significant digits and percentages are calculated from unrounded data. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at <http://minerals.usgs.gov/minerals>.

²Partial total; excludes values that must be withheld to avoid disclosing company proprietary data.

Nationally, production decreased almost 5% to 465,000 t from 488,000 t in 2012.

Though considered downstream and, therefore, not included in the State’s total mineral production value, metals were produced in Pennsylvania using materials obtained from other domestic and foreign sources. Metals produced included ferroniobium, ferromolybdenum, ferrovanadium, molybdenum, stainless steel, steel, titanium, tungsten, and zinc. Pennsylvania’s steel plants in 2013 consumed 4.32 million metric tons (Mt) of scrap and 2.24 Mt of pig iron compared with 5.52 Mt of scrap and 2.97 Mt of pig iron in 2012 (Fenton, 2014, p. 38.10; 2015, p. 38.10). Nationally, scrap consumption had decreased by almost 7% and pig iron consumption by slightly more than 10%.

Pennsylvania also produced downstream industrial mineral commodities, such as finished iron oxide pigments and regenerator iron oxides—byproducts manufactured from steel industry wastes. Synthetic gypsum was produced from flue gas desulfurization units at power plants, and synthetic graphite was produced, which was important in the steel industry to raise the carbon content. Other industrial minerals processed, but not mined, in the State included perlite at expanding plants and vermiculite at exfoliating plants.

There were 646 producing industrial mineral operations in 2013, a decrease from 661 in 2012 (Pennsylvania Department of Environmental Protection, 2013, 2014).

References Cited

- Fenton, M.D., 2014, Iron and steel scrap , *in* Metals and minerals: U.S. Geological Survey Minerals Yearbook 2012, v. I, p. 38.1–38.22. (Accessed March 18, 2016, at http://minerals.usgs.gov/minerals/pubs/commodity/iron_&_steel_scrap/myb1-2012-fescr.pdf.)
- Fenton, M.D., 2015, Iron and steel scrap , *in* Metals and minerals: U.S. Geological Survey Minerals Yearbook 2013, v. I, p. 38.1–38.23. (Accessed March 18, 2016, at http://minerals.usgs.gov/minerals/pubs/commodity/iron_&_steel_scrap/myb1-2013-fescr.pdf.)
- Pennsylvania Department of Environmental Protection, [2013], Industrial minerals mining reports - 2012. (Accessed May 12, 2016, at <http://www.dep.pa.gov/Business/Land/Mining/BureauofMiningPrograms/Reports/IndustrialMinerals/Pages/2012Archive.aspx>.)
- Pennsylvania Department of Environmental Protection, [2014], Industrial minerals mining reports - 2013. (Accessed May 12, 2016, at <http://www.dep.pa.gov/Business/Land/Mining/BureauofMiningPrograms/Reports/IndustrialMinerals/Pages/2013Archive.aspx>.)
- U.S. Mine Safety and Health Administration, [2013], Mine injury and worktime, quarterly, January–December 2012: U.S. Mine Safety and Health Administration, Final, closeout edition, 33 p. (Accessed February 4, 2016, at http://arlweb.msha.gov/Stats/Part50/WQ/MasterFiles/MIWQ%20Master_20125.pdf.)
- U.S. Mine Safety and Health Administration, [2014], Mine injury and worktime, quarterly, January–December 2013: U.S. Mine Safety and Health Administration, Final, closeout edition, 34 p. (Accessed February 4, 2016, at http://arlweb.msha.gov/Stats/Part50/WQ/MasterFiles/MIWQ%20Master_20135.pdf.)

TABLE 1
NONFUEL MINERAL PRODUCTION IN PENNSYLVANIA^{1,2}

(Thousand metric tons and thousand dollars)

Mineral	2011		2012		2013	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	141	19,700 ^e	147	7,010 ^e	143	7,500 ^e
Portland	3,270	297,000 ^e	3,360	308,000 ^e	3,620	353,000 ^e
Clays, common	(3)	(3)	317	2,480	236	1,240
Gemstones, natural	NA	1	NA	1	NA	1
Lime	1,150	156,000	1,090	151,000	1,090	151,000
Sand and gravel, construction	12,800 ^f	115,000 ^f	11,600	103,000	11,200	101,000
Stone:						
Crushed	87,900 ^f	951,000 ^f	82,600	897,000	79,200	891,000
Dimension	25	5,040	25	6,540	25	5,890
Combined values of peat, sand and gravel (industrial), tripoli (2011), and value indicated by footnote 3	XX	W	XX	W	XX	W
Total	XX	1,540,000 ^f	XX	1,470,000	XX	1,510,000

^eEstimated. ^fRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; excluded from "Total." XX not applicable.

¹Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

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

³Withheld to avoid disclosing company proprietary data.

TABLE 2
PENNSYLVANIA: CRUSHED STONE SOLD OR USED IN THE UNITED STATES, BY TYPE¹

Type	2012				2013			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone ²	110	49,100	\$565,000	\$11.52	106	47,000	\$574,000	\$12.21
Dolomite	16	8,580	83,800	9.77	17	7,680	69,000	8.98
Marble	1	124	949	7.66	1	84	642	7.66
Granite	5	2,610	27,400	10.51	5	2,440	26,300	10.76
Traprock	8	3,990	38,400	9.62	8	5,070	49,600	9.78
Sandstone and quartzite ³	65	10,300	103,000	9.97	63	8,900	91,300	10.26
Slate	12	623	6,980	11.21	10	892	9,780	10.96
Miscellaneous stone	41	7,360	71,100	9.65	38	7,100	70,500	9.93
Total or average	XX	82,600	897,000	10.85	XX	79,200	891,000	11.25

XX Not applicable.

¹Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

²Includes limestone-dolomite reported with no distinction between the two kinds of stone.

³Includes sandstone-quartzite reported with no distinction between the two kinds of stone.

TABLE 3
PENNSYLVANIA: CRUSHED STONE SOLD OR USED, BY PRODUCERS, BY USE¹

Use	2012			2013		
	Quantity (thousand metric tons)	Value (thousands)	Unit value	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:						
Coarse aggregate (+1½ inch):						
Macadam	14	\$189	\$13.47	--	--	--
Riprap and jetty stone	273	3,290	12.04	704	\$9,970	\$14.16
Filter stone	276	3,300	11.95	191	2,310	12.09
Unspecified coarse aggregate	2,070	17,100	8.24	1,890	17,400	9.21
Coarse aggregate, graded:						
Concrete aggregate, coarse	1,070	9,720	9.13	668	6,230	9.33
Bituminous aggregate, coarse	988	9,770	9.88	531	5,290	9.97
Bituminous surface-treatment aggregate	221	2,690	12.19	91	837	9.17
Railroad ballast	791	8,290	10.48	12	128	10.40
Unspecified graded coarse aggregate	5,410	44,000	8.15	5,630	58,000	10.32
Fine aggregate (-¾ inch):						
Stone sand, concrete	16	257	16.09	W	W	W
Stone sand, bituminous mix or seal	518	3,880	7.50	521	4,570	8.76
Screening, undesignated	265	2,170	8.20	218	1,790	8.21
Unspecified fine aggregate	2,550	25,200	9.87	2,030	22,000	10.87
Coarse and fine aggregates:						
Graded road base or subbase	2,460	21,000	8.57	3,140	34,000	10.81
Unpaved road surface	383	4,530	11.83	1,090	10,800	9.92
Terrazzo and exposed aggregate	W	W	W	13	40	3.06
Crusher run or fill or waste	4,050	20,600	5.08	1,440	9,150	6.36
Unspecified coarse and fine aggregates	5,280	38,000	7.20	5,920	47,400	8.01
Unspecified and other construction materials	693	7,760	11.19	167	1,390	8.34
Agricultural:						
Agricultural Limestone	489	7,650	15.64	298	3,230	10.81
Poultry grit and mineral food	W	W	W	W	W	W
Chemical and metallurgical:						
Cement manufacture	2,030	10,700	5.29	2,440	12,100	4.97
Lime manufacture	W	W	W	W	W	W
Flux stone	W	W	W	W	W	W
Sulfur oxide removal	W	W	W	W	W	W
Special:						
Mining dusting or acid water treatment	291	15,700	54.07	W	W	W
Asphalt fillers or extenders	--	--	--	1	3	6.86
Whiting or whiting substitute	--	--	--	W	W	W
Other miscellaneous uses and specified uses not listed	330	3,640	11.03	605	7,340	12.13
Unspecified:²						
Reported	18,500	214,000	11.57	19,200	220,000	11.50
Estimated	32,100	334,000	10.42	30,800	338,000	10.96
Total or average	82,600	897,000	10.85	79,200	891,000	11.25

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

¹Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

²Reported and estimated production without a breakdown by end use.

TABLE 4
PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2012, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch) ²	W	W	529	4,850	839	7,940
Coarse aggregate, graded ³	W	W	1,050	9,590	1,190	10,200
Fine aggregate (-¾ inch) ⁴	W	W	480	4,520	381	3,480
Coarse and fine aggregates ⁵	W	W	2,420	19,700	2,820	28,700
Other construction materials	38	410	138	1,700	518	5,640
Agricultural ⁶	W	W	W	W	35	368
Chemical and metallurgical ⁷	W	W	W	W	293	1,750
Special ⁸	W	W	--	--	282	15,300
Other miscellaneous uses and specified uses not listed ⁹	--	--	--	--	330	3,640
Unspecified:¹⁰						
Reported	1,410	15,300	2,760	31,400	5,160	56,100
Estimated	2,660	28,300	5,910	64,900	7,610	82,500
Total	7,910	124,000	13,600	150,000	19,400	216,000
Use	District 4					
	Quantity	Value				
Construction:						
Coarse aggregate (+1½ inch) ²	1,220	10,700				
Coarse aggregate, graded ³	6,100	53,600				
Fine aggregate (-¾ inch) ⁴	2,460	23,200				
Coarse and fine aggregates ⁵	4,720	34,400				
Other construction materials	--	--				
Agricultural ⁶	W	W				
Chemical and metallurgical ⁷	W	W				
Special ⁸	--	--				
Other miscellaneous uses and specified uses not listed ⁹	--	--				
Unspecified:¹⁰						
Reported	9,190	111,000				
Estimated	15,900	158,000				
Total	41,700	407,000				

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

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

²Includes macadam, riprap and jetty stone, filter stone, and unspecified coarse aggregate.

³Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and unspecified graded coarse aggregate.

⁴Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesigned), and unspecified fine aggregate.

⁵Includes graded road base or subbase, unpaved road surface, terrazzo and exposed aggregate, crusher run, and unspecified coarse and fine aggregates.

⁶Includes agricultural limestone, and poultry grit and mineral food.

⁷Includes cement manufacture, lime manufacture, flux stone, and sulfur oxide removal.

⁸Includes mine dusting or acid water treatment.

⁹Includes drain fields, waste material, lightweight aggregate (slate), pipe bedding, refractory stone (including ganister), and other miscellaneous uses.

¹⁰Reported and estimated production without a breakdown by end use.

TABLE 5
PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2013, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch) ²	80	779	479	4,560	1,010	12,900
Coarse aggregate, graded ³	219	1,730	850	8,470	1,230	13,200
Fine aggregate (-¾ inch) ⁴	45	251	322	3,070	717	8,510
Coarse and fine aggregates ⁵	1,280	7,020	1,610	13,100	3,690	42,600
Other construction materials	30	247	--	--	135	1,140
Agricultural ⁶	W	W	W	W	222	2,380
Chemical and metallurgical ⁷	W	W	W	W	--	--
Special ⁸	W	W	--	--	(9)	3
Other miscellaneous uses and specified uses not listed ¹⁰	153	1,860	27	240	413	5,150
Unspecified:¹¹						
Reported	1,360	15,900	2,330	27,300	4,300	50,400
Estimated	2,070	23,300	5,880	75,600	5,430	62,600
Total	6,440	123,000	11,600	133,000	17,200	199,000
	District 4					
Use	Quantity	Value				
Construction:						
Coarse aggregate (+1½ inch) ²	1,220	11,500				
Coarse aggregate, graded ³	4,630	47,100				
Fine aggregate (-¾ inch) ⁴	1,850	19,100				
Coarse and fine aggregates ⁵	5,030	38,700				
Other construction materials	--	--				
Agricultural ⁶	W	W				
Chemical and metallurgical ⁷	2,380	11,800				
Special ⁸	W	W				
Other miscellaneous uses and specified uses not listed ¹⁰	12	96				
Unspecified:¹¹						
Reported	11,200	127,000				
Estimated	17,400	176,000				
Total	44,000	436,000				

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

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

²Includes macadam, riprap and jetty stone, filter stone, and unspecified coarse aggregate.

³Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and unspecified graded coarse aggregate.

⁴Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesigned), and unspecified fine aggregate.

⁵Includes graded road base or subbase, unpaved road surface, terrazzo and exposed aggregate, crusher run, and unspecified coarse and fine aggregates.

⁶Includes agricultural limestone, and poultry grit and mineral food.

⁷Includes cement manufacture, lime manufacture, flux stone, and sulfur oxide removal.

⁸Includes mine dusting or acid water treatment.

⁹Less than ½ unit.

¹⁰Includes drain fields, waste material, lightweight aggregate (slate), pipe bedding, refractory stone (including ganister), and other miscellaneous uses.

¹¹Reported and estimated production without a breakdown by end use.

TABLE 6
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2012,
BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate and concrete products ²	2,000	\$15,500	\$7.75
Asphaltic concrete aggregates and other bituminous mixtures	164	979	5.97
Road base and coverings ³	738	6,690	9.07
Fill	568	3,360	5.92
Snow and ice control	165	1,230	7.45
Other miscellaneous uses ⁴	257	2,820	10.97
Unspecified: ⁵			
Reported	1,670	19,600	11.74
Estimated	6,000	52,300	8.72
Total or average	11,600	103,000	8.88

¹Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

²Includes plaster and gunite sands.

³Includes road and other stabilization (cement).

⁴Includes filtration and railroad ballast.

⁵Reported and estimated production without a breakdown by end use.

TABLE 7
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2013,
BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	1,170	\$11,300	\$9.64
Plaster and gunite sands	10	110	11.00
Concrete products (blocks, bricks, pipe, decorative, and so forth)	58	553	9.53
Asphaltic concrete aggregates and other bituminous mixtures	198	1,280	6.45
Road base and coverings	550	4,810	8.74
Fill	898	6,680	7.44
Snow and ice control	119	960	8.07
Other miscellaneous uses ²	272	2,370	8.72
Unspecified: ³			
Reported	1,470	15,300	10.41
Estimated	6,400	57,500	8.97
Total or average	11,200	101,000	9.04

¹Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

²Includes filtration and railroad ballast.

³Reported and estimated production without a breakdown by end use.

TABLE 8
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2012,
BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products ²	W	W	576	5160	W	W
Asphaltic concrete aggregates and road base materials ³	564	4,890	192	1,630	W	W
Fill	44	277	142	866	127	736
Snow and ice control	W	W	24	171	25	234
Other miscellaneous uses ⁴	66	606	--	--	--	--
Unspecified: ⁵						
Reported	106	1,810	465	4,340	1,030	12,800
Estimated	1,790	15,600	1,470	12,800	1,710	14,900
Total	3,200	27,500	2,870	25,000	3,790	34,700
	District 4					
Use	Quantity	Value				
Concrete aggregates and concrete products ²	141	1,790				
Asphaltic concrete aggregates and road base materials ³	15	144				
Fill	255	1,490				
Snow and ice control	(6)	4				
Other miscellaneous uses ⁴	192	2,220				
Unspecified: ⁵						
Reported	68	641				
Estimated	1,030	9,010				
Total	1,700	15,300				

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

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

²Includes plaster and gunite sands.

³Includes road and other stabilization (cement).

⁴Includes filtration and railroad ballast.

⁵Reported and estimated production without a breakdown by end use.

⁶Less than ½ unit.

TABLE 9
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2013,
BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products ²	W	W	432	4870	W	W
Asphaltic concrete aggregates and road base materials	375	3,060	283	2,210	W	W
Fill	69	310	2	8	116	989
Snow and ice control	W	W	8	65	40	385
Other miscellaneous uses ³	76	685	12	122	43	202
Unspecified: ⁴						
Reported	78	820	493	4,720	844	9,250
Estimated	1,780	15,400	1,880	16,500	1,480	13,300
Total	2,640	22,300	3,110	28,500	3,190	30,000
	District 4					
Use	Quantity	Value				
Concrete aggregates and concrete products ²	8	109				
Asphaltic concrete aggregates and road base materials	33	299				
Fill	711	5,370				
Snow and ice control	1	15				
Other miscellaneous uses ³	142	1,360				
Unspecified: ⁴						
Reported	55	517				
Estimated	1,260	12,400				
Total	2,210	20,100				

W Withheld to avoid disclosing company proprietary data; included in "Total."

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

²Includes plaster and gunite sands.

³Includes filtration and railroad ballast.

⁴Reported and estimated production without a breakdown by end use.