



2006 Minerals Yearbook

OHIO

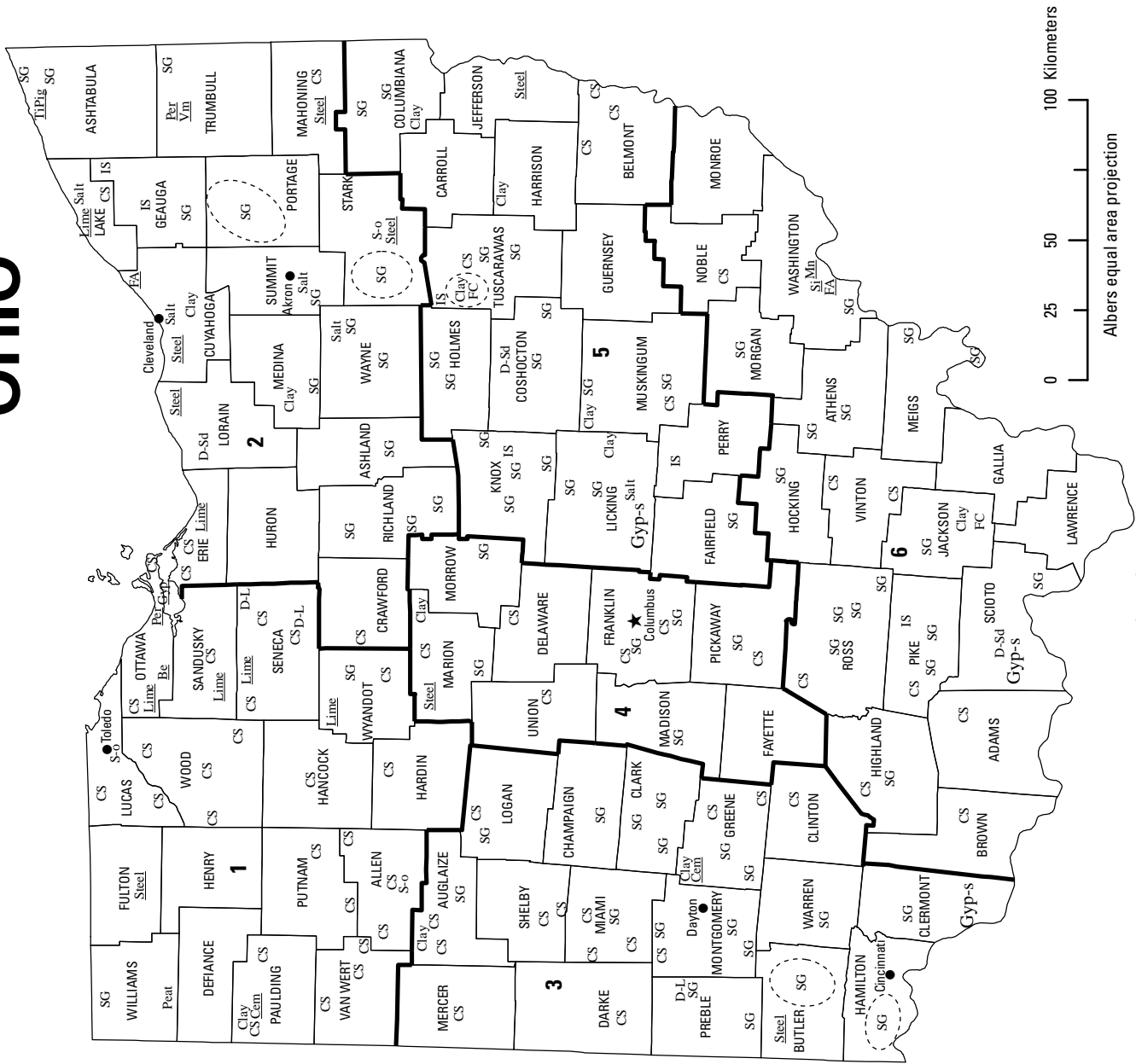
OHIO

LEGEND

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

MINERAL SYMBOLS (Major producing areas)

- Al Aluminum plant
- Be Beryllium plant
- Cem Cement plant
- Clay Common clay
- CS Crushed stone
- D-L Dimension limestone
- D-Sd Dimension sandstone
- FA Ferroalloys plant
- FC Fire clay
- Gyp Gypsum plant
- Gyp-s Synthetic gypsum
- IS Industrial sand
- Lime Lime plant
- Mn Manganese dioxide plant
- Peat Peat
- Per Perlite
- Salt Salt
- S-o Sulfur (oil)
- SG Construction sand and gravel
- Si Silicon metal plant
- Steel Steel plant
- TiPig Titanium dioxide pigment plant
- Vm Vermiculite plant
- Concentration of mineral operations



Source: Ohio Geological Survey/U.S. Geological Survey (2006).

THE MINERAL INDUSTRY OF OHIO

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Ohio Department of Natural Resources, Division of Geological Survey, for collecting information on all nonfuel minerals.

In 2006, Ohio's nonfuel raw mineral production was valued¹ at \$1.27 billion, based upon annual U.S. Geological Survey (USGS) data. This was a \$60 million, or nearly 5%, increase from the State's total nonfuel mineral value for 2005, which was up \$80 million, or up more than 7%, from that of 2004. The State was 19th in rank (virtually tied for 16th in 2005 and 13th in 2004) among the 50 States in total nonfuel raw mineral production value and accounted for nearly 2% of the U.S. total value.

Crushed stone by value remained Ohio's leading nonfuel mineral, followed by construction sand and gravel, salt, lime, cement (portland and masonry), and industrial sand and gravel (in descending order of value). Crushed stone and construction sand and gravel accounted for 56% of the State's total nonfuel mineral value. A majority of the State's mineral commodities rose in value in 2006, led by increases in salt, lime, common clays, and cement (masonry and portland). Although salt production dropped slightly, its value rose by more than \$35 million, and a 3% increase in lime production led to a \$20 million, or 15% increase in the commodity's value. The value of common clays rose by \$11 million and that of portland cement was up by \$7 million (masonry cement increase in production and value withheld—company proprietary data). The largest decreases took place in the values of crushed stone and industrial sand and gravel, down by about \$12 million and \$4 million, respectively (table 1).

In 2006, Ohio continued to rank second in the quantities of fire clay produced and fourth in lime and salt. The State rose to fourth from fifth in the production of common clays, and it decreased to eighth from seventh in construction sand and gravel and to ninth from eighth in crushed stone. Additionally, significant quantities of cement and dimension stone were produced in the State. Ohio's mines only produced industrial minerals and coal; metals produced in the State, including aluminum, beryllium, ferroalloys, raw steel, and silicon, were processed from materials received from foreign and other State domestic sources. In 2006, the State continued to be the Nation's second leading raw steel-manufacturing State with an estimated output of about 14.4 million metric tons (Mt), down about 3.4% from 14.9 Mt that was produced in 2005, as reported by the American Iron and Steel Institute (American Iron and Steel Institute, 2007, p. 74). With a significant decrease in production, Ohio was 11th in the production of primary aluminum.

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 2006 USGS mineral production data published in this chapter are those available as of March 2008. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

The Ohio Department of Natural Resources, Division of Geological Survey² (ODGS), provided the following narrative information, based upon its own surveys, estimates, and data that it acquired from other State agencies.

Commodity Review

Industrial Minerals

Industrial minerals, other than mineral fuels, were either produced or sold by 292 companies from 453 active operations in 2006. Of the 292 operating companies, 28 produced more than one industrial mineral at 30 facilities (Ohio Division of Geological Survey, 2007a, p. 8).

Common Clays.—Clay and shale production was 2.0 Mt in 2006. Belden Brick Co. was the leading producer of building brick in the State, operating seven plants in Tuscarawas County. Total production capacity of the Belden operations was 225 million bricks per year. Several other operators produced millions of additional bricks and other ceramic products at plants located in Columbiana, Harrison, Licking, and Marion Counties. Large quantities of Ohio clay and shale continued to be used in cement manufacture and lightweight-aggregate applications.

Salt.—Salt was produced by three companies at five operations in five counties during 2006. Reported known production of salt for the year was about 4.31 Mt. Cargill Inc., Cargill Salt Division, and Morton International, Inc., Morton Salt Division were the major salt producers in the State, operating rock salt mines (located mostly beneath Lake Erie) in Cuyahoga County and Lake County, respectively. Rock salt sales for the year were reported to be 3.24 Mt. Three brining operations, one each in Licking, Summit, and Wayne Counties, also sold 6,100 t of salt in brine, and an additional 698,000 t of salt that was recovered by evaporation (Ohio Division of Geological Survey, 2007a, p. 21).

Sand and Gravel, Construction.—In 2006, sand and gravel was sold or produced in 60 counties by 192 companies at 278 operations. The majority of the active sand and gravel operations was small to medium in size and served local markets. The largest single operation was Olen Corporation's Columbus Plant, which produced 2.0 Mt of aggregate from glacial outwash and kame terraces in southern Franklin County. Only one other operation, located in Butler County, produced greater than 1 Mt of sand and gravel in 2006. Twenty-five additional pits within the State each produced more than 500,000 metric tons (t) of sand and gravel during the year. Martin Marietta Aggregates

²Mark E. Wolfe, a Senior Geologist with the Ohio Division of Geological Survey, authored the text of the State mineral industry information provided by that State agency.

continued to lead the State in overall production of sand and gravel, recovering a total of 5.6 Mt from several facilities throughout the State. Most of the State's sand and gravel was used in asphaltic concrete, building materials, portland cement concrete, and road construction/resurfacing materials (Ohio Division of Geological Survey, 2007a, p. 14).

Sand and Gravel, Industrial.—Ohio has an abundance of high-silica sandstones that can be used for glass manufacture and other industrial applications. Best Sand Corp. produced 675,000 t of industrial sand from the Pennsylvanian-Period Sharon Conglomerate in Geauga County during 2006. Ogleby Norton Industrial Sands, Inc. produced about 363,000 t of high-silica sand from operations in Knox and Perry Counties. Production came from the Mississippian-Period Black Hand Sandstone and Pennsylvanian-Period Massillon Sandstone, respectively.

Stone, Crushed.—Reported known production of limestone and dolomite from the State's 106 active quarries, operated in 48 counties, totaled 68.4 Mt in 2006. Shelly Materials Inc. operated the Columbus Limestone Quarry in Franklin County, largest in the State, producing 4.0 Mt of aggregate. Hanson Aggregates Midwest, Inc. led the State in total limestone and dolomite production, recovering 11.6 Mt from 10 quarries. Crushed and broken limestone and dolomite were used principally in road construction and as resurfacing material. Other uses were in production of asphaltic concrete, commercial building materials, and portland cement concrete (Ohio Division of Geological Survey, 2007a, p. 11).

Stone, Dimension.—Based upon ODGS surveys and estimates, production of Ohio dimension sandstone, limestone, and dolomite during 2006 decreased by about 12% compared with that of 2005. Sales of dimension sandstone declined by about 5% compared with that of 2005, as demand moderated somewhat for institutional and residential projects in Ohio and from outside the State (Ohio Division of Geological Survey, 2006, p. 17; 2007a, p. 17). Large stone supply companies

in Ohio obtained rough stone from the State's quarries and then cut it to meet customer specifications. National Lime & Stone Company formed a dimension stone subsidiary in 2006, Cascades Cut Stone Company, and planned to market Ohio limestone and dolomite to architectural customers (Markley, 2007).

Government Programs

The ODGS annually prepares and publishes a report on Ohio's coal and industrial mineral industry. Included in the 2006 Report on Ohio Mineral Industries are certain detailed production, employment, and geologic information on each industrial mineral operation in the State. The report is available online at <http://www.ohiodnr.com/geosurvey/>. A Web-based Geographic Information System version of the Ohio mineral industries map from the report allows a user to directly access a summary of industrial minerals information by permitted operation (Ohio Division of Geological Survey, 2007b).

References Cited

- American Iron and Steel Institute, 2007, Table 24—Raw steel production by States, *in* American Iron and Steel Institute—AISI 2006 ASR: Washington, DC, American Iron and Steel Institute, 126 p.
- Markley, Rick, 2007, Who owns whom: Rock Products merger and acquisition news, March 1, 3 p. (Accessed February 11, 2009, at (http://rockproducts.com/mag/rock_owns_whom_7/)).
- Ohio Division of Geological Survey, 2006, 2005 report on Ohio mineral industries: Columbus, OH, Ohio Division of Geological Survey. 106 p. (Accessed February 11, 2009, at http://www.dnr.state.oh.us/Portals/10/pdf/min_ind_report/05minind.pdf).
- Ohio Division of Geological Survey, 2007a, 2006 report on Ohio mineral industries: Columbus, OH, Ohio Division of Geological Survey. 105 p. (Accessed February 10, 2009, at http://www.ohiodnr.com/Portals/10/pdf/min_ind_report/06minind.pdf).
- Ohio Division of Geological Survey, 2007b, Interactive map of Ohio mineral industries: Columbus, OH, Ohio Division of Geological Survey. (Accessed February 9, 2009, at (<http://www.ohiodnr.com/Default.aspx?alias=www.ohiodnr.com/geosurvey>)).

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN OHIO^{1,2}

(Thousand metric tons and thousand dollars)

Mineral	2004		2005		2006	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	98 ^r	13,000 ^{r,e}	W	W	W	W
Portland	1,020 ^r	85,700 ^{r,e}	986	89,200 ^e	966	96,100 ^e
Clays:						
Common	1,360	7,480	1,310	6,880	1,580	17,800
Fire	42	W	55	W	W	W
Gemstones, natural	NA	4	NA	4	NA	4
Lime	1,880	127,000	1,790	130,000	1,850	150,000
Sand and gravel:						
Construction	50,800	263,000	51,700	288,000	46,300	289,000
Industrial	1,180	34,200	1,230	37,900	1,110	33,800
Stone:						
Crushed	76,500	396,000	75,200	439,000 ^r	68,500	427,000
Dimension	38	5,100	28	4,880	29	4,950
Combined values of peat (2004-05), salt, and values indicated by the symbol W	XX	197,000	XX	211,000	XX	251,000
Total	XX	1,130,000	XX	1,210,000	XX	1,270,000

^eEstimated. ^rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data. Withheld values included in "Combined values" data. 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.

TABLE 2
OHIO: CRUSHED STONE SOLD OR USED, BY KIND¹

Kind	2005			2006		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Limestone ²	97 ^r	65,700 ^r	\$392,000	90	61,800	\$387,000
Dolomite	9	8,950 ^r	43,500 ^r	8	6,360	37,300
Sandstone	4	476 ^r	3,070 ^r	3	335	2,330
Total	XX	75,200	439,000 ^r	XX	68,500	427,000

^rRevised. XX Not applicable.

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

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

TABLE 3
OHIO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2006, BY USE¹

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Macadam	W	W
Riprap and jetty stone	414	3,190
Filter stone	132	710
Other coarse aggregate	580	4,460
Total	1,130	8,360
Coarse aggregate, graded:		
Concrete aggregate, coarse	1,620	8,810
Bituminous aggregate, coarse	791	4,110
Bituminous surface-treatment aggregate	688	4,860
Railroad ballast	55	346
Other graded coarse aggregate	4,950	29,500
Total	8,100	47,600
Fine aggregate (-¾ inch):		
Stone sand, concrete	22	125
Stone sand, bituminous mix or seal	714	3,840
Screening, undesignated	66	343
Other fine aggregate	732	4,070
Total	1,530	8,380
Coarse and fine aggregates:		
Graded road base or subbase	4,120	24,800
Unpaved road surfacing	2,610	17,300
Terrazzo and exposed aggregate	(2)	(2)
Crusher run or fill or waste	626	3,320
Other coarse and fine aggregates	2,350	13,100
Total	9,700	58,500
Other construction materials	343	1,670
Agricultural:		
Limestone	(3)	(3)
Other agricultural uses	(3)	(3)
Chemical and metallurgical:		
Cement manufacture	(3)	(3)
Lime manufacture	(3)	(3)
Flux stone	(3)	(3)
Glass manufacture	(3)	(3)
Special, other fillers or extenders	(3)	(3)
Other miscellaneous uses:		
Abrasives	(4)	(4)
Refractory stone	(4)	(4)
Other specified uses not listed	(4)	(4)
Total	8,010	53,300
Unspecified:⁵		
Reported	23,500	148,000
Estimated	12,000	74,000
Total	35,200	221,000
Grand total	68,500	427,000

W Withheld to avoid disclosing company proprietary data; included with "Other coarse aggregate."

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

²Withheld to avoid disclosing company proprietary data; included with "Other coarse and fine aggregates."

³Withheld to avoid disclosing company proprietary data; included in "Grand total."

⁴Withheld to avoid disclosing company proprietary data; included in "Total."

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

TABLE 4
OHIO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2006, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	Districts 1 and 2 ²		Districts 3 and 4 ²		Districts 5 and 6 ²	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch) ³	550	4,040	190	1,380	386	2,940
Coarse aggregate, graded ⁴	6,230	36,200	811	4,710	1,060	6,630
Fine aggregate (¾ inch) ⁵	868	4,750	123	756	543	2,880
Coarse and fine aggregate ⁶	4,850	28,600	543	2,880	2,330	14,400
Other construction materials	343	1,670	--	--	--	--
Agricultural ⁷	W	W	W	W	137	1,020
Chemical and metallurgical ⁸	2,580	14,500	W	W	W	W
Special ⁹	W	W	--	--	W	W
Other miscellaneous uses ¹⁰	3,940	24,000	4,060	29,200	8	50
Unspecified: ¹¹						
Reported	7,420	46,600	11,800	74,300	4,290	26,600
Estimated	8,800	54,000	2,100	13,000	860	6,800
Total	36,300	219,000	22,500	145,000	9,710	61,900

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.

²Districts 1 and 2, 3 and 4, 5 and 6 are combined to avoid disclosing company proprietary data.

³Includes macadam, filter stone, riprap and jetty stone, and other coarse aggregate.

⁴Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregate.

⁵Includes screening (undesigned), stone sand (bituminous mix or seal), stone sand (concrete), and other fine aggregate.

⁶Includes crusher run or fill or waste, graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, and other coarse and fine aggregates.

⁷Includes agricultural limestone and other agricultural uses.

⁸Includes cement, lime, and glass manufacture and flux stone.

⁹Includes other fillers and extenders.

¹⁰Includes abrasives, refractory stone, and other specified uses not listed.

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

TABLE 5
OHIO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2006,
BY MAJOR USE CATEGORY¹

Use	Quantity	Value (thousands)	Unit value
	(thousand metric tons)		
Concrete aggregate (including concrete sand)	6,670	\$36,600	\$5.49
Plaster and gunite sands	40	659	16.48
Concrete products (blocks, bricks, pipe, decorative, etc.)	106	662	6.25
Asphaltic concrete aggregates and other bituminous mixtures	2,850	16,900	5.91
Road base and coverings	2,280	14,700	6.44
Road stabilization (cement)	115	908	7.90
Road stabilization (lime)	12	24	2.00
Fill	4,600	25,400	5.52
Snow and ice control	91	371	4.08
Other miscellaneous uses ²	474	3,950	8.33
Unspecified: ³			
Reported	17,800	121,000	6.82
Estimated	11,300	67,800	6.01
Total or average	46,300	289,000	6.24

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

²Includes filtration and roofing granules.

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

TABLE 6
OHIO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2006,
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	1,820	9,650	2,810	16,000
Asphaltic concrete aggregates and other bituminous mixtures	W	W	939	6,970	804	4,060
Road base and coverings ³	145	768	685	4,240	848	6,100
Fill	159	631	1,220	7,820	2,660	13,400
Snow and ice control	--	--	12	55	W	W
Other miscellaneous uses ⁴	517	3,340	82	828	120	1,360
Unspecified: ⁵						
Reported	--	--	3,080	21,300	7,100	50,100
Estimated	502	3,010	4,810	28,900	1,680	10,100
Total	1,320	7,750	12,600	79,700	16,000	101,000
Use	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products ²	W	W	506	2,420	1,180	6,560
Asphaltic concrete aggregates and other bituminous mixtures	W	W	585	2,790	W	W
Road base and coverings ³	228	1,450	457	2,810	49	274
Fill	190	1,400	286	1,790	83	341
Snow and ice control	W	W	35	122	W	W
Other miscellaneous uses ⁴	584	3,710	54	238	181	990
Unspecified: ⁵						
Reported	571	3,800	3,710	24,300	3,310	21,700
Estimated	1,830	11,000	1,770	10,700	689	4,130
Total	3,410	21,400	7,410	45,100	5,490	34,000

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses." -- 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 and lime).

⁴Includes filtration and roofing granules.

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