



2007 Minerals Yearbook

OHIO [ADVANCE RELEASE]

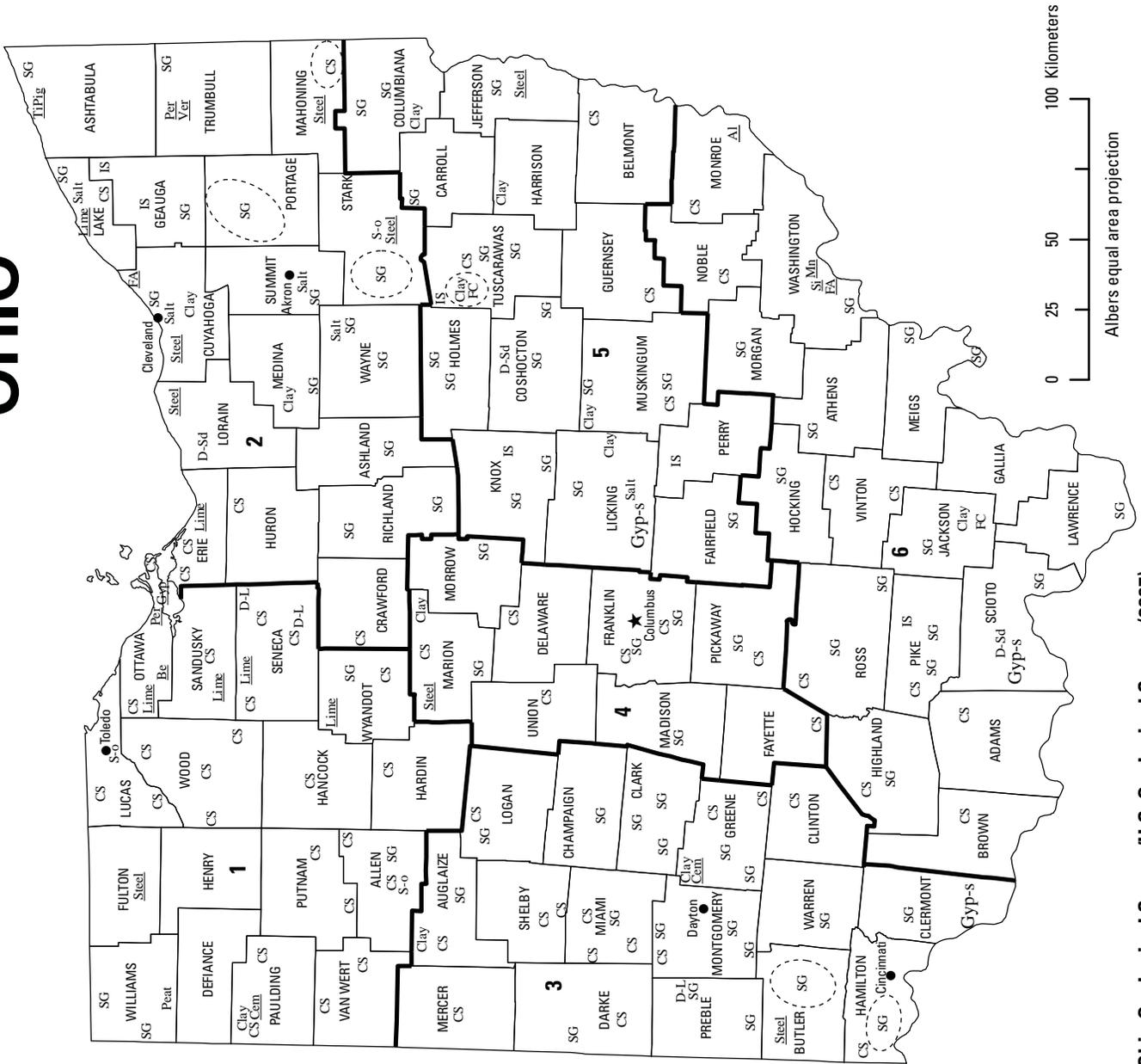
OHIO

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 and quarry
- 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 and quarry
- 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
- Ver Vermiculite plant
- Concentration of mineral operations



Source: Ohio Geological Survey/U.S. Geological Survey (2007).

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 2007, Ohio's nonfuel raw mineral production was valued¹ at \$1.27 billion, based upon annual U.S. Geological Survey (USGS) data. This was the same value as in 2006, which then had increased by \$60 million, or up by nearly 5%, from the State's total nonfuel mineral production value for 2005. The State remained 19th in rank among the 50 States in total nonfuel raw mineral production value and accounted for more than 1.8% 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 production value. In 2007, the mineral commodities of crushed stone, lime, and salt, rose in value, increasing by \$12 million, \$9 million, and approximately \$8 million, respectively, but these were partially offset by decreases in the values of construction sand and gravel, cement, dimension stone, and common clays, down by \$18 million, about \$8 million, \$1.7 million, and \$1.3 million, respectively. Although the quantities produced decreased for nearly all of the mineral commodities [except for salt and gemstones (based upon value), the production of each being the same as in 2006,], the unit values of each of the State's mineral commodities showed significant to incremental increases, except for industrial sand and gravel which was down slightly. The common clays and fire clays especially showed large increases in their unit values. The decreases in mineral production were partly a reflection of an overall decrease in construction industry activity that had begun somewhat in 2006 (table 1).

In 2007, Ohio continued to rank fourth in the quantity of salt and fourth in the quantity of lime that were produced in the United States. The State rose in rank amongst the States to 8th from 9th in the production of crushed stone and to 9th from 11th in industrial sand and gravel, but decreased to 3d from 2d in the production of fire clays, to 5th from 4th in that of common clays, and to 9th from 8th in construction sand and gravel production. 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 2007, the State continued

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 2007 USGS mineral production data published in this chapter are those available as of June 2009. 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>.

to be the Nation's second leading raw steel-manufacturing State with an estimated output of more than 14.6 million metric tons (Mt), up 1.8% from the nearly 14.4 Mt that was produced in 2006, as reported by the American Iron and Steel Institute (American Iron and Steel Institute, 2008, p. 74). With the resumption of significant primary aluminum production, Ohio rose to 10th from 11th in rank among 11 producing States.

The Ohio Department of Natural Resources, Division of Geological Survey² (ODGS), provided the following narrative information based upon its own surveys and estimates³ (Ohio Division of Geological Survey, 2008). Industrial minerals, other than mineral fuels, were produced in a total of 87 of Ohio's counties in 2007. In 2007, 362 companies operated 623 industrial-mineral mining operations. Industrial minerals were produced or sold by 285 companies from 447 active operations. Of these, 26 of the 285 companies produced more than one industrial mineral from 30 operations. Seven companies produced coal and one or more industrial minerals from 10 operations. Twenty-three companies produced multiple industrial mineral commodities (no coal) from 23 operations. The remaining 259 companies produced one industrial-mineral commodity (Ohio Division of Geological Survey, 2008, p. 8).

Of the 30 multiple industrial mineral operations (including those operations producing coal and more than one industrial mineral commodity), 10 operations produced sand and gravel and clay; 4 operations produced clay and shale; 3 operations produced limestone and clay; 3 operations produced limestone, clay, and shale; 2 operations produced sandstone and sand and gravel; 2 operations produced limestone and sand and gravel; 2 operations produced limestone and shale; 1 operation produced limestone and sandstone; 1 operation produced sand and gravel, and shale; 1 operation produced limestone, clay, shale, and sandstone; and 1 operation produced sand and gravel, sandstone, and shale (Ohio Division of Geological Survey, 2008, p. 8).

Employment

During 2007, Ohio's total annual average employment for its nonfuel mineral industry was more than 4,630 people (more than 3,250 production employees and 1,380 nonproduction employees). Total wages for all employees at industrial mineral operations in 2007 were more than \$210 million. The annual average wage, based on those employees for whom wages were reported, was about \$45,400.

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.

³Includes reported and estimated values. Some operations reporting sales did not report a value for those sales. A countywide- or statewide-average price per ton was calculated for each industrial mineral commodity based on sales for which the value was reported... These calculated averages were used to estimate the value of the sales for which the actual values were not reported."

Of the 30 multiple industrial mineral operations (more than one industrial mineral commodity, some operations producing coal), 195 multiple industrial mineral-commodity production employees worked an average of 171 days in 2007. Total wages of about \$10.5 million were paid to a total of 309 employees (195 production employees and 114 nonproduction employees). The annual average wage, based on those employees for whom wages were reported, was \$33,869 (Ohio Division of Geological Survey, 2008, p. 8).

Commodity Review

Industrial Minerals

Clay and Shale.—Based upon ODGS production and sales data and estimates, clay and shale production, which included clay used in landfills, was 1.7 Mt in 2007. Belden Brick Co. was the leading producer of building brick in the State. 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 the State's clay and shale continued to be mined for use in cement manufacture and lightweight aggregate applications.

Salt.—In 2007, rock salt was produced mainly from two large, underground mines beneath Lake Erie. Cargill Inc., Cargill Salt Division and Morton International, Inc., Morton Salt Division were the only salt producers in Ohio during 2007. Salt solution mining operations (vacuum pan salt) were in production in two Ohio counties, Summit County and Wayne County, from which approximately 16% of the State's total salt was produced (Ohio Division of Geological Survey, 2008, p. 21).

Sand and Gravel, Construction.—The largest sand-and-gravel operation in 2007 was Olen Corp.'s Columbus Plant, which produced approximately 1.5 Mt of aggregate from glacial outwash and kame terraces in southern Franklin County. Martin Marietta Aggregates again led the State in sand and gravel production, producing more than 3 Mt.

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 more than 650,000 metric tons of industrial sand from the Pennsylvanian age Sharon Conglomerate in Geauga County during 2007. Ogleby Norton Industrial Sands, Inc. produced

nearly 200,000 metric tons of high-silica sand from operations in Knox and Perry Counties. Production came from the Mississippian age Black Hand Sandstone and Pennsylvanian age Massillon Sandstone, respectively.

Stone, Crushed (limestone and dolomite).—Ohio's largest limestone quarry in 2007 was the Marblehead Limestone Quarry in Ottawa County, operated by Lafarge North America, which produced about 3.5 Mt of aggregate from the Devonian age Columbus Limestone. National Lime & Stone Co. led the State in limestone and dolomite production with more than 8 Mt produced from 11 quarries.

Government Programs

The 2007 Report on Ohio Mineral Industries, prepared by the ODGS, is available online; this and similar reports for the years 2000 through 2006 are available for download over the Internet (Ohio Division of Geological Survey, 2010b). Based upon production, sales, and value data reported to and estimated by the ODGS, the report contains detailed production, employment, and geologic information on each industrial mineral operation in the State. A Web-based Geographic Information System (GIS) version of Ohio's coal and industrial minerals industries map allows the user to work online with an interactive map and directly access summaries of mineral operations information by permitted operation (Ohio Division of Geological Survey, 2010a).

References Cited

- American Iron and Steel Institute, 2008, Table 24—Raw steel production by States, in American Iron and Steel Institute—AISI 2007 ASR: Washington, DC, American Iron and Steel Institute, 126 p.
- Ohio Division of Geological Survey, 2008, 2007 report on Ohio mineral industries: Columbus, OH, Ohio Division of Geological Survey, 101 p. (Accessed May 4, 2010, at http://www.dnr.state.oh.us/Portals/10/pdf/min_ind_report/MinInd07.pdf).
- Ohio Division of Geological Survey, 2010a, 2008 map of active mineral industry operations in Ohio: Columbus, OH, Ohio Division of Geological Survey, 1 p. (Accessed May 12, 2010, at <http://www.dnr.state.oh.us/website/geosurvey/INDUSTRIAL/viewer.htm> and via <http://www.dnr.state.oh.us/geosurvey/ogcim/minstat/minstat1/tabid/7798/Default.aspx>.)
- Ohio Division of Geological Survey, 2010b, 2008 Ohio mining activities in brief: Columbus, OH, Ohio Division of Geological Survey, 1 p. (Accessed May 10, 2010, at <http://www.dnr.state.oh.us/geosurvey/ogcim/minstat/minstat1/tabid/7798/Default.aspx>.)

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

(Thousand metric tons and thousand dollars)

Mineral	2005		2006		2007	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement, portland	986	89,200 ^e	966	96,100 ^e	916	92,000 ^e
Clays:						
Common	1,310	6,880	1,580	17,800	1,190	16,500
Fire	55	W	W	W	W	W
Gemstones, natural	NA	4	NA	4	NA	4
Lime	1,790	130,000	1,850	150,000	1,690	159,000
Sand and gravel:						
Construction	51,700	288,000	46,300	289,000	40,800	271,000
Industrial	1,230	37,900	1,110	33,800	1,080	33,000
Stone:						
Crushed	75,200	439,000 ^r	69,100 ^r	431,000 ^r	67,300	443,000
Dimension	28	4,880	29	4,950	18	3,330
Combined values of cement (masonry), peat, salt, and values indicated by symbol W	XX	211,000	XX	251,000	XX	254,000
Total	XX	1,210,000	XX	1,270,000	XX	1,270,000

^eEstimated. ^rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; 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 TYPE¹

Type	2006			2007		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Limestone ²	93 ^r	62,100 ^r	\$389,000 ^r	102	63,200	\$425,000
Dolomite	8	6,360	37,300	4	3,540	14,000
Sandstone	4 ^r	632 ^r	4,290 ^r	6	548	3,600
Total	XX	69,100 ^r	431,000 ^r	XX	67,300	443,000

^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 2007, BY USE¹

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Macadam	2,180	13,300
Riprap and jetty stone	W	W
Filter stone	W	W
Other coarse aggregate	360	2,830
Coarse aggregate, graded:		
Concrete aggregate, coarse	2,290	14,000
Bituminous aggregate, coarse	2,590	18,200
Bituminous surface-treatment aggregate	686	6,130
Railroad ballast	109	756
Other graded coarse aggregate	6,920	36,100
Fine aggregate (-¾ inch):		
Stone sand, concrete	29	212
Stone sand, bituminous mix or seal	967	7,500
Screening, undesignated	594	4,840
Other fine aggregate	581	3,280
Coarse and fine aggregates:		
Graded road base or subbase	4,890	32,000
Unpaved road surfacing	W	W
Terrazzo and exposed aggregate	W	W
Crusher run or fill or waste	650	4,300
Other coarse and fine aggregates	3,140	18,200
Other construction materials	589	2,590
Agricultural:		
Limestone	711	4,980
Poultry grit and mineral food	W	W
Other agricultural uses	180	1,320
Chemical and metallurgical:		
Cement manufacture	3,250	22,100
Lime manufacture	1,060	4,100
Flux stone	W	W
Glass manufacture	W	W
Special:		
Mine dusting or acid water treatment	W	W
Whiting or whiting substitute	W	W
Other fillers or extenders	W	W
Other miscellaneous uses and specified uses not listed	5,330	37,600
Unspecified:²		
Reported	22,500	153,000
Estimated	4,500	29,000
Total	67,300	443,000

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.

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

TABLE 4
OHIO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2007, 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	2,620	17,000	185	1,300	287	2,180
Coarse aggregate, graded ⁴	9,870	54,800	1,390	10,000	1,330	10,400
Fine aggregate (-¾ inch) ⁵	1,330	9,480	188	1,230	651	5,120
Coarse and fine aggregate ⁶	4,970	32,700	3,020	18,900	2,600	19,800
Other construction materials	428	1,850	85	373	76	363
Agricultural ⁷	468	3,180	W	W	W	W
Chemical and metallurgical ⁸	3,110	16,500	W	W	W	W
Special ⁹	214	1,470	W	W	W	W
Other miscellaneous uses	2,540	16,500	2,780	21,100	8	54
Unspecified:¹⁰						
Reported	9,390	59,900	11,600	79,600	1,540	13,200
Estimated	3,200	21,000	908	6,000	372	2,400
Total	38,100	234,000	22,100	153,000	7,100	55,400

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.

²Districts 1 and 2, 3 and 4, and 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, poultry grit and mineral food, and other agricultural uses.

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

⁹Includes mine dusting or acid water treatment, whiting or whiting substitute, and other fillers or extenders.

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

TABLE 5
OHIO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2007,
BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	6,190	\$38,600	\$6.23
Plaster and gunite sands	27	290	10.74
Concrete products (blocks, bricks, pipe, decorative, etc.)	159	1,270	7.99
Asphaltic concrete aggregates and other bituminous mixtures	2,910	19,200	6.60
Road base and coverings	1,910	10,600	5.54
Road stabilization (cement and lime)	97	754	7.77
Fill	2,210	11,900	5.40
Snow and ice control	141	696	4.94
Roofing granules	26	305	11.73
Filtration	31	398	12.84
Other miscellaneous uses	1,490	10,200	6.85
Unspecified: ²			
Reported	13,600	99,800	7.34
Estimated	12,000	77,000	6.43
Total or average	40,800	271,000	6.65

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 6
OHIO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2007,
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	320	1,970	1,110	6,220	2,800	19,300
Asphaltic concrete aggregates and road base materials ³	W	W	1,500	8,980	1,500	10,300
Fill	206	961	830	5,270	879	3,590
Snow and ice control	--	--	18	102	7	30
Other miscellaneous uses ⁴	440	3,210	116	1,290	1,210	7,650
Unspecified: ⁵						
Reported	--	--	2,780	19,800	4,850	37,300
Estimated	170	1,100	4,800	31,000	1,200	7,500
Total	1,130	7,210	11,200	73,000	12,400	85,700
Use	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products ²	211	1,760	700	3,450	1,230	7,400
Asphaltic concrete aggregates and road base materials ³	W	W	960	5,410	W	W
Fill	47	468	222	1,550	23	87
Snow and ice control	W	W	25	108	W	W
Other miscellaneous uses ⁴	410	2,580	100	710	337	1,810
Unspecified: ⁵						
Reported	770	5,300	3,010	22,100	2,200	15,300
Estimated	3,200	20,000	2,000	13,000	730	4,600
Total	4,610	30,400	6,980	45,900	4,520	29,200

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.