

OHIO



LEGEND		MINERAL SYMBOLS		(Major Producing areas)	
—	County boundary	Al	Aluminum plant	FC	Fire clay
★	Capital	Be	Beryllium plant	Gyp	Gypsum
●	City	Cem	Cement plant	Gyp-s	Synthetic gypsum
1	Crushed stone/sand and gravel districts	Clay	Common clay	IS	Industrial sand
		CS	Crushed stone	Lime	Lime plant
		D-L	Dimension limestone	Mn	Manganese dioxide plant
		D-Sd	Dimension sandstone	Peat	Peat
		DS	Dimension stone	Per	Perlite plant
		FA	Ferroalloys plant	S-o	Sulfur (oil)
				Salt	Salt
				SG	Construction sand and gravel
				Si	Silicon metal plant
				Steel	Steel plant
				TiMet	Titanium metal plant
				Vm	Vermiculite
				(Dashed circle)	Concentration of mineral operations

Source: Ohio Division of Geological Survey/U.S. Geological Survey (2004)

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 2004, Ohio's nonfuel raw mineral production was valued¹ at \$1.12 billion, based upon annual U.S. Geological Survey (USGS) data. This was a nearly 11% increase from the State's total nonfuel mineral value for 2003,² which was up 4.1% from 2002. The State remained 13th in rank among the 50 States in total nonfuel raw mineral production value and accounted for about 2.5% of the U.S. total value.

Crushed stone by value remained Ohio's leading nonfuel mineral, followed by construction sand and gravel, salt (proprietary data), lime, cement (portland and masonry), and industrial sand and gravel (in descending order of value). Crushed stone and construction sand and gravel accounted for about 58% of the State's total nonfuel mineral value. Virtually all the State's mineral commodities rose in value in 2004. Crushed stone and construction sand and gravel led with increases of \$46 million and \$21 million, respectively, followed by increases in lime, value up \$13 million, portland cement, up \$3.5 million, and industrial sand and gravel, up \$2.1 million (table 1). With a significant increase in production, the value of salt also was up substantially. Gains also were made in the production and value of masonry cement.

In 2003, a 15% increase in the production of lime resulted in a \$16 million rise in the commodity's value from 2002. Although the production of crushed stone was down about 2%, its value rose by \$13 million. Smaller yet significant increases also took place in the values of industrial sand and gravel and masonry and portland cement (descending order of change). The only substantial decrease in value for a nonfuel mineral resulted from a decrease in the production of construction sand and gravel, value down \$8 million (table 1). Similar to 2004, a significant increase in production of salt led to an increase in its value.

In 2004, Ohio continued to rank fourth among producing States in the quantities of salt and lime produced and sixth in construction sand and gravel. The State rose to second from third in the production of fire clays, to sixth from seventh in crushed stone and was a significant producer of portland cement, masonry cement, and dimension stone (descending order of value). It decreased to 5th from 4th in common clays and to 10th from 9th in industrial sand and gravel.

Ohio's mines produced only industrial minerals and coal; metals produced in the State were processed from materials received from other domestic and foreign sources. In 2004, the State continued to be the Nation's second leading raw steel-manufacturing State with an estimated output of about 14.3 million metric tons (Mt), as reported by the American Iron and Steel Institute (2005, p. 76), as well as second in the production of primary aluminum.

The Ohio Department of Natural Resources, Division of Geological Survey³ (ODGS), provided the following narrative information, based upon its own surveys, estimates, and data that it acquired from other State agencies.

In 2004, Ohio's total combined nonfuel mineral production was 131.5 Mt, a 5.8% increase from 2003. Limestone and dolomite production and value set an alltime record in 2004; salt, clay, and shale production were up significantly compared with 2003. The total value of industrial minerals produced in Ohio during 2004, not including cement or gemstones, was \$920.1 million. The Ohio nonfuel-mineral industry employed more than 5,500 people during 2004.

Commodity Review

Industrial Minerals

Clay and Shale.—Ohio's clay and shale industry continues to thrive, increasing production more than 15% in 2004. Belden Brick Co. is the leading producer of building brick in the State; its seven plants in Tuscarawas County have the capacity to produce 225 million bricks per year. Several other operators produce millions of additional bricks at plants located in Columbiana, Harrison, Licking, and Marion Counties. Proservices USA acquired Richland Moulded Brick Co. (Richland County) in June 2004 and renamed the enterprise Artisan Moulded Brick. Artisan plans to update equipment and boost production to 27 million bricks a year. Cement manufacture and lightweight-aggregate applications continue to use large quantities of Ohio clay and shale.

Crushed Stone.—The State's 114 active quarries produced 74.8 Mt of limestone and dolomite in 2004. Ohio's largest limestone quarry in 2004 was the Columbus Limestone quarry operated by Shelly Materials Inc. (Franklin County). This quarry produced 4.6 Mt of aggregate from the Devonian-age Columbus Limestone. Two additional quarries located in Delaware and Ottawa Counties produced in excess of 4 Mt of limestone and/or dolomite during 2004. National Lime and Stone Co. again led the State in limestone and dolomite production (12.9 Mt) from 8 plants.

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 2004 USGS mineral production data published in this chapter are those available as of December 2005. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—also can be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

²Values, percentage calculations, and rankings for 2003 may differ from the Minerals Yearbook, Area Reports: Domestic 2003, Volume II, owing to the revision of preliminary 2003 to final 2003 data. Data and rankings for 2004 are considered to be final and are not likely to change significantly.

³Mark Wolfe, a Geologist with the Ohio Division of Geological Survey, authored the text of the State mineral industry information provided by that State agency.

Industrial Sand.—Ohio has an abundance of high-silica sandstones that can be used for glass manufacture and other industrial applications. Best Sand Corp. produced 709,000 metric tons (t) of industrial sand from the Pennsylvanian-age Sharon conglomerate in Geauga County during 2004. Ogleby Norton Industrial Sands, Inc. produced more than 275,000 t 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.

Sand and Gravel.—The largest sand and gravel operation in 2004 was Olen Corp.'s Columbus Plant, which produced 2.3 Mt of aggregate from glacial outwash and kame terraces in southern Franklin County. Three other operations located in Butler and Hamilton Counties produced greater than 1 Mt in 2004; several pits located throughout the State each produced more than 500,000 t sand and gravel. Martin Marietta Aggregates led the State in sand and gravel production (8.1 Mt). The majority of Ohio's 293 active sand and gravel operations are small to medium in size, and serve local markets.

Merger and acquisition activity in the Ohio aggregate industry continued to be robust in 2004. Barrett Paving Materials Inc., Lafarge North America, Olen Corp., and Shelly Materials, Inc. completed major acquisitions.

Government Programs

The Report on Ohio Mineral Industries, prepared annually by the Ohio Division of Geological Survey, is available online at URL <http://www.ohiodnr.com/geosurvey/>. The Report contains detailed production, employment, and geologic information on each industrial mineral operation in the State. A Web-base GIS version of the Ohio mineral industries map allows a user to directly access a summary of industrial minerals information by permitted operation.

Reference Cited

American Iron and Steel Institute, 2005, Pig iron and raw steel production-Final 2004, AIS-7, subsection of Annual statistical report 2004: Washington, DC, American Iron and Steel Institute, 130 p.

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

(Thousand metric tons and thousand dollars)

Mineral	2002		2003		2004	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	W	W	W	W	98	13,000 ^e
Portland	1,020	78,000 ^e	1,030	82,200 ^e	1,020	85,700 ^e
Clays:						
Common	1,310	7,820	1,440	7,430	1,360	7,480
Fire	W	W	W	W	42	W
Gemstones	NA	4	NA	4	NA	4
Lime	1,630	98,100	1,880	114,000	1,880	127,000
Sand and gravel:						
Construction	48,700	250,000	47,300	242,000	50,800	263,000
Industrial	1,000	28,900	1,120	32,100	1,180	34,200
Stone:						
Crushed	72,000 ^f	326,000 ^f	70,500	339,000	76,400	385,000
Dimension	30	4,990	30	5,090	38	5,100
Combined values of gypsum [crude (2002)], peat, salt, and values indicated by symbol W	XX	176,000	XX	188,000	XX	197,000
Total	XX	970,000^f	XX	1,010,000	XX	1,120,000

^eEstimated. ^fRevised. 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	2002				2003				2004			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone ²	95 ^r	64,900 ^r	\$292,000 ^r	\$4.50 ^r	91	61,500	\$301,000	\$4.89	93	69,400	\$354,000	\$5.11
Dolomite	8 ^r	6,760 ^r	32,600 ^r	4.82 ^r	9	8,610	35,800	4.16	8	6,570	28,000	4.26
Sandstone	3 ^r	385	1,640	4.25	4	377	1,950	5.18	4	467	2,490	5.34
Total or average	XX	72,000 ^r	326,000 ^r	4.53	XX	70,500	339,000	4.80	XX	76,400	385,000	5.03

^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 3a
OHIO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, BY USE¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1½ inch):			
Macadam	W	W	\$5.37
Riprap and jetty stone	427	\$2,820	6.60
Filter stone	43	271	6.30
Other coarse aggregates	410	2,720	6.64
Total or average	880	5,810	6.61
Coarse aggregate, graded:			
Concrete aggregate, coarse	3,240	18,400	5.69
Bituminous aggregate, coarse	1,870	11,300	6.02
Bituminous surface-treatment aggregate	585	5,010	8.56
Railroad ballast	197	1,000	5.09
Other graded coarse aggregates	1,300	7,210	5.57
Total or average	7,190	42,900	5.97
Fine aggregate (-¾ inch):			
Stone sand, concrete	135	682	5.05
Stone sand, bituminous mix or seal	421	2,080	4.95
Screening, undesignated	92	223	2.42
Other fine aggregates	373	1,410	3.78
Total or average	1,020	4,400	4.31
Coarse and fine aggregates:			
Graded road base or subbase	8,040	38,400	4.78
Unpaved road surfacing	1,520	7,040	4.63
Crusher run or fill or waste	1,750	8,770	5.01
Other coarse and fine aggregates	1,710	7,990	4.66
Total or average	13,000	62,200	4.78
Other construction materials	1,960	10,100	5.15
Agricultural, limestone	481	2,770	5.75
Chemical and metallurgical:			
Cement manufacture	4,590	24,700	5.40
Lime manufacture	(2)	(2)	2.50
Flux stone	178	875	4.92
Glass manufacture	(2)	(2)	6.28
Total or average	6,830	32,000	4.68
Special:			
Asphalt fillers or extenders	(2)	(2)	5.51
Whiting or whiting substitute	(2)	(2)	12.13
Other fillers or extenders	(2)	(2)	5.53
Total or average	364	2,230	6.13
Other miscellaneous uses and specified uses not listed	5,360	28,500	5.32
Unspecified:³			
Reported	29,000	129,000	4.44
Estimated	4,400	19,000	4.30
Total or average	33,400	148,000	4.42
Grand total or average	70,500	339,000	4.80

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

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

²Withheld to avoid disclosing company proprietary data; included in "Total or average."

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

TABLE 3b
OHIO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1½ inch):			
Riprap and jetty stone	2,480	\$12,800	\$5.18
Filter stone	40	278	6.95
Other coarse aggregates	136	1,040	7.64
Total or average	2,660	14,200	5.33
Coarse aggregate, graded:			
Concrete aggregate, coarse	3,030	14,900	4.94
Bituminous aggregate, coarse	1,960	11,300	5.75
Bituminous surface-treatment aggregate	221	1,370	6.18
Railroad ballast	267	1,230	4.61
Other graded coarse aggregates	1,270	6,950	5.47
Total or average	6,740	35,800	5.30
Fine aggregate (-¾ inch):			
Stone sand, concrete	W	W	4.26
Stone sand, bituminous mix or seal	570	2,890	5.07
Screening, undesignated	51	185	3.63
Other fine aggregates	537	3,190	5.95
Total or average	1,160	6,270	5.41
Coarse and fine aggregates:			
Graded road base or subbase	4,910	26,000	5.29
Unpaved road surfacing	1,470	6,420	4.37
Crusher run or fill or waste	674	3,320	4.92
Other coarse and fine aggregates	1,610	8,170	5.09
Total or average	8,660	43,900	5.07
Other construction materials	2,020	11,200	5.54
Agricultural, limestone	633	3,520	5.56
Chemical and metallurgical:			
Cement manufacture	(2)	(2)	5.98
Lime manufacture	(2)	(2)	3.99
Flux stone	150	838	5.59
Glass manufacture	(2)	(2)	7.17
Total or average	7,130	38,200	5.37
Special:			
Asphalt fillers or extenders	(2)	(2)	5.51
Whiting or whiting substitute	(2)	(2)	12.13
Other fillers or extenders	(2)	(2)	5.82
Total or average	373	2,420	6.48
Other miscellaneous uses and specified uses not listed	6,210	36,300	5.84
Unspecified:³			
Reported	37,600	178,000	4.73
Estimated	3,200	15,000	4.64
Total or average	40,800	193,000	4.73
Grand total or average	76,400	385,000	5.03

W Withheld to avoid disclosing company proprietary data; included with "Other fine aggregates."

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

²Withheld to avoid disclosing company proprietary data; included in "Total or average."

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

TABLE 4b
OHIO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1½ inch) ²	2,240	11,100	197	1,560	W	W	W	W
Coarse aggregate, graded ³	4,220	18,800	965	8,080	997	5,400	W	W
Fine aggregate (-¾ inch) ⁴	422	2,030	471	2,710	W	W	--	--
Coarse and fine aggregate ⁵	2,950	12,000	W	W	2,390	12,300	W	W
Other construction materials	1,030	5,390	396	2,150	101	452	497	3,180
Agricultural ⁶	W	W	W	W	W	W	W	W
Chemical and metallurgical ⁷	W	W	W	W	W	W	W	W
Special ⁸	W	W	W	W	W	W	--	--
Other miscellaneous uses	1,700	9,550	1,230	6,680	472	2,500	2,770	17,300
Unspecified: ⁹								
Reported	9,970	54,900	8,010	36,200	4,820	21,700	8,220	37,300
Estimated	1,600	7,800	300	1,600	670	2,900	--	--
Total	28,500	144,000	13,000	67,300	10,700	52,100	13,400	70,100
	District 5		District 6		Unspecified district			
	Quantity	Value	Quantity	Value	Quantity	Value		
Construction:								
Coarse aggregate (+1½ inch) ²	W	W	W	W	--	--		
Coarse aggregate, graded ³	W	W	W	W	--	--		
Fine aggregate (-¾ inch) ⁴	W	W	W	W	--	--		
Coarse and fine aggregate ⁵	W	W	1,510	9,660	--	--		
Other construction materials	--	--	--	--	--	--		
Agricultural ⁶	W	W	W	W	--	--		
Chemical and metallurgical ⁷	--	--	--	--	--	--		
Special ⁸	--	--	--	--	--	--		
Other miscellaneous uses	--	--	35	231	--	--		
Unspecified: ⁹								
Reported	1,620	6,750	4,740	20,300	256	973		
Estimated	70	320	530	2,300	--	--		
Total	3,250	14,800	7,310	35,600	256	973		

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 filter stone, riprap and jetty stone, and other coarse aggregates.

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

⁴Includes screening (undesignated), stone sand bituminous mix or seal, stone sand (concrete), and other fine aggregates.

⁵Includes crusher run or fill or waste, graded road base or subbase, unpaved road surfacing, and other coarse and fine aggregates.

⁶Includes agricultural limestone.

⁷Includes cement manufacture, flux stone, lime manufacture, and glass manufacture.

⁸Includes asphalt fillers or extenders, whiting or whiting substitute, and other fillers and extenders.

⁹Reported and estimated production without a breakdown by end use.

TABLE 5a
OHIO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003,
BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	8,210	\$40,000	\$4.88
Plaster and gunitite sands	84	911	10.85
Concrete products (blocks, bricks, pipe, decorative, etc.)	616	3,440	5.59
Asphaltic concrete aggregates and other bituminous mixtures	3,370	16,300	4.84
Road base and coverings	1,870	10,800	5.81
Road stabilization (cement)	157	896	5.71
Fill	4,870	24,800	5.09
Snow and ice control	138	630	4.57
Filtration	91	520	5.71
Other miscellaneous uses ²	744	4,150	5.57
Unspecified: ³			
Reported	23,100	120,000	5.18
Estimated	4,100	20,000	4.95
Total or average	47,300	242,000	5.13

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

²Includes roofing granules.

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

TABLE 5b
OHIO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004,
BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	6,680	\$33,200	\$4.96
Plaster and gunitite sands	161	1,390	8.66
Concrete products (blocks, bricks, pipe, decorative, etc.)	98	634	6.44
Asphaltic concrete aggregates and other bituminous mixtures	2,590	13,100	5.08
Road base and coverings	1,830	10,400	5.70
Road stabilization (cement)	98	452	4.60
Fill	3,200	15,800	4.93
Snow and ice control	149	774	5.18
Roofing granules	26	313	11.81
Filtration	54	314	5.79
Other miscellaneous uses ²	822	5,200	6.33
Unspecified: ³			
Reported	23,500	123,000	5.24
Estimated	12,000	59,000	5.06
Total or average	50,800	263,000	5.19

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

²Includes railroad ballast.

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

TABLE 6a
OHIO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003,
BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products ²	485	2,530	2,540	13,200	1,590	7,870
Asphaltic concrete aggregates and other bituminous mixtures	W	W	1,070	5,550	W	W
Road base and coverings ³	132	642	665	3,980	449	2,740
Fill	274	1,090	925	5,390	1,240	4,460
Other miscellaneous uses ⁴	241	1,370	227	1,590	582	3,030
Unspecified: ⁵						
Reported	--	--	3,360	18,800	11,800	59,300
Estimated	100	500	1,500	7,300	1,100	5,800
Total	1,230	6,100	10,300	55,700	16,800	83,200
Use	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products ²	1,630	8,770	1,720	7,260	949	4,820
Asphaltic concrete aggregates and other bituminous mixtures	438	2,180	1,030	4,090	314	1,720
Road base and coverings ³	W	W	405	2,210	W	W
Fill	1,790	10,700	465	2,270	177	844
Other miscellaneous uses ⁴	501	2,650	171	698	151	901
Unspecified: ⁵						
Reported	--	--	4,690	25,900	3,250	15,600
Estimated	--	--	1,100	5,200	300	1,500
Total	4,360	24,300	9,540	47,600	5,130	25,400

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).

⁴Includes filtration, roofing granules, and snow and ice control.

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

TABLE 6b
OHIO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004,
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 (including concrete sand)	431	2,250	2,090	10,500	2,310	10,900
Plaster and gunitite sands	W	W	71	403	W	W
Concrete products (blocks, bricks, pipe, decorative, etc.)	--	--	W	W	W	W
Asphaltic concrete aggregates and other bituminous mixtures	429	2,040	592	3,330	637	2,950
Road base and coverings ²	W	W	374	2,300	473	2,800
Fill	381	2,100	957	5,500	1,460	5,990
Snow and ice control	--	--	W	W	44	273
Other miscellaneous uses ³	339	1,760	202	1,370	197	1,840
Unspecified: ⁴						
Reported	--	--	3,840	21,200	9,070	45,800
Estimated	70	360	3,800	20,000	2,500	13,000
Total	1,650	8,510	11,900	64,500	16,700	83,700
Use	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates (including concrete sand)	318	2,070	618	2,890	917	4,500
Plaster and gunitite sands	W	W	--	--	W	W
Concrete products (blocks, bricks, pipe, decorative, etc.)	W	W	--	--	26	175
Asphaltic concrete aggregates and other bituminous mixtures	W	W	508	2,580	W	W
Road base and coverings ²	W	W	457	2,400	W	W
Fill	261	1,670	69	266	73	263
Snow and ice control	W	W	38	136	30	171
Other miscellaneous uses ³	582	3,850	356	1,670	473	2,600
Unspecified: ⁴						
Reported	1,510	7,850	4,510	24,400	4,530	23,700
Estimated	2,800	14,000	2,100	9,300	340	1,800
Total	5,520	29,900	8,710	43,600	6,390	33,200

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 road and other stabilization (cement).

³Includes filtration, railroad ballast, and roofing granules.

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