

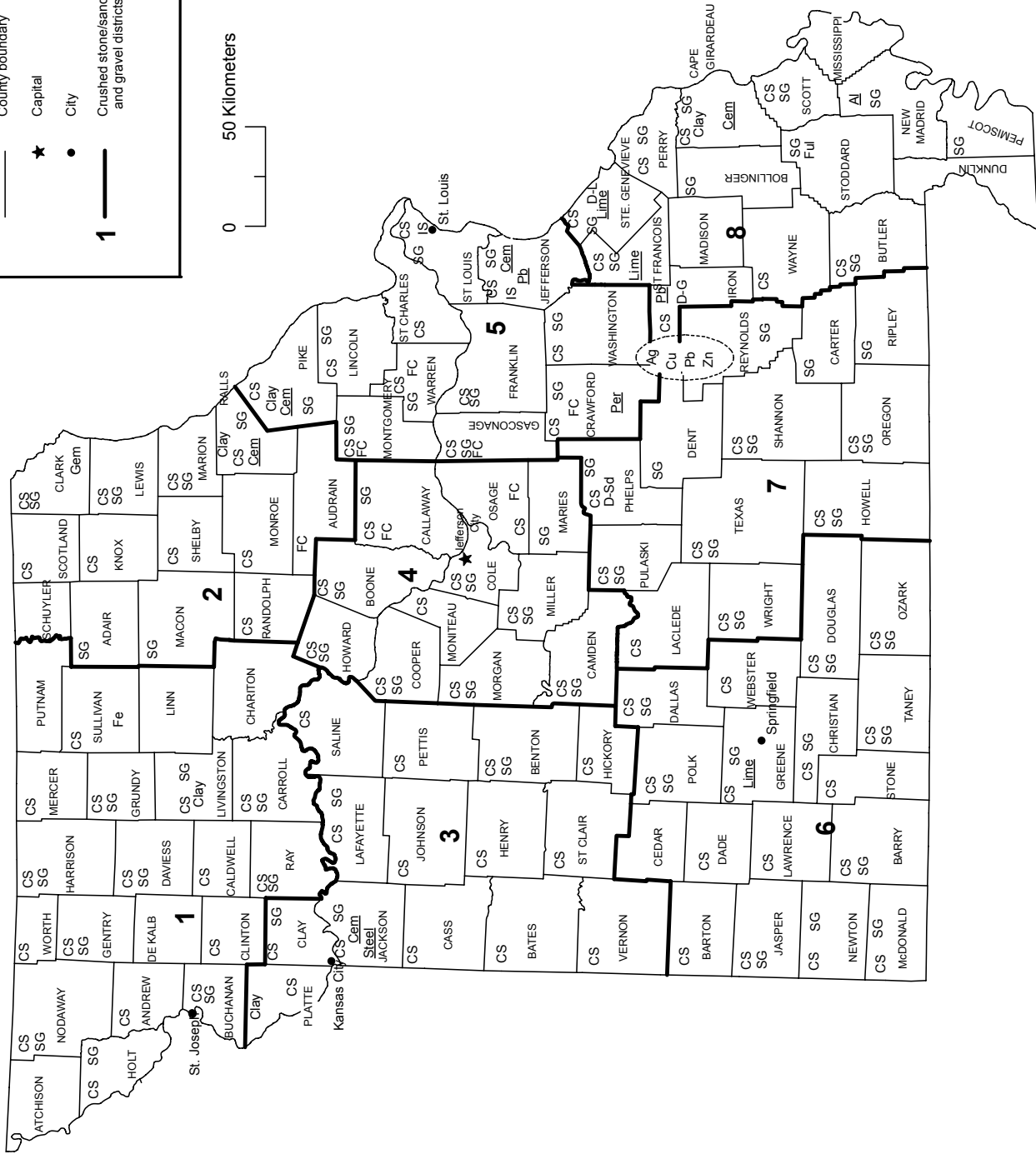
MISSOURI

LEGEND

- County boundary
- Capital
- City
- Crushed stone/sand and gravel districts

MINERAL SYMBOLS (Major producing areas)

- Ag Silver
- Al Aluminum plant
- Cem Cement plant
- Clay Common clay
- CS Crushed stone
- Cu Copper
- D-G Dimension granite
- D-L Dimension limestone
- D-Sd Dimension sandstone
- FC Fire clay
- Ful Fuller's earth
- Gem Gemstones
- IS Industrial sand
- Lime Lime plant
- Pb Lead
- Pb Lead plant
- Per Perlite plant
- SG Construction sand and gravel
- Zn Zinc
- Concentration of mineral operations



THE MINERAL INDUSTRY OF MISSOURI

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

In 2004, Missouri's nonfuel raw mineral production was valued¹ at \$1.47 billion, based upon annual U.S. Geological Survey (USGS) data. This was a 9.7% increase from that of 2003² and followed a 6.3% increase from 2002 to 2003. The State was 10th in rank (9th in 2003) among the 50 States in total nonfuel mineral production value, of which Missouri accounted for about 3.2% of the U.S. total.

Crushed stone, cement (portland and masonry), lead, and lime, in descending order of value, accounted for more than 87% of Missouri's total nonfuel mineral production value in 2004. Missouri continued to be the top lead-producing State in the Nation, producing significantly more than one-half of the Nation's output. But crushed stone and portland cement, by value, remained the State's leading nonfuel minerals in 2004, having surpassed lead in 1997 and 1999, respectively. Prior to 1997, lead had been Missouri's leading nonfuel mineral since 1969, except for several years in the mid-1980s and during 1993-95, when crushed stone was ranked first.

In 2004, even though there was a small drop in lead production, the value of lead was up more than \$45 million, the largest increase in value of all the State's nonfuel raw minerals. Following lead, but with each having increases in production, were portland cement, value up \$36 million, lime, up nearly \$22 million, construction sand and gravel and copper, up about \$10 million each, and masonry cement and silver, up about \$5 million each. The most significant decrease was that of crushed stone, the value of which was down \$11 million; fire clays and fuller's earth values also decreased, down more than \$1 million each (table 1).

In 2003, although there was a 2.3% drop in crushed stone production, the value of crushed stone was up more than \$50 million, the largest increase in value of all the State's nonfuel raw minerals. Following crushed stone, each with increases in production, were portland cement, value up \$19 million, lime, up nearly \$12 million, construction sand and gravel, up about \$7 million, copper and fuller's earth, up more than \$5 million and more than \$2 million, respectively. The most significant decreases were those of the production and values of lead and zinc with respective decreases in value of about \$8 million and more than \$4 million. All other changes were significantly smaller (table 1).

In 2004, Missouri continued to be first in the quantities of lead and lime produced, first of three fire clay-producing States, second in zinc, fifth in cement (portland and masonry combined), and sixth in the production of silver. The State rose to 2d from 3d in the production of fuller's earth, but decreased to 6th from 4th in copper, to 9th from 6th in crushed stone, and to 12th from 10th in common clays. Additionally, Missouri was a significant producer of construction sand and gravel, industrial sand and gravel, and gemstones (gemstones based upon value).

The Missouri Department of Natural Resources, Geological Survey and Resource Assessment Division³ (GSRAD), provided the following narrative information. Some data or information as reported by the GSRAD may differ from USGS preliminary estimates and production figures.

Commodity Review

Industrial Minerals

Cement.—Cement production in 2004 was about 5.3 million metric tons (Mt). This was about a 0.7% increase from that of 2003. Portland cement accounted for more than 97% of the total. The remainder was masonry cement. The overall unit value of cement increased about 13% from that of 2003. Production continued to be from five cement plants. Continental Cement Co. LLC operated the Hannibal plant; Holcim (US) Inc. operated the Clarksville plant; Buzzi Unicem USA Inc. operated the Selma plant and the Cape Girardeau plant; and Lafarge North America Inc. operated the Sugar Creek plant. The first two were along the Mississippi River north of St. Louis; the second two were along the Mississippi River south of St. Louis; and the fifth was along the Missouri River just east of Kansas City. Portland cement was produced by all five plants. Masonry cement was produced only at the Cape Girardeau plant. Cement accounted for about 26.8% of the total value of nonfuel mineral production.

Holcim continued the permitting process for its proposed Lee Island cement production facility along the Mississippi River in extreme northern Ste. Genevieve County, between the Selma and Cape Girardeau 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.

³Patrick S. Mulvany, Geologist and Chief, Geologic Data Acquisition and Management Section, authored the text of the State mineral industry information provided by the Missouri Department of Natural Resources, Geological Survey and Resource Assessment Division.

Clays.—Clay production was about 1.8 Mt in 2004. This was about an 8.6% increase from that of 2003. Three types of clay were produced: common, fire, and fuller's earth (also called absorbent clay). The overall unit value of clay decreased about 9.6% from that of 2003. Clay accounted for about 2.5% of the total value of nonfuel mineral production.

About 1.06 Mt of common clay in the form of shale and claystone was mined from 10 pits by 7 companies in Cape Girardeau, Livingston, Pike, Platte, and Ralls Counties. The majority of it was used in the manufacture of portland cement. The remainder was used in the manufacture of bricks and flowerpots.

About 351,000 metric tons (t) of fire clay was mined from 15 pits by three companies at various locations in the northern and southern fire clay districts of east-central Missouri.

Fuller's earth was mined by Nestle Purina Petcare Co. from Paleocene Porters Creek Clay in Stoddard County and was used to make absorbent pet litter.

Construction Sand and Gravel.—Construction sand and gravel production was about 12 Mt in 2004. This was about a 13% increase from that of 2003. Unit value increased by about 2% from that of 2003. Production was from 92 pits operated by 69 companies in 50 counties. Construction sand and gravel accounted for about 3.7% of the total value of nonfuel mineral production. In previous years, annual production ranged from 10 Mt to 11 Mt.

Crushed Stone.—In 2004, crushed stone production was about 77.0 Mt, which was about a 6.7% increase from that of 2003. Please note that Missouri State numbers are somewhat different from the USGS numbers shown in table 1. Production was from about 189 quarries scattered across the State that were operated by 92 companies. Crushed stone included four rock types: limestone, dolomite, granite (more accurately rhyolite porphyry), and trap rock (more accurately dark rhyolite porphyry or dark trachyte porphyry or both). Crushed stone accounted for about 30.8% of the total value of nonfuel mineral production.

Crushed limestone and dolomite production was about 75.3 Mt. This was about a 6.3% increase from that of 2003. Production was from about 185 quarries located across the State. Crushed limestone and dolomite accounted for about 26.5% of the total value of nonfuel mineral production.

Crushed granite and trap rock production was about 1.7 Mt. This was about a 4.0% increase from that of 2003. Production was from four quarries operated by four companies in the St. Francois Mountains region of southeastern Missouri. Crushed granite and trap rock accounted for about 4.0% of the total value of nonfuel mineral production.

Dimension Stone.—Missouri Red Quarries, Inc. continued to produce dimension granite from the Graniteville Quarry in Iron County. Dimension stone accounted for about 0.05% of the total value of nonfuel mineral production.

Gemstones.—As in previous years, quartz geodes were dug from Mississippian Warsaw Formation in extreme northeastern Missouri by one business concern. Others were collected and sold by hobbyists. Geodes accounted for about 0.01% of the total value of nonfuel mineral production.

Industrial (Silica) Sand.—High-purity quartz (silica) sand production for 2004 was about 609,000 t. This was about a 3.9% increase more than that of 2003. The sand was mined from the Ordovician St. Peter Sandstone in St. Louis and Jefferson Counties by Unimin Corp. and U.S. Silica Co. Unit price remained about the same. Industrial (silica) sand accounted for about 0.8% of the total value of nonfuel mineral production.

Lime.—In 2004, lime production was about 2.6 Mt. This was about a 6.4% increase more than that of 2003. Two types of lime were produced: quick and hydrated. Production was from four plants. In 2004, Vessell Mineral Products Co. restarted its small lime plant at Bonne Terre in St. Francois County, although data were not available on its production. The Chemical Lime Co. and the Mississippi Lime Co. operated their respective Ste. Genevieve plants near the Mississippi River in southeastern Missouri. The Mississippi Lime Co. continued to operate its Springfield plant in southwestern Missouri, but there were indications that the plant may shut down in 2005. Lime accounted for about 11.4% of the total value of nonfuel mineral production.

Metals

Copper, Lead, Silver, and Zinc.—Since approximately 1997, all production of metals in Missouri came from The Doe Run Company's underground mines in the Viburnum Trend on the west side of the St. Francois Mountains in southeastern Missouri. Metals production in 2004 comprised about 246,000 t lead, 50,000 t zinc, 4,200 t copper, and 59,000 kg silver. Prices of all four metals increased significantly during 2004. Metals accounted for about 24% of the total value of nonfuel mineral production.

Doe Run's Viburnum No. 28 Mine was in the process of closing. The Herculaneum smelter, located 40 kilometers south of St. Louis, continued to operate, and the Glover smelter located in Annapolis, MO, remained on care-and-maintenance status.

Government Programs

In late 2003, the GSRAD produced a CD-ROM titled "Missouri Environmental Geology Atlas (MEGA)" that is a compilation of Geographic Information System data layers, including alluvial flood plains, bedrock geology, dye trace data, geologic structures, public land survey system information, sinkhole locations, and well and spring locations. Also included are data layers for streams, lakes, major roads, urban areas, and county boundaries.

In early 2004, the GSRAD released the 2003 Sesquicentennial editions of the Geologic Map of Missouri and the Mineral Resources and Industry Map of Missouri. They are color wall maps at the scale of 1:500,000.

During 2004, the GSRAD continued to add new information into the Inventory of Mines, Occurrences and Prospects (IMOP) database that contained about 20,000 records at yearend.

On July 1, 2004, the GSRAD received a grant from the USGS to complete the Missouri portion of the National Geochemical Survey. The goal of the 2-year project was to collect more than 500 stream-sediment and soil samples on a predetermined sampling

grid that covered about 13 million hectares, including all of the State north of the 38th parallel and about three-eighths of the State south of the 38th parallel.

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

(Thousand metric tons and thousand dollars)

Mineral	2002		2003		2004	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement, portland	4,820	333,000 ^c	5,180	352,000 ^c	5,260	388,000 ^c
Clays:						
Common	1,050	3,930	970	3,660	911	3,290
Fire	340	7,360	307	7,230	W	W
Sand and gravel:						
Construction	10,000	42,300	10,600	49,400	12,200	60,000
Industrial	W	W	586	12,800	589	14,200
Stone, crushed	73,200 ^f	376,000 ^f	71,500	426,000	69,100	415,000
Combined values of cement (masonry), clays (fuller's earth), copper, gemstones (natural), lead, lime, silver, stone (dimension granite), zinc, and values indicated by symbol W	XX	494,000	XX	488,000	XX	593,000
Total	XX	1,260,000	XX	1,340,000	XX	1,470,000

^cEstimated. ^fRevised. 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
MISSOURI: 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	164 ^r	68,200 ^r	\$346,000 ^r	\$5.08	172	66,100	\$346,000	\$5.24	162	64,200	\$336,000	\$5.23
Dolomite	21 ^r	3,490 ^r	18,000 ^r	5.15 ^r	22	3,780	20,700	5.48	18	3,060	16,800	5.49
Granite	2	W	W	7.54	2	W	W	42.97	2	W	W	48.10
Traprock	2	W	W	7.81	2	W	W	8.83	2	W	W	9.86
Sandstone	--	--	--	--	--	--	--	--	1	W	W	3.61
Total or average	XX	73,200 ^r	376,000 ^r	5.14	XX	71,500	426,000	5.96	XX	69,100	415,000	6.02

^rRevised. W Withheld to avoid disclosing company proprietary data; included in "Total or average." XX Not applicable. -- Zero.

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.

TABLE 3a
MISSOURI: 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	\$6.48
Riprap and jetty stone	3,570	\$12,300	3.45
Filter stone	109	584	5.36
Other coarse aggregates	1,580	9,390	5.93
Total or average	5,260	22,300	4.23
Coarse aggregate, graded:			
Concrete aggregate, coarse	2,390	14,200	5.92
Bituminous aggregate, coarse	1,240	8,030	6.46
Bituminous surface-treatment aggregate	201	1,360	6.76
Railroad ballast	856	4,270	4.99
Other graded coarse aggregates	5,010	30,000	5.99
Total or average	9,710	57,800	5.96
Fine aggregate (-¾ inch):			
Stone sand, concrete	187	1,430	7.65
Stone sand, bituminous mix or seal	365	2,650	7.26
Screening, undesignated	437	1,520	3.49
Other fine aggregates	1,880	10,500	5.60
Total or average	2,870	16,100	5.62
Coarse and fine aggregates:			
Graded road base or subbase	4,990	20,700	4.15
Unpaved road surfacing	856	4,990	5.83
Terrazzo and exposed aggregate	(2)	(2)	11.57
Crusher run or fill or waste	646	5,210	8.06
Roofing granules	543	53,000	97.53
Other coarse and fine aggregates	4,140	20,700	5.00
Total or average	11,200	105,000	9.36
Other construction materials ³	85	584	6.87
Agricultural, limestone	843	3,520	4.17
Chemical and metallurgical:			
Cement manufacture	4,240	14,000	3.29
Lime manufacture	1,770	7,090	4.01
Flux stone	(4)	(4)	5.79
Total or average	6,010	21,000	3.50
Special, asphalt fillers or extenders	(5)	(5)	6.50
Other miscellaneous uses and specified uses not listed	266	1,450	5.44
Unspecified:⁶			
Reported	14,400	74,200	5.17
Estimated	21,000	120,000	5.96
Total or average	35,300	199,000	5.64
Grand total or average	71,500	426,000	5.96

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 with "Other coarse and fine aggregates."

³Includes pipe bedding.

⁴Withheld to avoid disclosing company proprietary data; included in "Grand total or average."

⁵Withheld to avoid disclosing company proprietary data; included in "Unspecified: Reported."

⁶Reported and estimated production without a breakdown by end use.

TABLE 3b
MISSOURI: 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):			
Macadam	448	\$3,070	\$6.85
Riprap and jetty stone	206	1,320	6.42
Filter stone	150	1,010	6.70
Other coarse aggregates	1,390	8,030	5.78
Total or average	2,190	13,400	6.12
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,560	11,300	7.24
Bituminous aggregate, coarse	563	3,300	5.87
Bituminous surface-treatment aggregate	184	1,130	6.16
Railroad ballast	W	W	6.80
Other graded coarse aggregates	5,430	34,200	6.30
Total or average	7,730	49,900	6.45
Fine aggregate (-¾ inch):			
Stone sand, concrete	(2)	(2)	6.72
Stone sand, bituminous mix or seal	95	620	6.53
Screening, undesignated	600	2,470	4.11
Other fine aggregates	1,780	10,500	5.92
Total or average	2,470	13,600	5.50
Coarse and fine aggregates:			
Graded road base or subbase	2,880	16,000	5.55
Unpaved road surfacing	771	4,480	5.81
Crusher run or fill or waste	70	366	5.23
Roofing granules	(3)	(3)	99.06
Other coarse and fine aggregates	5,890	81,800	13.90
Total or average	9,610	103,000	10.68
Other construction materials	60	393	6.55
Agricultural, limestone	(4)	(4)	4.71
Chemical and metallurgical:			
Cement manufacture	6,000	23,600	3.93
Lime manufacture	(4)	(4)	6.54
Special, asphalt fillers or extenders	(4)	(4)	5.02
Other miscellaneous uses and specified uses not listed	12	107	8.92
Unspecified:⁵			
Reported	20,600	96,200	4.67
Estimated	20,000	112,000	5.69
Total or average	40,300	209,000	5.17
Grand total or average	69,100	415,000	6.02

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

³Withheld to avoid disclosing company proprietary data; included with "Other coarse and fine aggregates."

⁴Withheld to avoid disclosing company proprietary data; included in "Grand total or average."

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

TABLE 4a
MISSOURI: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, 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	55	290	W	W	55	278	W	W
Coarse aggregate, graded ³	W	W	W	W	W	W	W	W
Fine aggregate (-¾ inch) ⁴	W	W	W	W	W	W	--	--
Coarse and fine aggregates ⁵	317	1,880	W	W	290	1,410	W	W
Other construction materials ⁶	--	--	--	--	--	--	--	--
Agricultural ⁷	42	191	W	W	W	W	28	72
Chemical and metallurgical ⁸	--	--	--	--	W	W	--	--
Special ⁹	--	--	--	--	--	--	--	--
Other miscellaneous uses	204	1,120	--	--	--	--	--	--
Unspecified:¹¹								
Reported	2,580	14,100	209	1,050	4,280	21,700	442	2,630
Estimated	560	3,300	3,100	18,000	5,600	33,000	1,800	11,000
Total	3,820	21,400	3,630	21,200	11,100	61,700	3,850	22,300
Use	District 5		District 6		District 7		District 8	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1½ inch) ²	1,020	6,020	W	W	W	W	W	W
Coarse aggregate, graded ³	3,320	19,700	1,470	10,800	W	W	3,000	15,800
Fine aggregate (-¾ inch) ⁴	W	W	511	3,200	W	W	628	3,940
Coarse and fine aggregates ⁵	2,820	14,200	1,550	8,740	W	W	5,320	74,300
Other construction materials ⁶	39	241	32	259	14	85	--	--
Agricultural ⁷	W	W	151	848	W	W	W	W
Chemical and metallurgical ⁸	W	W	W	W	--	--	W	W
Special ⁹	--	--	--	--	--	--	(10)	(10)
Other miscellaneous uses	20	108	--	--	--	--	42	217
Unspecified:¹¹								
Reported	4,280	21,500	1,960	10,200	--	--	594	2,970
Estimated	3,600	22,000	2,700	16,000	1,100	6,600	2,400	14,000
Total	19,600	98,600	8,800	53,200	1,870	10,800	18,800	137,000

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

³Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, 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 (select material or fill), graded road base or subbase, roofing granules, terrazzo and exposed aggregate, unpaved road surfacing, and other coarse and fine aggregates.

⁶Includes pipe bedding.

⁷Includes agricultural limestone.

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

⁹Includes asphalt fillers or extenders.

¹⁰Withheld to avoid disclosing company proprietary data; included in "Unspecified: Reported."

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

TABLE 4b
MISSOURI: 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	W	W	179	1,200	W	W	W	W
Coarse aggregate, graded ³	--	--	W	W	W	W	W	W
Fine aggregate (-¾ inch) ⁴	--	--	W	W	W	W	--	--
Coarse and fine aggregates ⁵	W	W	W	W	767	4,550	924	4,310
Other construction materials	--	--	--	--	--	--	--	--
Agricultural ⁶	W	W	115	568	W	W	W	W
Chemical and metallurgical ⁷	--	--	W	W	W	W	--	--
Special ⁸	--	--	--	--	--	--	--	--
Other miscellaneous uses	--	--	--	--	--	--	--	--
Unspecified:⁹								
Reported	2,130	11,500	167	836	5,180	28,300	269	1,600
Estimated	1,000	6,300	2,300	13,000	2,100	12,000	1,900	11,000
Total	3,190	18,100	4,270	24,800	8,830	49,200	4,420	25,400
Use	District 5		District 6		District 7		District 8	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1½ inch) ²	1,360	8,450	W	W	W	W	W	W
Coarse aggregate, graded ³	3,480	21,200	1,240	9,370	W	W	1,490	9,680
Fine aggregate (-¾ inch) ⁴	1,400	7,060	739	4,940	W	W	W	W
Coarse and fine aggregates ⁵	3,900	19,900	W	W	W	W	1,820	60,600
Other construction materials	3	15	57	378	--	--	--	--
Agricultural ⁶	80	289	161	874	W	W	--	--
Chemical and metallurgical ⁷	3,050	8,090	W	W	--	--	W	W
Special ⁸	--	--	--	--	--	--	W	W
Other miscellaneous uses	--	--	--	--	3	19	9	88
Unspecified:⁹								
Reported	2,520	12,700	1,410	7,720	--	--	8,910	33,600
Estimated	3,700	20,000	5,200	31,000	1,000	5,800	2,600	12,000
Total	19,500	98,000	10,200	62,700	1,970	11,200	16,800	126,000

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

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

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, roofing granules, unpaved road surfacing, and other coarse and fine aggregates.

⁶Includes agricultural limestone.

⁷Includes cement and lime manufacture.

⁸Includes asphalt fillers or extenders.

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

TABLE 5a
 MISSOURI: 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)	5,580	\$26,200	\$4.69
Plaster and gunitite sands	144	702	4.88
Concrete products (blocks, bricks, pipe, decorative, etc.)	433	2,180	5.03
Asphaltic concrete aggregates and other bituminous mixtures	466	1,850	3.97
Road base and coverings	300	1,680	5.59
Fill	296	945	3.19
Other miscellaneous uses ²	205	1,280	6.24
Unspecified: ³			
Reported	259	1,730	6.68
Estimated	2,900	13,000	4.41
Total or average	10,600	49,400	4.66

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

²Includes railroad ballast, roofing granules, and snow and ice control.

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

TABLE 5b
 MISSOURI: 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)	6,070	\$30,600	\$5.04
Concrete products (blocks, bricks, pipe, decorative, etc.) ²	1,160	6,100	5.26
Asphaltic concrete aggregates and other bituminous mixtures	648	2,880	4.44
Road base and coverings	124	547	4.40
Fill	153	656	4.30
Snow and ice control	52	236	4.56
Other miscellaneous uses ³	93	816	8.75
Unspecified: ⁴			
Reported	782	4,180	5.34
Estimated	3,100	14,000	4.47
Total or average	12,200	60,000	4.91

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

²Includes plaster and gunite sands.

³Includes roofing granules.

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

TABLE 6a
 MISSOURI: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003, BY USE AND DISTRICT^{1,2}

(Thousand metric tons and thousand dollars)

Use	Districts 1 and 2		District 3		Districts 4 and 5	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products ³	104	469	--	--	5,260	24,700
Asphaltic concrete aggregates and road base materials	W	W	--	--	616	2,880
Fill	W	W	--	--	W	W
Other miscellaneous uses ⁴	33	136	--	--	360	1,590
Unspecified: ⁵						
Reported	4	19	--	--	179	1,320
Estimated	570	2,400	390	1,800	1,400	6,200
Total	708	3,070	389	1,780	7,860	36,700

Use	Districts 6 and 7		District 8	
	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products ³	171	998	619	2,840
Asphaltic concrete aggregates and road base materials	78	298	W	W
Fill	40	180	W	W
Other miscellaneous uses ⁴	11	77	127	594
Unspecified: ⁵				
Reported	52	262	25	135
Estimated	450	2,100	82	350
Total	797	3,900	856	3,920

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.

²Districts 1 and 2, 4 and 5, and 6 and 7 are combined to avoid disclosing company proprietary data.

³Includes plaster and gunite sands.

⁴Includes railroad ballast, roofing granules, and snow and ice control.

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

TABLE 6b
MISSOURI: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004, BY USE AND DISTRICT^{1,2}

(Thousand metric tons and thousand dollars)

Use	Districts 1 and 2		District 3		Districts 4 and 5	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products ³	W	W	--	--	5,320	27,100
Asphaltic concrete aggregates and road base materials	W	W	--	--	137	696
Fill	22	78	--	--	117	527
Other miscellaneous uses ⁴	734	3,900	--	--	78	716
Unspecified: ⁵						
Reported	29	246	(6)	2	288	1,700
Estimated	520	2,300	360	1,600	1,800	7,700
Total	1,310	6,530	360	1,620	7,700	38,500

Use	Districts 6 and 7		District 8		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products ³	156	913	718	3,310	W	W
Asphaltic concrete aggregates and road base materials	35	219	W	W	417	1,660
Fill	13	49	(6)	2	--	--
Other miscellaneous uses ⁴	39	198	99	487	417	2,010
Unspecified: ⁵						
Reported	87	459	--	--	376	1,770
Estimated	460	2,200	40	180	--	--
Total	793	4,010	857	3,970	1,210	5,440

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.

²Districts 1 and 2, 4 and 5, and 6 and 7 are combined to avoid disclosing company proprietary data.

³Includes plaster and gunite sands.

⁴Includes roofing granules and snow and ice control.

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

⁶Less than ½ unit.