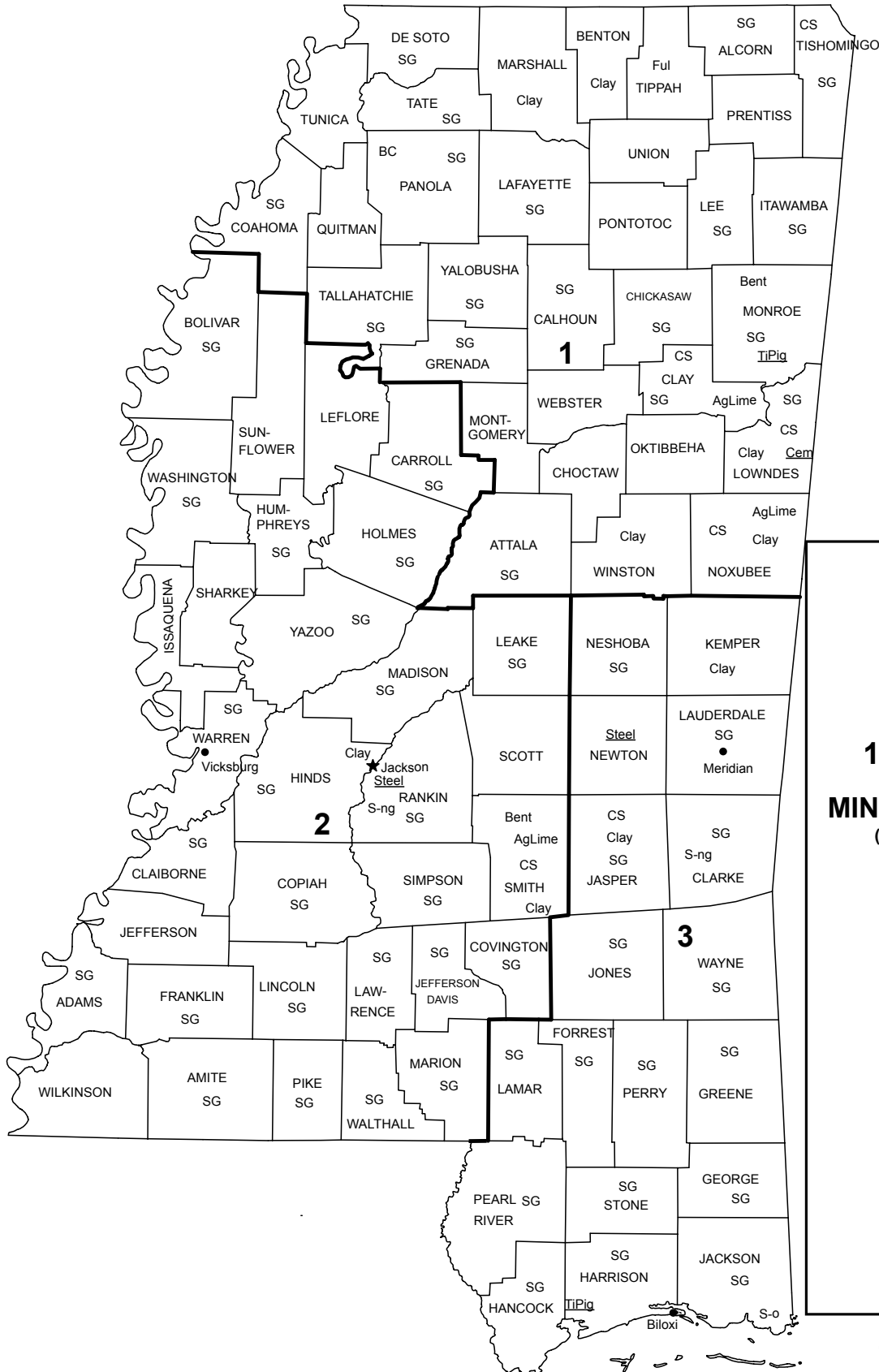


# MISSISSIPPI

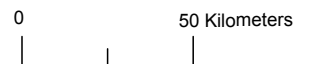


## LEGEND

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

## MINERAL SYMBOLS (Major producing areas)

- AgLime Agricultural lime
- BC Ball clay
- Bent Bentonite
- Cem Cement plant
- Clay Common clay
- CS Crushed stone
- Ful Fuller's earth
- S-ng Sulfur (natural gas)
- S-o Sulfur (oil)
- SG Construction sand and gravel
- Steel Steel plant
- TiPig Titanium dioxide pigment plant



# THE MINERAL INDUSTRY OF MISSISSIPPI

**This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Mississippi Department of Environmental Quality, Office of Geology for collecting information on all nonfuel minerals.**

In 2004, Mississippi's nonfuel raw mineral production was valued<sup>1</sup> at \$194 million, based upon annual U.S. Geological Survey (USGS) data. This was a marginal increase from the State's total nonfuel mineral value for 2003<sup>2</sup>, which was up 8.4% from 2002.

Construction sand and gravel was Mississippi's leading nonfuel mineral, accounting for about 42% of the State's total nonfuel mineral value in 2004. When combined with the value of crushed stone, the States's two major mined construction materials accounted for nearly 60% of Mississippi's total value. In descending order of value, construction sand and gravel was followed by fuller's earth, crushed stone, portland cement, bentonite, and ball clay. In 2004, increases in the values of bentonite, portland cement, and ball clay (descending order of change) more than offset decreases in fuller's earth, down \$7.5 million, construction sand and gravel, down \$1.9 million, and industrial sand and gravel, resulting in a net increase in total nonfuel mineral production value for the State (table 1).

In 2003, increases in the production of fuller's earth, construction sand and gravel, and crushed stone, values up nearly \$13 million, \$9.3 million, and \$6 million, respectively, led the way in Mississippi's rise in total value. Smaller yet significant increases took place in the values of portland cement and ball clay. With significant decreases in production, the largest decreases in value took place in industrial sand and gravel and bentonite (table 1).

In 2004, Mississippi rose to second from fourth in the quantities of bentonite produced and to third from fourth in ball clay, but decreased to third from second in fuller's earth. The State continued to be a significant producer of construction sand and gravel and common clays. Metals that were produced in Mississippi, especially raw steel, were processed from materials received from other domestic and foreign sources.

The following narrative information was provided by the Mississippi Department of Environmental Quality's (DEQ) Office of Geology<sup>3</sup> (MOG). The Mississippi Environmental Quality Permit Board of the State's Commission on Environmental Quality (CEQ) issued 60 surface mining permits covering approximately 571 hectares (ha) and processed 112 Notices of Exempt Operations [1.6 ha (4 acres) or less] covering approximately 181 ha. The MOG Mining and Reclamation Division (MRD) performed 827 annual inspections for all active mining permits on file and received applications for bond release on 90 permits. During the year, 134 ha were reclaimed and released.

All mines in Mississippi were surface industrial mineral operations except one, the State's only coal mine. Mississippi Lignite Mining Company in Choctaw County, continued to mine and stockpile lignite, producing approximately 3.1 million metric tons per year (3.4 million short tons) of lignite from the Wilcox Group formation. The brownish black coal material is mined for feed to the 440-megawatt Red Hills "mine-mouth" powerplant that uses state-of-the-art technology to produce electricity that is sold to the Tennessee Valley Authority.

## Legislation and Government Activities

The CEQ approved the amended State Surface Mining Rules and Regulations in 2004 following revisions made to the State's Mining and Reclamation Law (the State's noncoal surface mining law of 1978) by the Mississippi State Legislature in 2002. The new regulations closely follow the new law; among the changes that the mining industry will be seeing as a result of these new regulations are the maintaining of buffer zones between mining and permit boundaries. This had been a problem in the past because mining could take place up to the permit boundary, resulting in abrupt property ownership changes within a formation that was being continuously mined. This practice had prevented the operator sloping down the highwall from the top or caving of material from an adjacent property owner.

The MRD continued to perform safety training for miners of nonfuel mineral operations in the State in compliance with regulations (Parts 46 and 48) of the U.S. Department of Labor's Mine Safety and Health Administration (MSHA). Two MRD staff members were certified by MSHA to do mine safety training. A grant from MSHA helped MRD provide training for mining operations that process material, such as rock crushing or washing operations. Approximately 600 people were trained in 2004.

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<sup>1</sup>The 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>.

<sup>2</sup>Values, 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.

<sup>3</sup>Kenneth McCarley, Geologist and Director, Mining and Reclamation Division, Mississippi Office of Geology, authored the text of the State mineral industry information provided by that agency.

TABLE 1  
NONFUEL RAW MINERAL PRODUCTION IN MISSISSIPPI<sup>1,2</sup>

(Thousand metric tons and thousand dollars)

Mineral	2002		2003		2004	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays:						
Common	496	2,210	524	2,050	610	2,700
Fuller's earth	411	29,900	534	42,700	381	35,200
Gemstones	NA	1	NA	1	NA	1
Sand and gravel, construction	13,600	73,200	14,600	82,600	14,100	80,700
Stone, crushed	2,620	27,900	2,850	33,900	2,760	34,200
Combined values of cement (portland), clays (ball, bentonite), sand and gravel (industrial)	XX	44,600	XX	31,400	XX	41,500
Total	XX	178,000	XX	193,000	XX	194,000

NA Not available. XX Not applicable.

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

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

TABLE 2  
MISSISSIPPI: CRUSHED STONE SOLD OR USED, BY KIND<sup>1</sup>

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	3	2,620	\$27,900	\$10.64	3	2,850	\$33,900	\$11.90	3	2,760	\$34,200	\$12.40

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

TABLE 3a  
MISSISSIPPI: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, BY USE<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
<b>Construction:</b>			
Coarse aggregate (+1½ inch), other coarse aggregates	W	W	\$21.60
Coarse aggregate, graded, other graded coarse aggregates	W	W	16.81
Fine aggregate (-¾ inch), other fine aggregates	W	W	15.96
<b>Coarse and fine aggregates:</b>			
Graded road base or subbase	(2)	(2)	7.59
Other coarse and fine aggregates	(2)	(2)	15.68
Total or average	356	\$5,570	15.65
Agricultural limestone	W	W	7.83
<b>Chemical and metallurgical:</b>			
Cement manufacture	(2)	(2)	9.48
Sulfur oxide removal	(2)	(2)	7.59
Total or average	868	8,050	9.27
Special, mine dusting or acid water treatment	W	W	7.59
<b>Unspecified:<sup>3</sup></b>			
Reported	876	8,300	9.48
Estimated	120	1,600	13.15
Total or average	996	9,880	9.92
Grand total or average	2,850	33,900	11.90

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

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

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

<sup>3</sup>Reported and estimated production without a breakdown by end use.

TABLE 3b  
MISSISSIPPI: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
<b>Construction:</b>			
Coarse aggregate (+1½ inch), other coarse aggregates	W	W	\$21.66
Coarse aggregate, graded, other graded coarse aggregates	W	W	17.49
Fine aggregate (-¾ inch), other fine aggregates	W	W	15.69
Coarse and fine aggregates, other coarse and fine aggregates	W	W	15.83
Agricultural limestone	W	W	9.90
<b>Chemical and metallurgical:</b>			
Cement manufacture	W	W	9.47
Sulfur oxide removal	W	W	7.99
<b>Unspecified:<sup>3</sup></b>			
Reported	706	6,690	9.48
Estimated	18	160	9.00
Total or average	724	6,850	9.47
Grand total or average	2,760	34,200	12.40

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

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

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

<sup>3</sup>Reported and estimated production without a breakdown by end use.

TABLE 4a

MISSISSIPPI: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Construction:</b>						
Coarse aggregate (+1½ inch) <sup>2</sup>	W	W	W	W	W	W
Coarse aggregate, graded <sup>3</sup>	W	W	W	W	W	W
Fine aggregate (-¾ inch) <sup>4</sup>	W	W	W	W	W	W
Coarse and fine aggregate <sup>5</sup>	W	W	W	W	W	W
Agricultural <sup>6</sup>	W	W	--	--	W	W
Chemical and metallurgical <sup>7</sup>	W	W	--	--	--	--
Special <sup>8</sup>	W	W	--	--	--	--
<b>Unspecified:<sup>9</sup></b>						
Reported	401	3,800	475	4,500	--	--
Estimated	120	1,600	--	--	--	--
<b>Total</b>	<b>1,620</b>	<b>16,300</b>	<b>616</b>	<b>7,300</b>	<b>619</b>	<b>10,400</b>

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

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.<sup>2</sup>Includes other coarse aggregates.<sup>3</sup>Includes other graded coarse aggregates.<sup>4</sup>Includes other fine aggregates.<sup>5</sup>Includes graded road base or subbase and other coarse and fine aggregates.<sup>6</sup>Includes agricultural limestone.<sup>7</sup>Includes cement manufacture and sulfur oxide removal.<sup>8</sup>Includes mine dusting or acid water treatment.<sup>9</sup>Reported and estimated production without a breakdown by end use.

TABLE 4b

MISSISSIPPI: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch) <sup>2</sup>	W	W	W	W	W	W
Coarse aggregate, graded <sup>3</sup>	W	W	W	W	W	W
Fine aggregate (-¾ inch) <sup>4</sup>	W	W	W	W	W	W
Coarse and fine aggregate <sup>5</sup>	W	W	W	W	W	W
Agricultural <sup>6</sup>	W	W	--	--	W	W
Chemical and metallurgical <sup>7</sup>	W	W	--	--	--	--
Unspecified: <sup>8</sup>						
Reported	323	3,060	383	3,630	--	--
Estimated	18	160	--	--	--	--
Total	1,520	15,300	528	6,510	708	12,400

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

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.<sup>2</sup>Includes other coarse aggregates.<sup>3</sup>Includes other graded coarse aggregates.<sup>4</sup>Includes other fine aggregates.<sup>5</sup>Includes other coarse and fine aggregates.<sup>6</sup>Includes agricultural limestone.<sup>7</sup>Includes cement manufacture and sulfur oxide removal.<sup>8</sup>Reported and estimated production without a breakdown by end use.



TABLE 5a  
MISSISSIPPI: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003,  
BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	4,200	\$23,600	\$5.63
Concrete products (blocks, bricks, pipe, decorative, etc.) <sup>2</sup>	114	779	6.83
Asphaltic concrete aggregates and other bituminous mixtures	2,530	18,100	7.15
Road base and coverings	888	3,660	4.12
Fill	253	533	2.11
Other miscellaneous uses	125	743	5.95
Unspecified: <sup>3</sup>			
Reported	2,590	13,900	5.37
Estimated	3,900	21,000	5.39
Total or average	14,600	82,600	5.66

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

<sup>2</sup>Includes plaster and gunite sands.

<sup>3</sup>Reported and estimated production without a breakdown by end use.

TABLE 5b  
MISSISSIPPI: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004,  
BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate and concrete products <sup>2</sup>	2,360	\$13,200	\$5.59
Asphaltic concrete aggregates and other bituminous mixtures	1,160	8,290	7.13
Road base and coverings	679	2,750	4.05
Fill	185	429	2.31
Other miscellaneous uses	3	87	27.56
Unspecified: <sup>3</sup>			
Reported	4,990	26,900	5.39
Estimated	4,700	29,000	6.16
Total or average	14,100	80,700	5.73

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

<sup>2</sup>Includes plaster and gunite sands.

<sup>3</sup>Reported and estimated production without a breakdown by end use.

TABLE 6a  
MISSISSIPPI: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products <sup>2</sup>	2,200	11,700	1,360	9,220	749	3,500
Asphaltic concrete aggregates and other bituminous mixtures	1,210	9,290	W	W	W	W
Road base and coverings	609	2,550	W	W	W	W
Fill	99	276	4	10	149	246
Other miscellaneous uses	--	--	1,200	7,730	525	2,910
Unspecified: <sup>3</sup>						
Reported	1,530	7,170	668	4,640	396	2,120
Estimated	570	3,000	2,700	15,000	350	1,700
Total	6,220	33,900	5,950	36,700	2,170	10,500
			Unspecified districts			
Use	Quantity	Value				
Concrete aggregate and concrete products <sup>2</sup>	--	--				
Asphaltic concrete aggregates and other bituminous mixtures	--	--				
Road base and coverings	--	--				
Fill	--	--				
Other miscellaneous uses	--	--				
Unspecified: <sup>3</sup>	--	--				
Reported	--	--				
Estimated	310	1,500				
Total	310	1,500				

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

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

<sup>2</sup>Includes plaster and gunite sands.

<sup>3</sup>Reported and estimated production without a breakdown by end use.

TABLE 6b  
MISSISSIPPI: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products <sup>2</sup>	456	2,220	1,150	7,600	608	2,560
Asphaltic concrete aggregates and road base materials	481	2,340	989	6,220	176	1,240
Fill	98	261	4	6	53	97
Other miscellaneous uses	--	--	--	--	3	87
Unspecified: <sup>3</sup>						
Reported	4,060	21,300	756	4,690	171	924
Estimated	990	7,800	2,600	15,000	1,100	5,900
Total	6,090	33,900	5,540	33,900	2,110	10,800
	Unspecified districts					
Use	Quantity	Value				
Concrete aggregate and concrete products <sup>2</sup>	141	794				
Asphaltic concrete aggregates and road base materials	196	1,240				
Fill	31	65				
Other miscellaneous uses	--	--				
Unspecified: <sup>3</sup>						
Reported	--	--				
Estimated	--	--				
Total	368	2,100				

-- Zero.

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

<sup>2</sup>Includes plaster and gunite sands.

<sup>3</sup>Reported and estimated production without a breakdown by end use.