



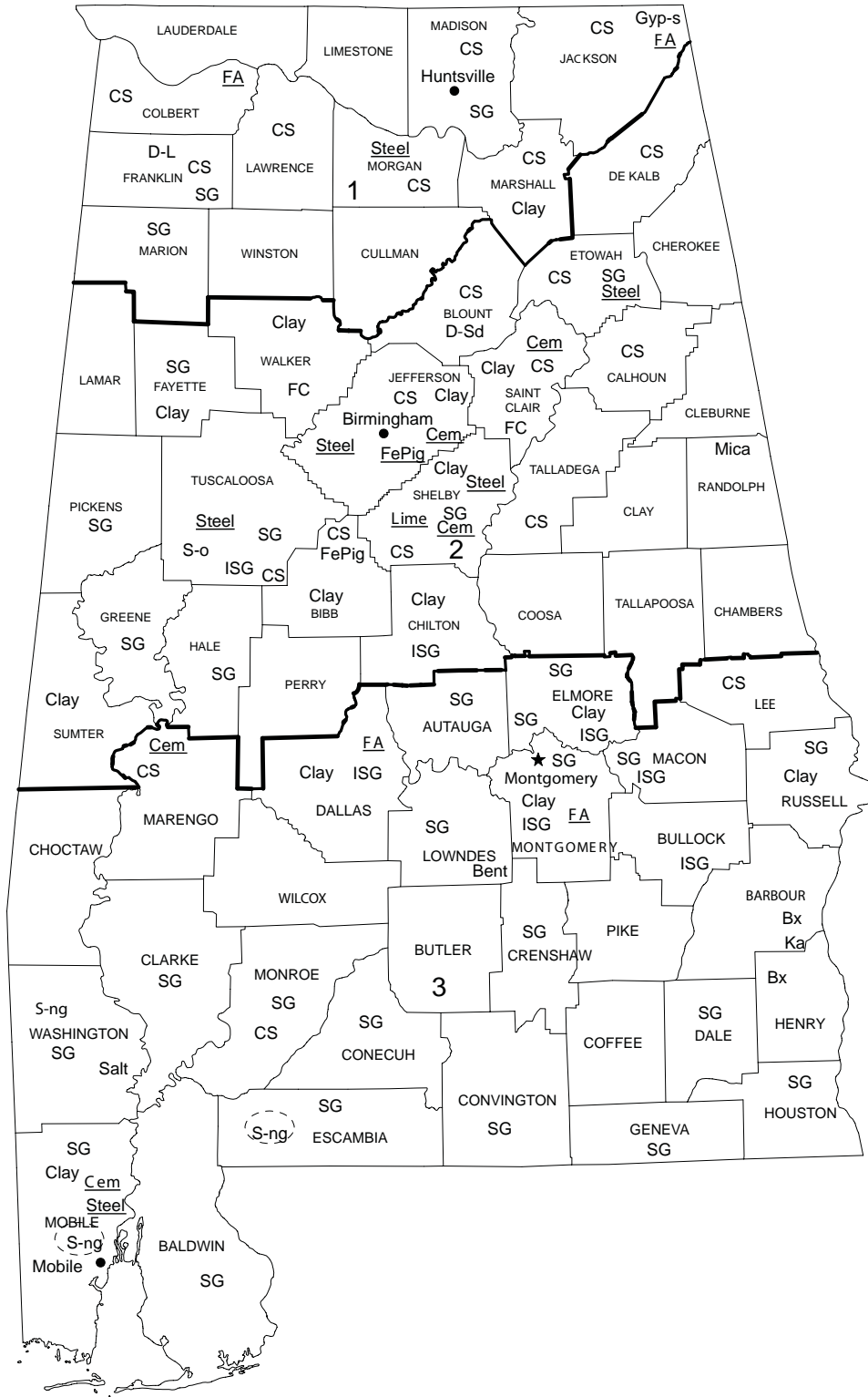
# 2005 Minerals Yearbook

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## ALABAMA

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# ALABAMA



## LEGEND

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

## MINERAL SYMBOLS (Major producing areas)

- Bent Bentonite
- Bx Bauxite
- Clay Common clay
- Cem Cement plant
- CS Crushed stone
- D-L Dimension limestone
- D-Sd Dimension sandstone
- FA Ferroalloys plant
- FC Fire clay
- FePig Iron oxide pigments
- FePig Iron oxide pigment plant
- Gyp-s Synthetic gypsum
- ISG Industrial sand and gravel
- Ka Kaolin
- Lime Lime plant
- Mica Mica
- S-ng Sulfur (natural gas)
- S-o Sulfur (oil)
- Salt Salt
- SG Construction sand and gravel
- Steel Steel plant
- (---) Concentration of mineral operations

0 50 Kilometers

# THE MINERAL INDUSTRY OF ALABAMA

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Geological Survey of Alabama for collecting information on all nonfuel minerals.

In 2005, Alabama's nonfuel mineral production was valued<sup>1</sup> at \$1.12 billion, based upon annual U.S. Geological Survey (USGS) data. This was a 16.1% increase compared with that of 2004 following a 7.2% increase from 2003 to 2004. The State ranked 20th among the 50 States in total nonfuel mineral production value and accounted for more than 2% of the U.S. total.

The top four nonfuel mineral commodities produced in Alabama in 2005 continued to be, in descending order of value, cement (portland and masonry), crushed stone, lime, and construction sand and gravel. These four commodities accounted for 94% of the State's total nonfuel mineral production value; the combined value of cement and crushed stone represented nearly 72% of the total.

Most of Alabama's nonfuel minerals increased in production value in 2005. Leading in the State's rise in value were increases in the values of cement overall (portland and masonry), crushed stone, and lime (while the quantity produced decreased), up about \$106 million, \$29 million, and \$17 million, respectively (table 1).

Nonfuel mineral production in Alabama consisted entirely of industrial minerals. Alabama continued to be third in the quantities of lime it produced, third of four iron oxide pigment-producing States, and fourth in bentonite, seventh in portland cement, and eighth in salt. The State rose to 2d in rank in mica production with the opening of a new operation, to 2d from 3d in common clays, to 4th from 5th in masonry cement, and to 9th from 10th in gemstones (based upon value), while it decreased to third from second in kaolin. Additionally, Alabama was the producer of substantial quantities of, in descending order of value, crushed stone, construction sand and gravel, and industrial sand and gravel. All metal production in the State, especially that of raw steel, was the result of processing materials acquired from other domestic and foreign sources. Production of a natural mixture of bauxite (no longer used to produce primary aluminum) and bauxitic clay with very low iron oxide content has been reported to the USGS since 1995 as kaolin; it is primarily used to make refractory products.

The narrative information that follows was provided by the Geological Survey of Alabama<sup>2</sup> (GSA).

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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 2005 USGS mineral production data published in this chapter are those available as of December 2006. 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>.

<sup>2</sup>Lewis S. Dean, a Geologist in the Economic Geology Division at the Geological Survey of Alabama, authored the text of the State mineral industry information provided by that agency.

## Exploration and Development

Mineral exploration in Alabama continued to focus on industrial mineral resources with several large expansions of operations happening in the State (including crushed stone, cement, brick/tile, lime, and calcium carbonate).

## Commodity Review

### *Industrial Minerals*

In 2005, 166 companies or operations were involved in the mining and production of industrial mineral resources in Alabama. This included 50 limestone-dolomite operations for crushed stone that were active in the State. In addition, granite, marble, quartzite, and sandstone, operations for crushed stone were active in the State. New granite crushed stone quarries were operating in Lee and Randolph Counties.

The GSA reported another year of record crushed stone production for Alabama with more than 49.5 million metric tons (Mt) produced in the State. Birmingham-based Vulcan Materials Co. remained the leading construction aggregate producer in the country. Marble operations were active for the production of micronized calcium carbonate and building stone. Alabama had 20 active clay (bentonite, common clay, fire clay, fuller's earth, kaolin, and shale) operations. Clay production was lead by common clay followed by shale, fuller's earth, bentonite, fireclay, and kaolin.

Alabama had 76 active sand and gravel operations. Sand and gravel production came primarily from alluvium and terrace deposits in Elmore, Macon, Montgomery, Russell, and Tuscaloosa Counties and from the Citronelle Formation in Mobile County.

Other industrial mineral operations included bauxitic clays, building stone (limestone and sandstone), chalk, recovered sulfur, salt (solution recovery), and silicon.

A mica recovery operation that began production in 2004 continued operations at Micaville, Randolph County. Muscovite flake mica occurs as finely disseminated flakes in the mica schist of the northern Alabama Piedmont. Scrap or flake mica is used by industry in dry-, wet-, or micronized-ground form.

## Government Activities and Programs

The largest beach renourishment project along coastal Alabama was continued in 2005 by the City of Gulf Shores which initiated a \$25 million project in 2003 to pump sand from the bottom of Little Lagoon to the Gulf of Mexico shoreline along nearby West Beach. An estimated 15% to 30% of the sand that was added was displaced by Hurricane Katrina (December, 2005).

The Alabama Department of Transportation (ADOT) has an annual maintenance and construction program for nearly 18,000 kilometers of highway. This work represents one of the largest uses of asphaltic and bituminous base, concrete, and stone and gravel aggregate in the State. A revised listing of approved sources of coarse and fine aggregates is available from the ADOT (Alabama Department of Transportation, 2006§<sup>3</sup>).

In 2005, the GSA continued to publish 1:24,000-scale geologic maps in Alabama in conjunction with the STATEMAP program. STATEMAP is a component of the Congressionally mandated USGS National Cooperative Geological Mapping Program (NCGMP), which distributes Federal funds to support geologic mapping efforts through a competitive funding process. The NCGMP has three primary components: (1) FEDMAP, which funds Federal geologic mapping projects, (2) STATEMAP, which is a matching-funds grant program with State geological surveys, and (3) EDMAP, a matching-funds grant program with universities that has a goal to train the next generation of geologic mappers. This new geologic map information is being used in a variety of ways in these rapidly urbanizing parts of the State. For example, geologic mapping aids in the identification of supplies of industrial mineral resources (sand, gravel, and crushed stone) that support

construction and infrastructure development. Published geologic 7.5-minute quadrangles during 2005 included the Greenbrier and Mason Ridge quads in the Limestone and the Madison County areas of the Tennessee Valley and the Vincent and Talladega quads in the Shelby, the St. Clair, and the Talladega County areas of the Valley and Ridge geologic province.

More information on geology, hydrology, mineral occurrence, mining history, and general economics of specific mineral resources in Alabama is available from the Geological Survey of Alabama. Much of this information, as well as contact information, are available over the Internet at <http://www.gsa.state.al.us>.

### Reference Cited

Dezember, Ryan, 2005, Beach rebuilding to resume—Estimates between 15 percent and 30 percent of added sand displaced by Hurricane Katrina: Mobile Register, September 11, p. 6.

### Internet Reference Cited

Alabama Department of Transportation, 2006, List I – 1 Sources of Course and Fine Aggregates, accessed on December 17, 2006, at URL <http://www.dot.state.al.us/NR/rdonlyres/63C54970-7695-4DFD-8582-E574DDFA7153/0/Li01.pdf>.

<sup>3</sup>A reference that includes a section mark (§) is found in the Internet Reference Cited section.

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

(Thousand metric tons and thousand dollars)

Mineral	2003		2004		2005	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	565	55,700 <sup>c</sup>	430	49,400 <sup>c</sup>	475	54,800 <sup>c</sup>
Portland	4,330	273,000 <sup>c</sup>	4,800	320,000 <sup>c</sup>	5,120	421,000 <sup>c</sup>
Clays:						
Bentonite	125	3,810	100	3,050	109	3,480
Common	1,920	24,000	2,120	29,600	2,280	29,000
Gemstones	NA	356	NA	356	NA	371
Lime	2,290	151,000	2,280	164,000	2,240	181,000
Sand and gravel:						
Construction	14,500	67,600	14,700	65,300	15,700	70,500
Industrial	723	9,180	643	9,800	710	11,200
Stone, crushed	49,300	286,000	47,800 <sup>f</sup>	296,000 <sup>f</sup>	49,500	325,000
Combined values of clays (kaolin), iron oxide pigments (crude), mica [crude (2004)], salt, stone (dimension marble and sandstone)	XX	30,000	XX	27,000	XX	27,000
Total	XX	900,000	XX	965,000 <sup>f</sup>	XX	1,120,000

<sup>c</sup>Estimated. <sup>f</sup>Revised. 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  
ALABAMA: CRUSHED STONE SOLD OR USED, BY KIND<sup>1</sup>

Kind	2004			2005		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Limestone	50 <sup>r</sup>	40,000 <sup>r</sup>	\$237,000 <sup>r</sup>	51	41,000	\$269,000
Dolomite	3	1,600	10,200	3	W	W
Marble	2	W	W	2	2,750	18,200
Sandstone	10 <sup>r</sup>	1,530	8,250	8	1,290	7,690
Granite	2	1,280	8,410	2	1,830	12,600
Slate	2	652	3,800	2	561	3,650
Miscellaneous stone	1	W	W	3	50	436
Total	XX	47,800 <sup>r</sup>	296,000 <sup>r</sup>	XX	49,500	325,000

<sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data; included in "Total."

XX Not applicable.

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

TABLE 3  
ALABAMA: CRUSHED STONE SOLD OR USED BY PRODUCERS  
IN 2005, BY USE<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
<b>Construction:</b>		
<b>Coarse aggregate (+1½ inch):</b>		
Riprap and jetty stone	211	1,500
Other coarse aggregates	1,130	8,760
Total	1,340	10,300
<b>Coarse aggregate, graded:</b>		
Concrete aggregate, coarse	1,210	7,750
Bituminous aggregate, coarse	2,490	15,900
Bituminous surface-treatment aggregate	W	W
Other graded coarse aggregates	7,990	53,200
Total	11,700	76,900
<b>Fine aggregate (-¾ inch):</b>		
Stone sand, concrete	(2)	(2)
Stone sand, bituminous mix or seal	269	1,760
Screening, undesignated	140	951
Other fine aggregates	2,410	13,300
Total	2,820	16,000
<b>Coarse and fine aggregates:</b>		
Graded road base or subbase	1,680	9,020
Unpaved road surface	217	916
Crusher run or fill or waste	138	925
Roofing granules	(3)	(3)
Other coarse and fine aggregates	8,870	61,000
Total	10,900	71,800
Other construction materials	478	3,020
<b>Agricultural:</b>		
Agricultural limestone	(4)	(4)
Other agricultural uses	(4)	(4)
Total	532	2,810
<b>Chemical and metallurgical:</b>		
Cement manufacture	2,680	15,200
Lime manufacture	(5)	(5)
Flux stone	(5)	(5)
<b>Special:</b>		
Mine dusting or acid water treatment	(5)	(5)
Other fillers or extenders	(5)	(5)
<b>Unspecified:<sup>6</sup></b>		
Reported	11,400	78,300
Estimated	5,300	34,000
Total	16,700	113,000
Grand total	49,500	325,000

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

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

<sup>2</sup>Withheld to avoid disclosing company proprietary data, included with "Other fine aggregate."

<sup>3</sup>Withheld to avoid disclosing company proprietary data, included with "Other coarse and fine aggregates."

<sup>4</sup>Withheld to avoid disclosing company proprietary data; included in "Total."

<sup>5</sup>Withheld to avoid disclosing company proprietary data; included in "Grand total."

<sup>6</sup>Reported and estimated production without a breakdown by end use.

TABLE 4  
ALABAMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2005, 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	6,610	43,300	W	W
Fine aggregate (-¾ inch) <sup>4</sup>	1,080	6,700	W	W	W	W
Coarse and fine aggregates <sup>5</sup>	W	W	5,580	35,300	W	W
Other construction materials	478	3,020	--	--	--	--
Agricultural <sup>6</sup>	W	W	W	W	W	W
Chemical and metallurgical <sup>7</sup>	--	--	W	W	W	W
Special <sup>8</sup>	--	--	W	W	--	--
Unspecified: <sup>9</sup>						
Reported	--	--	7,500	51,200	3,940	27,200
Estimated	1,700	11,000	3,600	24,000	--	--
Total	13,600	84,900	30,900	200,000	5,000	40,500

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 riprap and jetty stone and other coarse aggregates.

<sup>3</sup>Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, and other graded aggregates.

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

<sup>5</sup>Includes crusher run or fill or waste, graded road base or subbase, roofing granules, unpaved road surface, and other coarse and fine aggregates.

<sup>6</sup>Includes agricultural limestone and other agricultural uses.

<sup>7</sup>Includes cement and lime manufacture and flux stone.

<sup>8</sup>Includes mine dusting or acid water treatment and other fillers or extenders.

<sup>9</sup>Reported and estimated production without a breakdown by end use.

TABLE 5  
ALABAMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005,  
BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	8,780	\$36,700	\$4.19
Plaster and gunite sands	177	1,110	6.27
Concrete products (blocks, bricks, pipe, decorative, etc.)	74	526	7.10
Asphaltic concrete aggregates and other bituminous mixtures	1,380	10,100	7.34
Road base and coverings	656	1,900	2.89
Road and other stabilization (cement and lime)	26	116	4.46
Fill	914	2,290	2.50
Snow and ice control	11	34	3.09
Other miscellaneous uses <sup>2</sup>	582	3,350	5.76
Unspecified: <sup>3</sup>			
Reported	497	2,340	4.71
Estimated	2,650	12,000	4.52
Total or average	15,700	70,500	4.48

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

<sup>2</sup>Includes filtration.

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

TABLE 6  
ALABAMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005, 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>	487	2,860	789	3,560	7,750	32,000
Asphaltic concrete aggregates and road base materials <sup>3</sup>	216	2,180	94	244	1,750	9,680
Fill	8	23	9	98	897	2,170
Other miscellaneous uses <sup>4</sup>	43	201	166	1,660	383	1,530
Unspecified: <sup>5</sup>						
Reported	361	1,750	36	200	99	449
Estimated	128	577	235	1,060	2,290	10,300
Total	1,240	7,590	1,330	6,820	13,200	56,100

<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>Includes road and other stabilization (cement and lime).

<sup>4</sup>Includes filtration and snow and ice control.

<sup>5</sup>Reported and estimated production without a breakdown by end use.