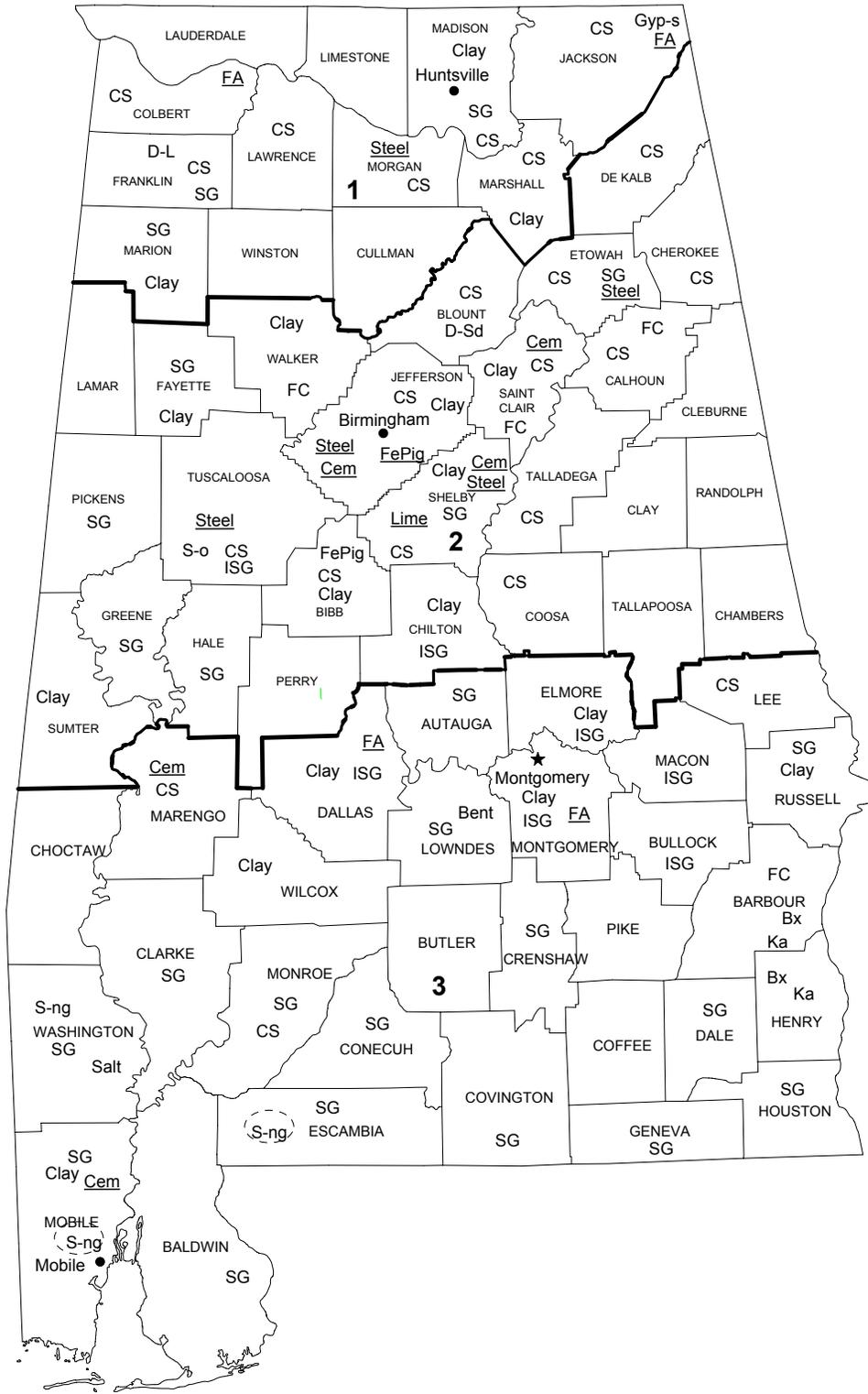


ALABAMA



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
- S-ng Sulfur (natural gas)
- S-o Sulfur (oil)
- Salt Salt
- SG Construction sand and gravel
- Steel Steel plant
- Concentration of mineral operations



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 2003, the estimated value¹ of nonfuel mineral production for Alabama was \$863 million, based upon preliminary U.S. Geological Survey (USGS) data. This was about a 2% increase from that of 2002,² following a 10.4% decrease from 2001 to 2002. The State, for the third consecutive year, was 17th in rank among the 50 States in total nonfuel mineral production value, of which Alabama accounted for more than 2% of the U.S. total.

The top four nonfuel mineral commodities produced in Alabama in 2003 continued to be cement (portland and masonry), crushed stone, lime, and construction sand and gravel (descending order of value). These four commodities accounted for more than 93% of the State's total nonfuel mineral production value, whereas the combined value of cement and crushed stone represented about 72% of the total. In 2003, the increased production and values of crushed stone and lime led Alabama's rise in value, offset somewhat by decreases in the production and value of construction sand and gravel and dimension stone. In 2002, the State's drop in value resulted mostly from decreases in portland cement, down an estimated \$54 million, and crushed stone, down \$46 million; construction sand and gravel production dropped off slightly, its value down about \$3 million (table 1).

Nonfuel mineral production in Alabama consisted entirely of industrial minerals. Compared with USGS estimates of the quantities produced in 2003 in the other 49 States, Alabama continued to be second in lime and kaolin, third in common clay and iron oxide pigments, fourth in bentonite, fifth in masonry cement, sixth in portland cement, and eighth in salt. The State decreased to 9th from 8th in gemstones (gemstones ranking based upon value) and was a significant producer of crushed stone, construction sand and gravel, and industrial sand and gravel (descending order of value). All metal production in the State, especially that of raw steel, was the result of processing materials acquired from other domestic and foreign sources.

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 2003 USGS mineral production data published in this chapter are preliminary estimates as of July 2004 and are expected to change. For some mineral commodities, such as construction sand and gravel, crushed stone, and portland cement, estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. Specialist contact information may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>; alternatively, specialists' names and telephone numbers may be obtained by calling USGS information at (703) 648-4000 or by calling the USGS Earth Science Information Center at 1-888-ASK-USGS (275-8747). All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

²Values, percentage calculations, and rankings for 2002 may differ from the Minerals Yearbook, Area Reports: Domestic 2002, Volume II, owing to the revision of preliminary 2002 to final 2002 data. Data for 2003 are preliminary and are expected to change; related rankings also may change.

Production of a natural mixture of bauxite (no longer used to produce primary aluminum) and bauxitic clay with a 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 Alabama³ (GSA).

Mining Industry Overview

In 2003, 185 companies or operations were involved in the mining and production of industrial nonfuel mineral resources in Alabama, the majority being for the mining of aggregates. This included 48 active limestone-dolomite crushed stone operations; other crushed stone operations produced granite, quartzite, and sandstone. Crushed stone production and value (up about 5%) rose in Alabama from 2002 to 2003. Birmingham-based Vulcan Materials Co. remained the largest construction aggregate producer in the country. In 2003, 90 sand and gravel operations (including both construction and industrial operations) were active. Sand and gravel production has come primarily from Quaternary alluvium and terrace deposits in Montgomery County (16%), Elmore County (8%), Macon County (5%), Tuscaloosa County (5%), and Russell County (6%), and from the Citronelle Formation in Mobile County (8%). In the past, small plants alone produced sand and gravel for a specific job or area. Recent trends have shifted to develop large, high-capacity plants that use long-distance transportation.

With regard to other industrial minerals, 21 clay (bentonite, common clay and shale, fire clay, fuller's earth, and kaolin) operations were active in the State in 2003. Clay production was lead by common clay (48%) and followed by shale (18%), fuller's earth (21%), bentonite (7%), fireclay (4%), and kaolin (2%). The State's marble operations produced micronized calcium carbonate and building stone. Other industrial mineral operations included chalk, building stone (limestone), salt (solution recovery), bauxitic clays, silicon, and recovered sulfur.

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 clay, and fire clay). Additionally, the Alabama Department of Environmental Management issued a discharge permit in 2003 for a new mica recovery operation in development at Micaville, Randolph County. Muscovite occurs as finely disseminated flakes in mica schist of the northern

³Lewis S. Dean, a Geologist at the Geological Survey of Alabama, authored the text of the State mineral industry information provided by that agency.

Alabama Piedmont in Randolph County. Scrap or flake mica is used by industry in dry-, wet-, and micronized-ground form.

Government Activities and Programs

Work on the largest beach replenishment project along coastal Alabama was continued in 2003 when the City of Gulf Shores, Baldwin County, initiated a project to pump about 535,000 cubic meters (700,000 cubic yards) of sand from the bottom of Little Lagoon to the Gulf of Mexico shoreline along the city's West Beach.

The USGS's National Cooperative Geologic Mapping Program has significantly enhanced the GSA's ability to produce new 1:24,000-scale geologic maps in Alabama. Priority areas with mapping either completed or currently being mapped include the Birmingham-Shelby County area, Anniston area, Birmingham-Tuscaloosa corridor, north Birmingham growth

corridor, the Lincoln area in Talladega County, and the Huntsville-Decatur area. 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 aided in the identification of supplies of industrial mineral resources (sand, gravel, crushed stone) that support construction and infrastructure development. Recently published geologic 7.5-minute quadrangles include Alabaster, Argo, Bessemer, Chelsea, Coaling, Helena, Irondale, Jeff, Madison, Montevallo, Odenville, Sleeping Giants, Tanner, Vandiver, Wattsville, and Woodstock.

More information on geology, hydrology, 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 GSA contact information, is available at URL <http://www.gsa.state.al.us>.

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

(Thousand metric tons and thousand dollars)

Mineral	2001		2002		2003 ^P	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	380	38,900 ^e	380	42,000 ^e	380	42,000 ^e
Portland	4,480	352,000 ^e	4,540	298,000 ^e	4,550	300,000 ^e
Clays:						
Bentonite	132	4,010	125	3,810	125	3,810
Common	2,050	24,800	2,020	24,600	2,020	24,600
Kaolin	W	W	531	14,600	531	14,600
Gemstones	NA	108	NA	356	NA	356
Lime	2,040	127,000	2,040	127,000	2,070	134,000
Sand and gravel:						
Construction	13,600	60,200	12,500	56,700	11,200	51,500
Industrial	743	9,420	722	8,990	722	9,040
Stone, crushed	49,400	308,000	43,400	262,000	45,000	275,000
Combined values of clays [kaolin, (2000-01)], iron oxide pigments (crude), salt, stone (dimension marble and sandstone), and values indicated by symbol W	XX	20,100	XX	8,850	XX	7,420
Total	XX	945,000	XX	847,000	XX	863,000

^eEstimated. ^PPreliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "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
ALABAMA: CRUSHED STONE SOLD OR USED, BY KIND¹

Kind	2001				2002			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	46	41,200	\$252,000	\$6.13	49	35,000	\$209,000	\$5.98
Dolomite	3	W	W	7.18	3	W	W	6.57
Marble	2	W	W	6.90	2	W	W	6.38
Sandstone	5	1,370	9,260	6.75	8	2,150	13,200	6.15
Granite	1	W	W	5.77	1	W	W	5.45
Slate	2	W	W	7.25	2	W	W	7.16
Miscellaneous stone	3	127	420	3.30	3	71	230	3.22
Total or average	XX	49,400	308,000	6.24	XX	43,400	262,000	6.04

W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.

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

TABLE 3
ALABAMA: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 2002, BY USE¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregates (+1 1/2 inch):			
Riprap and jetty stone	62	\$402	\$6.43
Other coarse aggregates	524	3,930	7.50
Total or average	586	4,330	7.40
Coarse aggregates, graded:			
Concrete aggregate, coarse	W	W	5.10
Bituminous aggregate, coarse	W	W	6.06
Bituminous surface-treatment aggregate	W	W	5.95
Other graded coarse aggregates	7,410	46,900	6.33
Total or average	7,410	46,900	6.33
Fine aggregate (-3/8 inch):			
Screening, undesignated	W	W	6.06
Other fine aggregates	2,090	12,000	5.75
Total or average	2,090	12,000	5.75
Coarse and fine aggregates:			
Graded road base or subbase	W	W	5.23
Crusher run or fill or waste	W	W	5.64
Other coarse and fine aggregates	4,490	28,300	6.31
Total or average	4,490	28,300	6.31
Other construction materials	1,100	9,400	8.56
Agricultural limestone	(2)	(2)	6.50
Chemical and metallurgical, cement manufacture	2,220	8,240	3.72
Other miscellaneous uses ³	1,070	4,730	4.41
Unspecified:⁴			
Reported	13,700	85,900	6.27
Estimated	11,000	61,000	5.77
Total or average	24,300	147,000	6.06
Grand total or average	43,400	262,000	6.04

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

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

²Withheld to avoid disclosing company proprietary data; included in "Grand total."

³Includes refractory stone.

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

TABLE 4
ALABAMA: CRUSHED STONE SOLD OR USED
BY PRODUCERS IN 2002, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1 1/2 inch) ²	W	W	W	W	W	W
Coarse aggregate, graded ³	W	W	W	W	W	W
Fine aggregate (-3/8 inch) ⁴	W	W	W	W	W	W
Coarse and fine aggregate ⁵	W	W	W	W	W	W
Other construction materials	--	--	1,100	9,400	--	--
Agricultural ⁶	W	W	W	W	--	--
Chemical and metallurgical ⁷	--	--	W	W	W	W
Other miscellaneous uses ⁸	--	--	1,070	4,730	--	--
Unspecified: ⁹						
Reported	3,390	20,100	8,410	53,800	1,890	12,000
Estimated	2,300	13,000	8,200	48,000	140	790
Total	11,600	66,900	29,000	174,000	2,620	20,200
Unspecified districts						
	Quantity	Value				
Construction:						
Coarse aggregate (+1 1/2 inch) ²	--	--				
Coarse aggregate, graded ³	60	324				
Fine aggregate (-3/8 inch) ⁴	46	240				
Coarse and fine aggregate ⁵	57	290				
Other construction materials	--	--				
Agricultural ⁶	--	--				
Chemical and metallurgical ⁷	--	--				
Other miscellaneous uses ⁸	--	--				
Unspecified: ⁹						
Reported	--	--				
Estimated	--	--				
Total	163	854				

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 riprap and jetty stone and other coarse aggregates.

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

⁴Includes screening (undesignated) and other fine aggregates.

⁵Includes crusher run (select material or fill), graded road base or subbase, and other coarse and fine aggregates.

⁶Includes agricultural limestone.

⁷Includes cement manufacture.

⁸Includes refractory stone.

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

TABLE 5
ALABAMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002,
BY MAJOR USE CATEGORY¹

Use	Quantity		Unit value
	(thousand metric tons)	Value (thousands)	
Concrete aggregate and concrete products ²	4,510	\$20,400	\$4.51
Asphaltic concrete aggregates and other bituminous mixtures	804	4,700	5.85
Road base and coverings	454	1,820	4.00
Fill	240	816	3.40
Other miscellaneous uses ³	37	135	3.65
Unspecified: ⁴			
Reported	2,560	11,600	4.55
Estimated	3,900	17,000	4.36
Total or average	12,500	56,700	4.55

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

²Includes plaster and gunite sands.

³Includes snow and ice control and railroad ballast.

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

TABLE 6
ALABAMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002, 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	920	5,940	977	5,070	2,620	9,360
Asphaltic concrete aggregates and other bituminous mixtures	219	1,140	W	W	W	W
Road base and coverings	W	W	W	W	450	1,800
Fill	7	24	6	21	227	773
Other miscellaneous uses ³	5	7	246	1,310	377	2,390
Unspecified: ⁴						
Reported	--	--	--	--	2,560	11,600
Estimated	40	200	300	1,300	3,500	16,000
Total	1,190	7,280	1,520	7,690	9,760	41,800

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 railroad ballast and snow and ice control.

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