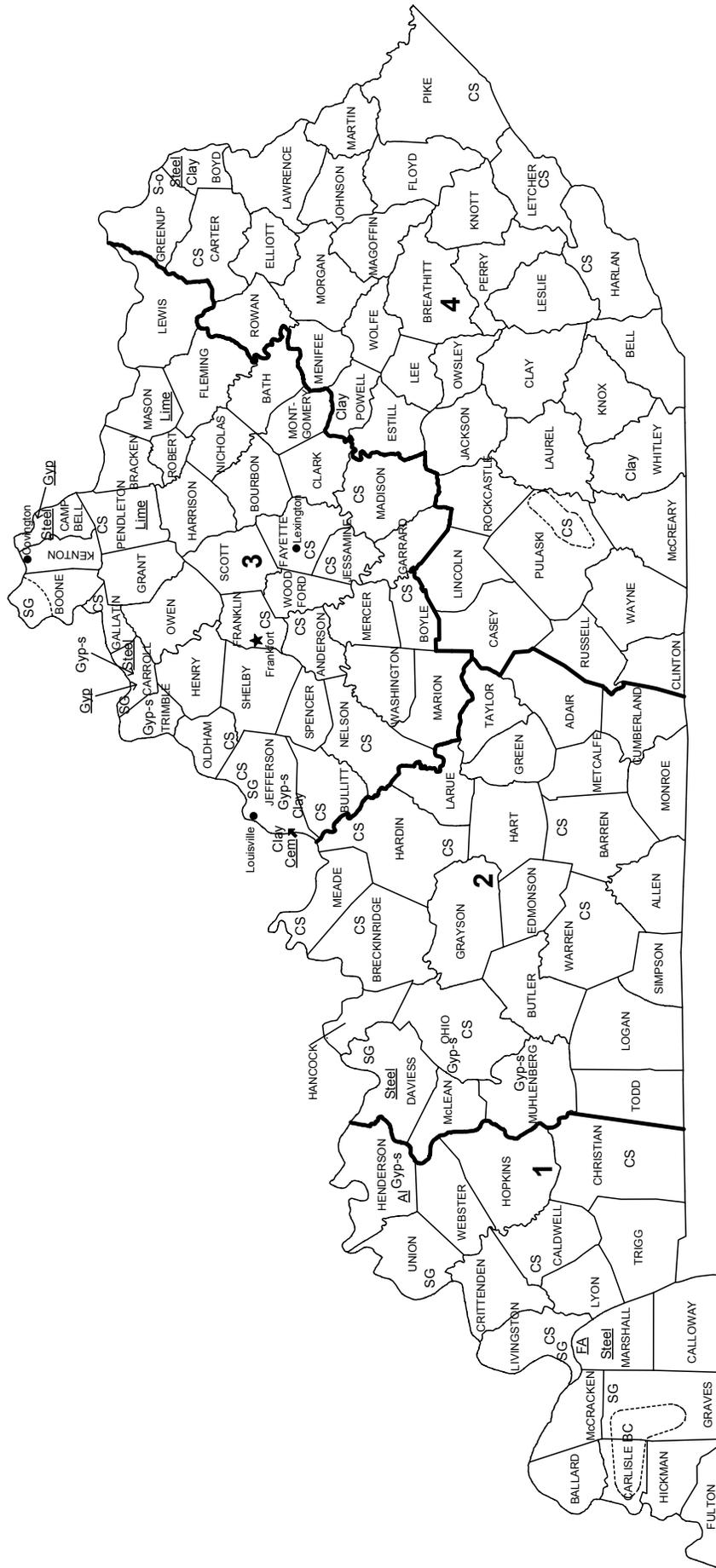


# KENTUCKY



## MINERAL SYMBOL (Major producing areas)

## LEGEND

	County boundary		Capital		City		Crushed stone/sand and gravel districts
	Construction sand and gravel		Ferroalloys plant		Gypsum plant		Steel plant
	Aluminum plant		Synthetic gypsum		Lime plant		Concentration of mineral operations
	Ball clay		Sulfur (oil)				
	Cement plant						
	Common clay						
	Crushed stone						

# THE MINERAL INDUSTRY OF KENTUCKY

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

In 2003, Kentucky's estimated value<sup>1</sup> of nonfuel mineral production was \$559 million, a 3% increase from that of 2002,<sup>2</sup> based upon preliminary U.S. Geological Survey (USGS) data. This followed about a 7% decrease in 2002 from that of 2001, based upon annual data. Kentucky was 24th in rank (25th in 2002) among the 50 States in total nonfuel mineral production value, of which the State continued to account for about 1.5% of the U.S. total.

Crushed stone continued to be Kentucky's leading nonfuel mineral commodity in 2003 and accounted for about 57% of the State's raw nonfuel mineral production value. Lime was second, followed by cement (portland and masonry) and construction sand and gravel. These four mineral commodities accounted for about 98% of the State's total nonfuel mineral value. In 2003, increases in the production and values of crushed stone, up about \$15 million, and lime, up more than \$10 million, led the State's increase for the year.

In 2002, decreases happened in the production and values of crushed stone, value down \$22 million, portland cement, down about \$14 million, lime, down about \$3 million, and construction sand and gravel, down \$2.5 million. Although small relative to these, increases also happened in the production and values of ball clay and masonry cement (descending order of change); common clays value was up 12% with about 9% lower production than in 2001 (table 1).

Compared with USGS estimates of the quantities produced in the other 49 States during 2002, Kentucky remained 3d in lime, 3d of four ball-clay-producing States, and 10th in common clays. Additionally, the State produced significant quantities of crushed stone, portland cement, and gemstones (descending order of value). Primary aluminum and raw steel were produced from materials obtained from other domestic and foreign sources. Based upon USGS annual data, Kentucky remained the Nation's leading producer of primary aluminum.

---

<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 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>.

<sup>2</sup>Values, 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.

The following narrative information was provided by the Kentucky Geological Survey<sup>3</sup> (KGS). In 2003, with an estimated production of nearly 52 million metric tons (Mt), the value of crushed stone was \$317 million, a 5% increase from the \$302 million of 2002. About 8.8 Mt of construction sand and gravel was produced at a value of about \$35 million in 2003, an 8% decrease from 9.5 Mt at a value of nearly \$38 million in 2002. Clay mineral production remained steady in 2002 and 2003 at about 925,000 metric tons, and gemstone production remained the same as 2002 levels at a value of about \$64,000.

## Mine Reclamation

Several old quarries and mines in the State have gotten new uses as idle quarry areas have become novel cultural features. The former Joe Clark Quarry in Oldham County has now become Falls Rock Park, featuring a quarry lake and a scuba diving training facility that has gained popularity because of its "open water" diving potential. An abandoned mine in Jefferson County was under development during 2003 to be used as a post-9/11 Critical Data Center, or technology park to provide a secure underground backup for critical infrastructure needs such as internet, financial, media, governmental and military communication systems. At another quarry in Jessamine County, the owners collected and bottled spring water for retail sales throughout central Kentucky. Other abandoned mines were being used as business, industrial, and equipment storage; some were used as mushroom farms because of their constant darkness and humidity.

## Commodity Review

### Industrial Minerals

**Clays.**—In general, acquisition activity slowed during 2003 from higher levels that happened during 2002 partly because companies were adjusting to previous year's acquisitions. Hanson Building Materials America purchased several companies in the United States during the year, including two brick plants in Kentucky. Hanson's purchase of the Ashland and Stanton brick operations from Sipple Brick Co. made Hanson the largest brick maker in the United States.

**Crushed Stone.**—Based upon 2002 annual USGS data, Kentucky, per capita, ranked 20th in the Nation in total nonfuel raw mineral production value; having a population of about 4.1 million, the per capita value of Kentucky's total nonfuel mineral production was \$133. (Value data herein represents the gross

---

<sup>3</sup>Warren H. Anderson, Geologist and Principal Investigator with the Kentucky Geological Survey, submitted the text of the State mineral industry information provided by that agency.

income of nonfuel raw mineral companies for the mined and processed minerals produced.) The Vulcan Materials Co.'s Reed Quarry continued to be the State's leading producer of crushed stone. Based upon 2002 USGS annual data, the Reed Quarry in Livingston County ranked as the fifth largest limestone quarry in order of output of crushed stone in the United States (Tepordei, 2004<sup>4</sup>). The central Kentucky region (crushed stone/sand and gravel district 3) had increasing demand for aggregate in urban and industrial markets and was the leading district in the State in total aggregate production (tonnage and value).

## Government Programs

During 2003, the KGS continued its efforts to visit all active nonfuel mineral operations in the State to obtain the most current information for an update of its directory of Kentucky's nonfuel-mineral producers. Upon completion, the KGS directory of mineral producers will be published on the KGS Web site at URL <http://www.uky.edu/KGS/home.htm>. Regarding the State's identified fuel and nonfuel mineral resources, the KGS Mineral and Fuel Resources Map of Kentucky is available on the KGS Web site at URL <http://www.uky.edu/KGS/gis/minmap.pdf>.

By yearend, the KGS' conversion into digital format of all 707 printed geologic quadrangle (GQ) 1:24,000-scale, 7.5-minute maps for Kentucky was nearly finished. Completion of the project was anticipated for spring 2004, making Kentucky the first State to have detailed geologic map coverage for the entire State in digital format. Previously, in 1978, the completion of geologic mapping of the entire State by the KGS and the USGS was considered a milestone in the history of geologic mapping in Kentucky. The digital conversion of GQs

<sup>4</sup>References that include section marks (§) are found in the Internet Reference Cited section.

began in 1996 with the establishment of the KGS component of the USGS Digital Geologic Mapping Program (found at URL <http://www.uky.edu/kgs/mapping/mapping.html>). The National Cooperative Geologic Mapping Act of 1992 and subsequent reauthorizations provided funding on a 50:50 basis between the KGS and the USGS. The KGS and the USGS oversaw the program to ensure that the highest standards be maintained in digitizing the data, that appropriate metadata are provided to assist the users, and that products are inexpensively and broadly distributed to the public. These projects were done, in part, to assist decisionmakers across the State with instant access to critical information needed to make well-informed decisions regarding future development and protection of the State's natural resources.

The conversion of the GQs into digital format has numerous benefits. Many of the Kentucky GQs are out of print, and the new digital data permanently preserve this valuable geologic information. With this digitized geologic data, newly created vector data can be compiled and organized in databases and can be distributed on CD-ROM or on the Internet. The digital format allows users to manipulate and analyze the data, is particularly useful in geographic information systems, allows for easy and inexpensive distribution by electronic means, and allows many varied users greater flexibility in the use of the data. Users can create new maps and new data by overlaying different maps (Kentucky Geological Survey, 2004§).

## Internet References Cited

Kentucky Geological Survey, 2004, Kentucky geology, Earth resources—Our common wealth, Kentucky Geological Survey Spring 2004 Newsletter, accessed August 13, 2004, at URL <http://www.uky.edu/KGS/announce/KentuckyGeologyv5no2.pdf>.

Tepordei, V.V., 2004, Directory of principal crushed stone producers in the United States in 2002, accessed August 12, 2004 at URL [http://minerals.usgs.gov/minerals/pubs/commodity/stone\\_crushed/csdir02.pdf](http://minerals.usgs.gov/minerals/pubs/commodity/stone_crushed/csdir02.pdf).

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

(Thousand metric tons and thousand dollars)

Mineral	2001		2002		2003 <sup>P</sup>	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays, common	1,010	4,230	925	4,740	925	4,740
Gemstones	NA	64	NA	64	NA	64
Sand and gravel, construction	10,100	40,400	9,530	37,900	8,800	35,200
Stone, crushed	58,700 <sup>r</sup>	324,000 <sup>r</sup>	50,600	302,000	51,900	317,000
Combined values of cement, clays (ball), lime	XX	213,000	XX	197,000	XX	202,000
Total	XX	581,000 <sup>r</sup>	XX	542,000	XX	559,000

<sup>P</sup>Preliminary. <sup>r</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  
KENTUCKY: CRUSHED STONE SOLD OR USED, BY KIND<sup>1</sup>

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 <sup>2</sup>	92 <sup>r</sup>	W	W	\$5.53 <sup>r</sup>	90	W	W	\$5.99
Dolomite	1	W	W	5.24	1	W	W	5.24
Total or average	XX	58,700 <sup>r</sup>	\$324,000 <sup>r</sup>	5.52 <sup>r</sup>	XX	50,600	\$302,000	5.97

<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, except unit value; may not add to totals shown.

<sup>2</sup>Includes limestone-dolomite reported with no distinction between the two.

TABLE 3  
KENTUCKY: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
<b>Construction:</b>			
<b>Coarse aggregate (+1 1/2 inch):</b>			
Macadam	W	W	\$4.36
Riprap and jetty stone	124	\$649	5.23
Filter stone	529	2,720	5.14
Other coarse aggregates	2,830	19,500	6.90
Total or average	3,490	22,900	6.57
<b>Coarse aggregate, graded:</b>			
Concrete aggregate, coarse	375	2,390	6.36
Bituminous aggregate, coarse	2,000	15,000	7.49
Bituminous surface-treatment aggregate	W	W	4.82
Other graded coarse aggregates	8,660	55,300	6.39
Total or average	11,000	72,600	6.59
<b>Fine aggregate (-3/8 inch):</b>			
Stone sand, concrete	W	W	8.12
Stone sand, bituminous mix or seal	W	W	6.71
Screening, undesignated	1,960	9,660	4.93
Other fine aggregates	3,050	20,900	6.84
Total or average	5,010	30,500	6.09
<b>Coarse and fine aggregates:</b>			
Graded road base or subbase	1,940	10,800	5.59
Unpaved road surfacing	41	274	6.68
Crusher run or fill or waste	72	321	4.46
Other coarse and fine aggregates	3,830	23,000	6.00
Total or average	5,890	34,400	5.85
Agricultural limestone	467	2,090	4.48
<b>Chemical and metallurgical:</b>			
Lime manufacture	(2)	(2)	8.77
Flux stone	(2)	(2)	4.41
Special, asphalt fillers or extenders	(2)	(2)	4.96
Other miscellaneous uses, pipe bedding	(2)	(2)	5.77
<b>Unspecified:<sup>3</sup></b>			
Reported	4,370	22,100	5.04
Estimated	16,000	84,000	5.09
Total or average	20,800	106,000	5.08
Grand total or average	50,600	302,000	5.97

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

<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 "Grand total."

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

TABLE 4  
KENTUCKY: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE AND DISTRICT<sup>1</sup>

(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 (+1 1/2 inch) <sup>2</sup>	W	W	W	W	W	W	1,090	5,960
Coarse aggregate, graded <sup>3</sup>	W	W	2,080	12,700	W	W	3,190	17,400
Fine aggregate (-3/8 inch) <sup>4</sup>	W	W	W	W	2,050	10,300	1,050	5,630
Coarse and fine aggregate <sup>5</sup>	W	W	W	W	2,130	12,900	1,550	7,280
Agricultural <sup>6</sup>	W	W	210	892	W	W	W	W
Chemical and metallurgical <sup>7</sup>	--	--	W	W	W	W	--	--
Special <sup>8</sup>	--	--	W	W	--	--	W	W
Other miscellaneous uses <sup>9</sup>	--	--	--	--	--	--	W	W
Unspecified: <sup>10</sup>								
Reported	1,820	9,020	--	--	2,330	11,300	226	1,770
Estimated	2,600	13,000	4,500	20,700	5,400	30,000	3,800	19,000
Total	11,400	77,200	9,010	47,100	19,100	120,000	11,100	58,000

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

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

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

<sup>5</sup>Includes crusher run (select material or fill), graded road base or subbase, unpaved road surfacing, and other coarse and fine aggregates.

<sup>6</sup>Includes agricultural limestone.

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

<sup>8</sup>Includes asphalt fillers or extenders.

<sup>9</sup>Includes pipe bedding.

<sup>10</sup>Reported and estimated production without a breakdown by end use.

TABLE 5  
KENTUCKY: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002,  
BY MAJOR USE CATEGORY<sup>1,2</sup>

Use	Quantity	Value (thousands)	Unit value
	(thousand metric tons)		
Concrete aggregate (including concrete sand)	1,300	\$4,370	\$3.36
Asphaltic concrete aggregates and road base materials	W	W	5.68
Fill	3	11	3.67
Other miscellaneous uses	126	731	5.80
Unspecified: <sup>3</sup>			
Reported	1,360	5,580	4.11
Estimated	6,700	27,000	4.04
Total or average	9,530	37,900	3.98

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

<sup>1</sup>To avoid disclosing company proprietary data, no district tables were produced in 2002.

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

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