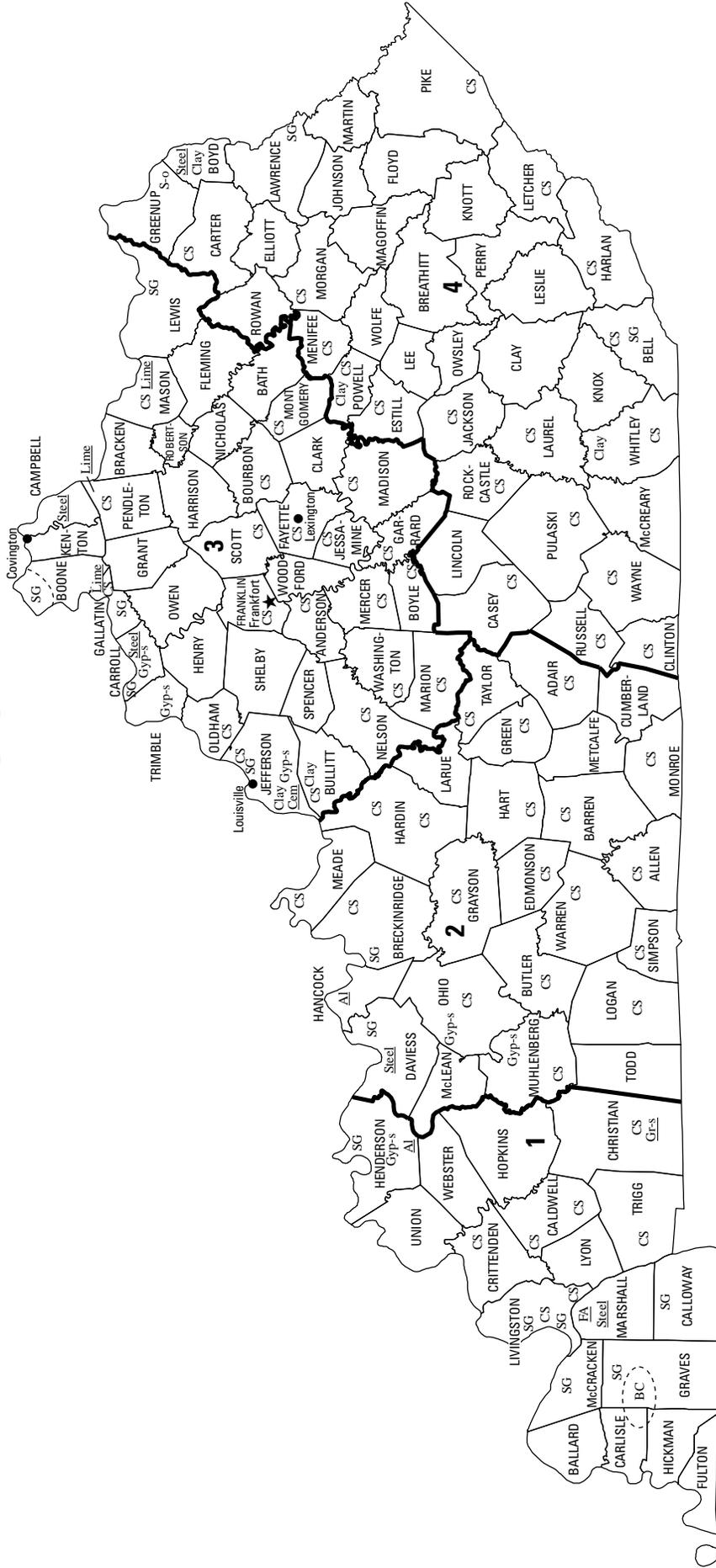




2008 Minerals Yearbook

KENTUCKY

KENTUCKY



LEGEND

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

**MINERAL SYMBOLS
(Principal producing areas)**

- Al Aluminum plant
- BC Ball clay
- Cem Cement plant and quarry
- Clay Common clay
- CS Crushed stone
- EA Ferroalloys plant
- Gr-s Synthetic graphite plant

- Gyp-s Synthetic gypsum
- Lime Lime plant and quarry
- S-o Sulfur (oil)
- SG Construction sand and gravel
- Steel Steel plant
- Concentration of mineral operations



Albers equal area projection

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 2008, Kentucky's nonfuel raw mineral production¹ was valued at \$776 million, based upon annual U.S. Geological Survey (USGS) data. This was a 2% decrease from the State's total nonfuel mineral production value of \$791 million in 2007, and followed a \$23 million, or 3%, decrease in the State's value from 2006 to 2007. Kentucky was 28th (27th in 2007) in rank among the 50 States in total nonfuel mineral production value, accounting for more than 1% of the U.S. total, yet, per capita, the State ranked 21st in the Nation in its minerals industry's value of nonfuel mineral production; with a population of nearly 4.28 million, the value of production, per capita, was about \$181.

In 2008, crushed stone continued to be Kentucky's leading nonfuel mineral commodity, accounting for 53% of the State's nonfuel raw mineral production value. Lime was second (withheld—company proprietary data), followed by portland cement (withheld—company proprietary data) and construction sand and gravel. These four mineral commodities accounted for about 98% of the State's total nonfuel mineral production value. Kentucky's decrease in total nonfuel mineral production value was the result of the decrease in the majority of the State's mineral commodities. The largest decrease in value took place in crushed stone, down by \$21 million, followed by construction sand and gravel, down by almost \$7 million, and portland cement (withheld—company proprietary data). Smaller, yet significant, decreases also took place in masonry cement and ball clay (withheld—company proprietary data). Common clays production value rose, despite a decrease in the quantity produced. The only mineral commodity to increase in production and value was lime (withheld—company proprietary data).

In 2008, Kentucky continued to rank 3d in the quantities of lime produced, 4th in the production of ball clay, and the State produced significant quantities of crushed stone (12th in rank), common clays (19th in rank), and portland cement (19th in rank). Additionally, primary aluminum and raw steel were produced from materials obtained from other domestic and foreign sources. Kentucky remained the Nation's leading producer of primary aluminum.

The following narrative information was provided by the Kentucky Geological Survey² (KGS).

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 2008 USGS mineral production data published in this chapter are those available as of June 2010. 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>.

²Warren H. Anderson, Geologist and Principal Investigator with the Kentucky Geological Survey, submitted the text of the State mineral industry information provided by that State agency.

Overview

Kentucky continued to be the leading State in underground limestone production in 2008. Crushed stone production decreased to 51 million metric tons (Mt), down by 9% from that of 2007. The production value of crushed stone decreased by 5% owing to the rise in value of raw materials. Construction sand and gravel production was 7.6 Mt, with a production value of about \$42 million, representing a 16% decrease in production and a 14% decrease in production value from those of 2007. The production and value of ball clays similarly decreased. Production data for ball clays, cement, and lime were proprietary data, but the combined production value for these mineral commodities increased by 3% in 2008 from that of 2007. Synthetic graphite continued to be produced in several Kentucky counties. Gemstone production values increased from that of 2007, partly thought to be the result of an increase in the harvest of shell used as seed for pearls.

Employment

An average of 7,484 individuals were employed in Kentucky's steel industry during 2008, according to the Kentucky Cabinet for Economic Development. In 2008, the major steel employers in the State were North American Stainless, Gallatin County (1,350 employees); AK Steel Corp., Boyd County (936 employees); Mubea, Inc., Boone County (688 employees); Gallatin Steel Co., Gallatin County (423 employees); IPSCO Tubulars Kentucky, Inc., Campbell County (324 employees); Aichi Forge USA, Inc., Scott County (320 employees); Stephens Pipe & Supply, LLC, Russell County (320 employees); Sypris Solution, Inc., Jefferson County (310 employees); Gerdau Ameristeel Corp., Marshall County (200 employees); and Kobe Aluminum Automotive Products, LLC, Warren County (200 employees) (Kentucky Cabinet for Economic Development, 2009, p. 5).

Exploration and Mine Development Activities

In 2008, Hastie Mining and Trucking Co. and Moodie Minerals Co. continued an exploration program in the Western Kentucky fluor spar district to obtain the necessary permits to open a fluorite mine. Core drilling results from the Klondike Mine in Livingston County showed that several cores contained a high percentage of fluor spar. The companies planned to continue the process of obtaining the regulatory approval necessary to open a mine in 2010.

Hilltop-Ingleside Mine, LLC planned to open an underground limestone mine on the property owned by East Kentucky Power Company in Mason County. Hilltop expected to add approximately 35 new jobs and begin operations in 2010. Kay and Kay Quarry Division opened a new limestone quarry at

Barnesburg, northeast of Somerset in Pulaski County. The stone was used for agricultural purposes and construction.

Superior Graphite, Hopkinsville, KY, producer of carbon products and graphite, completed its silicon carbide armor tile plant. With the new capability, Superior was able to increase production of silicon carbide powder and ceramic armor tiles. Superior expected to increase employment with the expansion.

Felkers Brothers Corp. located in Glasgow, Barren County, producer of stainless steel pipe and tubes, expanded its steel-related facilities in 2008, with an investment of \$300,000 (Kentucky Cabinet for Economic Development, 2009, p. 22).

Commodity Review

Industrial Minerals

Lime.—Alpha Natural Resources Inc. sold its interest in the Gallatin Materials, LLC Lime Plant located at the Sterling Materials Mine, in Verona, KY, to Mississippi Lime Co. The plant began in the first quarter of 2008. The lime plant produced bulk lime for industrial use and processed about 250,000 metric tons per year of high-calcium quicklime for industrial use. An additional lime kiln was planned for 2009 if market conditions warranted.

Government Programs and Activities

The Kentucky Geological Survey's new Minerals Web site (<http://www.uky.edu/KGS/>) provides introductory information on the mineral resources of the State. KGS continued to work on a long-term project of a minerals database to allow the user to search specific information on mineral deposits. Information on mineral deposits such as mine maps, cross sections, ore grade

analysis, and log data were scanned and incorporated into the database. The database can be searched using a specific site location to provide detailed information to the user.

In 2008, KGS completed the development of a digital database and Web site of geologic information for digital 1:100,000-scale maps for the State. This Web site allows a user to download various types of geologic maps and data to create custom maps (Kentucky Geological Survey, 2008).

The University of Kentucky continued State-funded research efforts in carbon sequestration issues, powerplants and their impact on nearby underground limestone mining operations. The Kentucky Consortium for Carbon Sequestration was formed to evaluate the potential for drilling a well in western Kentucky to test the sequestration potential in deeper rocks. There were several projects in Boone and Hancock Counties to inject carbon dioxide (CO₂) deep into the surface to test the storage capability of deeper rocks in the State. Limited amounts of CO₂ will be injected into these wells in an effort to monitor the subsurface fluid behavior and the migration of the fluid. Further information about carbon sequestration is available on the KGS Web site at <http://www.uky.edu/KGS/kyccs/>.

References Cited

- Kentucky Cabinet for Economic Development, 2009, Profile of Kentucky's steel industry: Frankfort, KY, Kentucky Cabinet for Economic Development, August, 27 p. (Accessed February 15, 2011, at <http://www.thinkkentucky.com/kyedc/pdfs/SteelIndustryProfile.pdf>.)
- Kentucky Geological Survey, 2008, KGSGeoPortal—Gateway to online maps, databases, and publications for Kentucky: Lexington, KY, Kentucky Geological Survey, KGS Databases, Maps, and Publications Web site. (Accessed February 14, 2011, at <http://kgs.uky.edu/kgsmap/KGSGeoPortal/KGSGeoPortal.asp>.)

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

(Thousand metric tons and thousand dollars)

Mineral	2006		2007		2008	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays, common	1,000	5,140	598	3,720	419	8,170
Gemstones, natural	NA	48	NA	48	NA	173
Sand and gravel, construction	10,100	54,400	9,070	48,300	7,600	41,600
Stone, crushed	60,100	443,000	56,000 ^r	432,000 ^r	51,000	411,000
Combined values of cement, clays (ball), lime	XX	311,000	XX	307,000	XX	315,000
Total	XX	814,000	XX	791,000 ^r	XX	776,000

^rRevised. NA Not available. XX Not applicable.

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

²Data are rounded to three significant digits; may not add to totals shown.

TABLE 2
KENTUCKY: CRUSHED STONE SOLD OR USED, BY TYPE¹

Type	2007 ^r			2008		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Limestone ²	94	56,000	\$432,000	95	51,000	\$411,000

^rRevised.

¹Data are rounded to no more than three significant digits.

²Includes limestone-dolomite reported with no distinction between the two.

TABLE 3
KENTUCKY: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2008, BY USE¹

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Macadam	W	W
Riprap and jetty stone	1,180	1,250
Filter stone	W	W
Other coarse aggregate	3,560	30,200
Coarse aggregate, graded:		
Concrete aggregate, coarse	1,240	10,200
Bituminous aggregate, coarse	1,640	16,700
Bituminous surface-treatment aggregate	370	3,040
Railroad ballast	361	2,830
Other graded coarse aggregate	5,170	49,900
Fine aggregate (-¾ inch):		
Stone sand, concrete	W	W
Stone sand, bituminous mix or seal	W	W
Screening, undesignated	4,000	18,300
Other fine aggregate	1,930	17,500
Coarse and fine aggregates:		
Graded road base or subbase	6,140	37,500
Unpaved road surfacing	248	1,970
Crusher run or fill or waste	480	3,280
Other coarse and fine aggregates	2,960	23,600
Other construction materials	3	10
Agriculture, limestone	W	W
Chemical and metallurgical:		
Lime manufacture	W	W
Flux stone	W	W
Sulfur oxide removal	W	W
Special, mine dusting or acid water treatment	W	W
Other miscellaneous uses and specified uses not listed	1	9
Unspecified: ²		
Reported	9,700	87,300
Estimated	9,200	77,000
Total	51,000	411,000

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

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

²Reported and estimated production without a breakdown by end use.

TABLE 4
KENTUCKY: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2008, BY USE AND DISTRICT^{1,2}

(Thousand metric tons and thousand dollars)

Use	Districts 1 and 2		Districts 3 and 4	
	Quantity	Value	Quantity	Value
Construction:				
Coarse aggregate (+1½ inch) ³	862	7,140	4,060	37,200
Coarse aggregate, graded ⁴	3,480	30,700	5,300	52,000
Fine aggregate (-¾ inch) ⁵	938	8,020	5,730	34,300
Coarse and fine aggregate ⁶	2,170	15,200	7,650	51,100
Other construction materials	3	10	--	--
Agricultural ⁷	W	W	W	W
Chemical and metallurgical ⁸	W	W	W	W
Special ⁹	W	W	--	--
Other miscellaneous uses and specified uses not listed	--	--	1	9
Unspecified: ¹⁰				
Reported	6,370	58,200	3,330	29,000
Estimated	3,500	30,000	5,600	47,000
Total	18,100	154,000	32,900	258,000

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.

²Specified districts are combined to avoid disclosing company proprietary data.

³Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.

⁴Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded aggregate.

⁵Includes screening (undesignated), stone sand (bituminous mix or seal), stone sand (concrete), and other fine aggregate.

⁶Includes crusher run or fill or waste, graded road base or subbase, unpaved road surfacing, and other coarse and fine aggregates.

⁷Includes limestone.

⁸Includes lime manufacture, flux stone, and sulfur oxide removal.

⁹Includes mine dusting or acid water treatment.

¹⁰Reported and estimated production without a breakdown by end use.

TABLE 5
KENTUCKY: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2008,
BY MAJOR USE CATEGORY¹

Use	Quantity	Value (thousands)	Unit value
	(thousand metric tons)		
Concrete aggregate (including concrete sand)	5,560	\$30,800	\$5.54
Asphaltic concrete aggregates and road base materials	163	820	5.03
Fill	275	1,150	4.20
Other miscellaneous uses	6	70	11.67
Unspecified: ²			
Reported	281	2,270	8.06
Estimated	1,300	6,500	4.96
Total or average	7,600	41,600	5.47

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

²Reported and estimated production without a breakdown by end use.

TABLE 6
 KENTUCKY: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2008, 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 (including concrete sand)	W	W	--	--	W	W
Asphaltic concrete aggregates and other bituminous mixtures	W	W	(2)	(2)	W	W
Fill	W	W	--	--	W	W
Other miscellaneous uses	1,040	4,350	--	--	4,930	28,200
Unspecified: ³						
Reported	--	--	--	--	281	2,270
Estimated	870	4,300	(2)	(2)	170	830
Total	1,910	8,660	183	966	5,380	31,300
	District 4					
	Quantity	Value				
Concrete aggregate (including concrete sand)	--	--				
Asphaltic concrete aggregates and other bituminous mixtures	--	--				
Fill	(2)	(2)				
Other miscellaneous uses	--	--				
Unspecified: ³						
Reported	--	--				
Estimated	(2)	(2)				
Total	127	619				

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.

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

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