

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 2002, the estimated value¹ of nonfuel mineral production for Kentucky was \$587 million, based upon preliminary U.S. Geological Survey (USGS) data. This was virtually the same as that of 2001² and followed a 17.8% increase in 2001 from that of 2000. The State remained 24th in rank among the 50 States in total nonfuel mineral production value, of which Kentucky accounted for more than 1.5% of the U.S. total.

Crushed stone continued as Kentucky's leading nonfuel mineral commodity in 2002 and accounted for nearly 55% of the State's raw nonfuel mineral production value. Lime was second, followed by cement (portland and masonry) and construction sand and gravel. The four combined accounted for about 98% of the State's total nonfuel mineral value. In 2002, decreases in the value of crushed stone, down \$11 million, along with a smaller drop in portland cement were more than offset by increases in the values of lime, up more than \$12 million, and construction sand and gravel, up about \$1.5 million, resulting in a slight net increase for the year.

In 2001, a very substantial increase in the production and value of portland cement plus a \$37 million rise in the value of crushed stone and a smaller increase in construction sand and gravel accounted for nearly all the State's increase in nonfuel mineral value. The value of gemstones also was up slightly. Decreases occurred in the production and values of lime and ball clay (descending order of change in value) (table 1).

Compared with USGS estimates of the quantities produced in the other 49 States during 2002, Kentucky remained third of four ball-clay-producing States, fourth in lime, and produced significant quantities of crushed stone, portland cement, construction sand and gravel, and common clays (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.

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the minerals or 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 2002 USGS mineral production data published in this chapter are preliminary estimates as of July 2003 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 Mineral Industry Surveys—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 2001 may differ from the Minerals Yearbook, Area Reports: Domestic 2001, Volume II, owing to the revision of preliminary 2001 to final 2001 data. Data for 2002 are preliminary and are expected to change; related rankings may also change.

The following narrative information was provided by the Kentucky Geological Survey³ (KGS). Some data or information as reported by the KGS may differ from USGS preliminary estimates and production figures as reported to and estimated by the USGS.

Clay, limestone, and sand and gravel are the principal nonfuel minerals mined in Kentucky. Limestone is the State's principal industrial mineral and is used for agricultural limestone, cement, coal-related industries, construction aggregate, and lime. Limestone is mined in the Mississippian Plateaus region of eastern and western Kentucky and along Pine Mountain in southeastern Kentucky. Ordovician and Silurian limestone are mined from the central part of the State. Quaternary sand and gravel is mined along the Ohio River and is used in construction materials and as aggregate for roads and buildings. A variety of clay materials are mined in Kentucky, including ceramic and ball clays, common clay, refractory clay, and shale. These materials are used in the manufacture of brick, china, industrial absorbents, lightweight aggregate, pottery, sanitaryware, and tile. Clays are mined from tertiary deposits of the Jackson Purchase Region in western Kentucky and from Devonian through Pennsylvanian deposits in other parts of the State.

Commodity Review

Per capita spending and consumption of crushed stone in Kentucky was \$145, ranking Kentucky 18th nationally. Vulcan Materials Co.'s Reed Quarry, in Livingston County, remained the State's leading producer of crushed stone. The Reed Quarry ranks among the top 10 largest limestone quarries in the United States. At the deepest level of the quarry, the floor is 30 meters below sea level. Other quarries in Kentucky also planned to increase the depth of their operations. In central Kentucky, many surface quarries have made plans to go underground and develop mine operations because of increased urban growth, surface zoning restrictions, and expansion limitations.

Cement and lime production data were not released for 2002 because of the exclusion of proprietary information, but the estimated value of production was \$213 million in 2001, which was an increase from \$164 million in 2000. Sand and gravel production was estimated to be 10.3 million metric tons (Mt) with an estimated value of about \$42 million, up slightly from 10.1 Mt with a value of \$40.4 million in 2001. Common clay production was estimated to be 0.93 Mt, with an estimated value of \$4.56 million, a slight production decline from 2001 values. The value of gemstone production in 2002 remained at the 2001 level of \$64,000.

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

The potential development of new coal-fired powerplants in Kentucky has fueled interest in sources of limestone suitable for flue gas desulfurization. Adjacent sources of limestone will be important to many of the new plants that have been proposed for the eastern and western Kentucky coalfields. Western Kentucky Energy (a subsidiary of LG&E Energy Corp.) will install scrubbers at its existing Coleman Generation Station at Hawesville in western Kentucky. East Kentucky Power Cooperative will install a circulating fluidized bed combustion unit at the Spurlock Station in Maysville, KY.

In November 2000, Cemex Inc. purchased the assets of Southdown Inc., including several Kentucky operations. Cemex maintains a controlling interest in Lone Star Cement Co. and has expanded the Louisville facility, while selling four quarries in 2002. Two of its quarries in Bowling Green and one each in Hartford and Bardstown, KY, were sold to Rinker Materials Corp. Cemex also sold Butler Quarry to Hilltop Basic Resources Inc. Also in 2002, Mago Construction Co. purchased White Stone Co. in Hardinsburg, KY.

Government Programs

In September 2001, the Governor signed an executive order that imposed a 9-month moratorium on issuing new permits

for noncoal mineral operations in Kentucky. This order was amended to remove clay, sand, and gravel operations from the moratorium and extended it to December 15, 2002. On December 13, 2002, the Natural Resources and Environmental Protection Cabinet implemented nine emergency administrative regulations to address mining and environmental concerns about water supplies, highwalls, blasting, and transportation issues related to limestone mining operations. These regulations will allow the moratorium to be lifted for new permits in the southeastern part of the State. In a related development, the Governor signed into law House bill 556, which established a 190-kilometer linear State park along the Pine Mountain Trail corridor, an area that is the only source of limestone in southeastern Kentucky and where several limestone operations are presently located.

KGS provides a 1:500,000-scale map showing the distribution of minerals and fuel resources in Kentucky. It can be viewed at URL <http://www.uky.edu/KGS/gis/newmaps.html#mineral>. General information about mineral resources and regional geology can be found on KGS's Web site at URL <http://www.uky.edu/KGS>.

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

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2000		2001		2002 ^p	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays:						
Common	1,000	4,190	1,010	4,230	933	4,560
Fire	10	35	--	--	--	--
Gemstones	NA	47	NA	64	NA	64
Sand and gravel, construction	11,000	36,000	10,100	40,400	10,300	41,900
Stone, crushed	55,100 ^r	294,000 ^r	60,200	331,000	57,000	320,000
Combined values of cement, clays (ball), lime	XX	164,000	XX	213,000	XX	221,000
Total	XX	499,000 ^r	XX	588,000	XX	587,000

^pPreliminary. ^rRevised. NA Not available. XX Not applicable. -- Zero.

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 KIND¹

Kind	2000				2001			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	95	W	W	\$5.39	94	W	W	\$5.50
Dolomite	1	W	W	3.46	1	W	W	5.24
Total or average	XX	55,100 [†]	\$294,000 [†]	5.33	XX	60,200	\$331,000	5.50

[†]Revised. 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
KENTUCKY: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2001, BY USE¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	\$6.08
Riprap and jetty stone	135	\$1,020	7.57
Filter stone	481	2,800	5.83
Other coarse aggregates	2,340	14,100	6.03
Total or average	2,950	17,900	6.06
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,450	7,350	5.07
Bituminous aggregate, coarse	2,350	16,400	6.98
Bituminous surface-treatment aggregate	251	1,670	6.65
Railroad ballast	W	W	6.61
Other graded coarse aggregates	7,580	43,400	5.73
Total or average	11,600	68,900	5.92
Fine aggregate (-3/8 inch):			
Stone sand, concrete	324	1,330	4.10
Stone sand, bituminous mix or seal	420	2,140	5.10
Screening, undesignated	671	3,580	5.34
Other fine aggregates	1,990	12,300	6.16
Total or average	3,410	19,300	5.67
Coarse and fine aggregates:			
Graded road base or subbase	2,970	16,400	5.50
Unpaved road surfacing	311	1,780	5.73
Crusher run or fill or waste	399	1,550	3.88
Other coarse and fine aggregates	3,010	17,400	5.78
Total or average	6,690	37,100	5.54
Other construction materials	(2)	(2)	5.13
Agricultural limestone	586	2,780	4.74
Chemical and metallurgical, lime manufacture	(2)	(2)	3.58
Other miscellaneous uses, pipe bedding	(2)	(2)	6.17
Unspecified:³			
Reported	19,000	105,000	5.49
Estimated	16,000	80,000	5.08
Total or average	34,900	185,000	5.30
Grand total or average	60,200	331,000	5.50

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

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

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

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

TABLE 4
KENTUCKY: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2001, BY USE AND DISTRICT¹

(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) ²	W	W	W	W	479	3,000	932	5,080
Coarse aggregate, graded ³	W	W	W	W	3,500	22,700	3,070	16,300
Fine aggregate (-3/8 inch) ⁴	W	W	W	W	896	5,000	1,100	5,670
Coarse and fine aggregate ⁵	W	W	W	W	2,740	15,500	1,170	5,900
Other construction materials	--	--	--	--	--	--	W	W
Agricultural ⁶	W	W	W	W	94	485	W	W
Chemical and metallurgical ⁷	--	--	--	--	--	--	W	W
Other miscellaneous uses ⁸	--	--	--	--	--	--	W	W
Unspecified: ⁹								
Reported	7,720	38,800	4,200	25,000	6,200	35,200	922	5,580
Estimated	840	4,000	2,600	13,000	8,700	45,000	3,700	18,000
Total	15,800	90,500	10,700	56,100	22,600	126,000	11,100	57,900

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

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

⁴Includes screening (undesignated), stone sand bituminous mix or seal, stone sand (concrete), and other fine aggregate.

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

⁶Includes agricultural limestone.

⁷Includes lime manufacture.

⁸Includes pipe bedding.

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

TABLE 5
KENTUCKY: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2001, BY MAJOR USE CATEGORY¹

Use	Quantity	Value	Unit
	(thousand metric tons)	(thousands)	value
Concrete aggregates (including concrete sand)	4,980	\$21,900	\$4.39
Asphalt concrete aggregates and road base materials	177	1,090	6.16
Fill	127	664	5.23
Other miscellaneous uses	23	155	6.74
Unspecified: ²			
Reported	1,420	5,600	3.95
Estimated	3,400	11,000	3.25
Total or average	10,100	40,400	3.25

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 2001, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	Districts 1 and 2		Districts 3 and 4	
	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products	W	W	W	W
Asphaltic concrete aggregates and road base materials	177	1,090	--	--
Other miscellaneous uses ²	924	3,000	4,210	19,700
Unspecified: ³				
Reported	--	--	1,420	5,600
Estimated	2,900	9,200	540	1,800
Total	4,000	13,300	6,170	27,100

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

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

²Includes fill.

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