

# 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 2000, the estimated value<sup>1</sup> of nonfuel mineral production for Kentucky was \$497 million, based upon preliminary U.S. Geological Survey (USGS) data. This was a 1.4% decrease from that of 1999<sup>2</sup> and followed a 2.4% increase in 1999 from 1998. The State was 30th in rank among the 50 States in total nonfuel mineral production value, of which Kentucky accounted for more than 1% of the U.S. total.

Crushed stone continued as Kentucky's leading nonfuel mineral commodity in 2000, accounting for more than 59% of the State's nonfuel mineral production value. Lime was second, and portland cement was third. Kentucky's decrease in nonfuel mineral value in 2000, resulting mostly from a \$15 million drop in the value of crushed stone, was moderately offset by an increase in lime of about \$8 million. Construction sand and gravel value increased by almost as much as the value of ball clay decreased, while all other mineral commodities changed little or remained the same. There was no production of fire clay in 2000. In 1999, increases in the values of crushed stone, construction sand and gravel, and portland cement (in descending order) totaled more than the decreases that occurred in lime and ball clay of about \$16 million and \$4 million, respectively (table 1). The value of gemstones showed a small increase, while common clays was down slightly.

Compared with USGS estimates of the quantities produced in the other 49 States during 2000, Kentucky remained 3d in ball clay; 1 of the top 4 lime-producing States; 8th in common clay; and rose to 9th from 10th in the production of gemstones (based on value). Additionally, the State produced significant quantities of crushed stone. Primary aluminum and raw steel were produced from materials obtained from other domestic and foreign sources. Based upon USGS data, Kentucky remained the Nation's second leading producer of primary aluminum.

Whereas in recent years, Kentucky has been entirely an industrial mineral-producing State, there has been exploration

<sup>1</sup>The 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 2000 USGS mineral production data published in this chapter are preliminary estimates as of July 2001 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. A telephone listing of the specialists may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>, by using MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset (request Document #1000 for a telephone listing of all mineral commodity specialists), or by calling USGS information at (703) 648-4000 for the specialist's name and number. All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>; facsimile copies may be obtained from MINES FaxBack.

<sup>2</sup>Values, percentage calculations, and rankings for 1999 may vary from the Minerals Yearbook, Area Reports: Domestic 1999, Volume II, owing to the revision of preliminary 1999 to final 1999 data. Data for 2000 are preliminary and are expected to change; related rankings may also change.

for metals. Pasmenco Zinc Inc., subsidiary of Pasmenco Ltd. of Australia, put up for sale its 100% interest in the Western Kentucky zinc exploration project and mill in Crittenden, Livingston, and Caldwell Counties, part of what is known as the Kentucky-Illinois "fluorspar district." The Kentucky-Illinois fluorspar (fluorite) district has a history of fluorite, lead, and zinc mining going back more than 150 years and was the largest producer of fluorite in the United States for almost 100 years. The last year in which any zinc was mined was 1990, when small quantities of zinc and fluorspar were recovered from surface ore at the Lafayette Mine in Crittenden County. Pasmenco Zinc, together with previous owner Savage Zinc Inc., spent about \$1.75 million on exploration and investment. The area hosts some historically defined and unexploited zinc reserves, including the Robinson-Lasher mine property with 500,000 metric tons grading 14% zinc. According to Pasmenco, the exploration potential is excellent for multiple midsize deposits that could produce high-quality, low-iron, zinc concentrate. However, because of other commitments, Pasmenco elected to sell the project to a mining company capable of operating the mine and capitalizing on the exploration potential of the region. Included in the offering was the Babbs-Barnes mill, a 410-metric-ton-per-day zinc and fluorite mill with a heavy-media plant, tailings ponds, and all the ancillary facilities needed for a zinc milling operation (160 kilometers from Pasmenco's Clarksville, TN, zinc smelter). Pasmenco announced it was prepared to guarantee access and to contribute toward transportation costs of zinc concentrates to its Clarksville smelter (InfoMine), undated, Western Kentucky fluorite-zinc project, accessed August 30, 2001, at URL <http://www.infomine.com/companies-properties/properties/westernken.html>.

The following narrative information was provided by the Kentucky Geological Survey (KGS).<sup>3</sup> Jefferson County Stone of the Rogers Group, Inc. started producing limestone from a new underground mine in Jefferson County, east of Louisville. Production was in the Tyrone Limestone of the High Bridge Group (Ordovician) at a depth of more than 305 meters. A second producing level was being developed in the underlying Camp Nelson Limestone of the High Bridge. Production also continued at the site from a surface quarry in the Laurel Dolomite (Silurian).

Proposed opening and expansion of aggregate operations in counties bordering Jefferson County and Louisville were opposed. The Rogers Group has proposed opening a quarry in the town of West Point in northern Hardin County. The proposal received the support of the West Point mayor and city council but was opposed by a citizens group (Woolhouse, 2000). Litter's Quarry proposed expanding an underground mine in Oldham County but encountered opposition from both local government officials and citizens (Ellis, 2000).

<sup>3</sup>Garland Dever, Jr., Geologist, submitted the text of information provided by the KGS.

Two large wallboard plants opened because of the construction boom with its increased demand for wallboard and the availability of synthetic gypsum produced by flue gas desulfurization systems at coal-fired powerplants along the Ohio River. The BPB Celotex Carrollton plant in Carroll County received gypsum from the Kentucky Utilities Ghent powerplant in Carroll County and from the Louisville Gas and Electric (LG&E) Trimble powerplant in Trimble County (Stamper, 2000). The Lafarge Corp. Silver Grove plant in Campbell County used gypsum from the Cinergy Zimmer powerplant in Ohio (Cement Americas, 2000b). LG&E's Mill Creek powerplant in Jefferson County began providing synthetic gypsum to U.S. Gypsum Co. in 1999.

Kosmos Cement Co., owned by Southdown, Inc. and Lone Star Industries, Inc., awarded a \$15 million contract to expand and to modernize its Kosmosdale plant in Jefferson County (Cement Americas, 2000c). The contract provided for the plant's capacity to be increased by 635,000 metric tons per year (t/yr) to about 1.45 million metric tons per year. The purchase of Southdown by Cemex S.A. de C.V. of Mexico in late 2000 involved the Kosmos cement plant and its supporting quarry as well as five Southdown quarries in Kentucky (Cement Americas, 2000a).

Hanson Aggregates Midwest, Inc. swapped several plants in western Kentucky and Tennessee for Rogers Group operations in Ohio (Kentucky Crushed Stone Association, 2001b). Kentucky operations involved in the swap were the Marion Mine in Crittenden County, Princeton Mine in Caldwell County, and Canton Quarry in Trigg County. Hanson also purchased Davon, Inc., an Ohio-based aggregate producer (Mining Engineering, 2001). The purchase included Davon's AA Limestone Quarry in Carter County.

Hinkle Contracting Corp. and Walker Ventures purchased the Debbie Hill Quarry in Morgan County from Ken-Mor Stone,

Inc. (Kentucky Crushed Stone Association, 2001a). The operation was renamed Cave Run Stone, LLC.

Southwire Co. announced an agreement to sell its Hawesville aluminum smelter in Hancock County to Century Aluminum Co. of California (Ward, 2000). The smelter had a capacity of 237,000 t/yr. Southwire planned to continue to operate a rod mill at Hawesville.

Kentucky-Tennessee Clay Co., whose operations include ball clay mines in western Kentucky, was put up for sale by its parent, Hecla Mining Co. (Industrial Minerals, 2000). Zemex Industrial Minerals of Canada was reported to be planning to purchase the subsidiary from Hecla Mining Co. (Industrial Minerals, 2001).

## References Cited

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TABLE 1  
NONFUEL RAW MINERAL PRODUCTION IN KENTUCKY 1/ 2/

(Thousand metric tons and thousand dollars)

Mineral	1998		1999		2000 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays, common	872	3,930	892	3,790	892	3,790
Gemstones	NA	263	NA	292	NA	297
Sand and gravel, construction	8,100	27,500	9,620	32,400	9,640	33,000
Stone, crushed 3/	58,600 r/	285,000 r/	60,500	310,000	56,000	295,000
Combined values of cement, clays [ball, fire (1998-99)], lime, stone [crushed sandstone (1998), crushed miscellaneous (1999-2000)]	XX	175,000	XX	158,000	XX	165,000
Total	XX	492,000 r/	XX	504,000	XX	497,000

p/ Preliminary. r/ Revised. NA Not available. XX Not applicable.

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

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

3/ Excludes certain stones; kind and value included with "Combined values."

TABLE 2  
KENTUCKY: CRUSHED STONE SOLD OR USED BY PRODUCERS, BY KIND 1/

Kind	1998				1999			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	91 r/	58,600 r/	\$285,000 r/	\$4.86 r/	98	W	W	W
Dolomite	1 r/	(2/)	(2/)	(2/)	1	W	W	W
Miscellaneous stone	1	(2/)	(2/)	(2/)	1	(2/)	(2/)	(2/)
Total or average	XX	58,600 r/	285,000 r/	4.86 r/	XX	60,500	310,000	5.13

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

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

2/ Withheld from total to avoid disclosing company proprietary data.

TABLE 3  
KENTUCKY: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1999,  
BY USE 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
<b>Construction:</b>			
<b>Coarse aggregate (+1 1/2 inch):</b>			
Macadam	101	\$461	\$4.56
Riprap and jetty stone	284	1,800	6.32
Filter stone	500	2,520	5.04
Other coarse aggregate	1,900	7,980	4.19
<b>Coarse aggregate, graded:</b>			
Concrete aggregate, coarse	1,970	10,800	5.49
Bituminous aggregate, coarse	3,550	23,100	6.50
Bituminous surface-treatment aggregate	554	3,050	5.50
Railroad ballast	106	475	4.48
Other graded coarse aggregate	7,300	39,200	5.37
<b>Fine aggregate (-3/8 inch):</b>			
Stone sand, concrete	287	1,280	4.45
Stone sand, bituminous mix or seal	837	4,160	4.97
Screening, undesignated	338	2,090	6.19
Other fine aggregate	2,100	11,000	5.24
<b>Coarse and fine aggregate:</b>			
Graded road base or subbase	3,920	21,500	5.49
Unpaved road surfacing	1,160	5,750	4.98
Crusher run or fill or waste	825	3,060	3.71
Other coarse and fine aggregates	3,150	15,300	4.85
Other construction materials	W	W	3.87
Agricultural, agricultural limestone	752	3,000	3.99
<b>Chemical and metallurgical:</b>			
Cement manufacture	W	W	3.16
Lime manufacture	W	W	5.51
<b>Special:</b>			
Mine dusting or acid water treatment	W	W	26.46
Roofing granules	W	W	5.51
<b>Unspecified: 3/</b>			
Reported	16,600	84,400	5.08
Estimated	13,000	63,000	4.96
Total or average	60,500	310,000	5.13

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

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

2/ Includes limestone and dolomite; excludes miscellaneous stone from total to avoid disclosing company proprietary data.

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

TABLE 4  
KENTUCKY: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1999, BY USE AND DISTRICT 1/ 2/

(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) 3/	W	W	W	W	552	3,230	907	3,350
Coarse aggregate, graded 4/	W	W	W	W	4,450	28,700	3,760	15,700
Fine aggregate (-3/8 inch) 5/	W	W	W	W	1,050	5,250	840	3,400
Coarse and fine aggregate 6/	W	W	W	W	3,840	21,700	1,800	7,100
Other construction materials	--	--	W	W	--	--	--	--
Agricultural 7/	W	W	271	1,090	W	W	W	W
Chemical and metallurgical 8/	--	--	W	W	--	--	--	--
Special 9/	--	--	W	W	W	W	--	--
Unspecified: 10/								
Reported	7,150	33,100	W	W	6,430	35,100	W	W
Estimated	550	2,700	3,000	15,000	6,700	33,000	2,400	12,000
Total	15,600	80,600	10,500	51,900	23,300	130,000	11,000	48,100

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

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

2/ Excludes miscellaneous stone from total to avoid disclosing company proprietary data.

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

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

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

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

7/ Includes agricultural limestone.

8/ Includes cement manufacture and lime manufacture.

9/ Includes acid water treatment or mine dusting and roofing granules.

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

TABLE 5  
KENTUCKY: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1999,  
BY MAJOR USE CATEGORY 1/ 2/

Use	Quantity	Value (thousands)	Unit value
	(thousand metric tons)		
Concrete aggregate and concrete products	2,280	\$7,580	\$3.32
Asphaltic concrete aggregates and other bituminous mixtures	157	706	4.50
Road base and coverings 3/	241	751	3.12
Fill 4/	270	667	2.47
Other miscellaneous uses	7	92	13.14
Unspecified: 5/			
Reported	1,200	3,160	2.64
Estimated	5,500	19,000	3.45
Total or average	9,620	32,400	3.37

1/ To avoid disclosing company proprietary data, no district tables were produced for 1999.

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

3/ Includes road and other stabilization (cement and lime).

4/ Includes snow and ice control.

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