

THE MINERAL INDUSTRY OF MISSOURI

This chapter has been prepared under a Memorandum of Understanding between the U.S. Bureau of Mines, U.S. Department of the Interior, and the Missouri Department of Natural Resources, Division of Geology and Land Survey, for collecting information on all nonfuel minerals.

Missouri ranked 10th among the 50 States in total nonfuel mineral value¹ in 1994, climbing from 12th in 1993, according to the U.S. Bureau of Mines. The estimated value for 1994 was more than \$1 billion, a 17% increase compared with that of 1993. This followed a less than 5% decrease in 1993 from that of 1992. The State accounted for almost 3% of the U.S. total. Beginning in 1993, crushed stone took over as the State's leading commodity and portland cement became second, dropping lead to the third position. This ranking continued in 1994, while industrial minerals accounted for almost 70% of the total nonfuel mineral value. Missouri's jump in State ranking was due mainly to increases in the value of crushed stone and portland cement, each rising by about 21% above their respective 1993 levels, and lead, which gained about 29%. Increases in construction sand and gravel, lime, and zinc also contributed to the State's overall growth. While Missouri was still the top lead producing State in the Nation, lead production has dropped notably since the high production of the 1970's and early 1980's. The year 1984

marked a low year for the State's lead industry, which produced a little more than 278,000 metric tons (mt) (recoverable content of ores). Following a modest, while fluctuating, recovery from 1985-90 (381,000 mt was produced in 90), lead output has since declined. By 1993, it had decreased to just below the low 1984 level; in 1994, it rose again an estimated 3%. In estimated mineral production for 1994, Missouri remained first nationally in lead and fire clays, second in iron oxide pigments, one of the top three in lime, third of four barite producing States, fourth in zinc and iron ore, and fifth in crushed stone and fuller's earth clays; the State rose from sixth to fifth in the production of portland cement, and remained seventh in copper and silver. Compared with 1993, the value of the following increased: crushed stone, portland cement, lead, lime, zinc, construction sand and gravel, copper, iron ore, masonry cement, and common clays. Decreases occurred in industrial sand and gravel, silver, fire clays, and gemstones.

According to the Missouri Department of Natural

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN MISSOURI¹

Mineral	1992		1993		1994 ^p	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement (portland) thousand metric tons	4,286	\$196,073	4,057	\$201,016	4,920	\$244,000
Clays ² do.	1,195	8,327	1,184	7,737	1,290	8,040
Copper ³ metric tons	10,766	25,497	6,982	14,094	7,130	17,000
Gemstones	NA	862	NA	46	NA	W
Iron ore (usable) thousand metric tons	19	W	287	W	291	W
Lead ³ metric tons	¹ 299,741	¹ 231,946	277,427	194,129	285,000	224,000
Sand and gravel:						
Construction thousand metric tons	8,186	26,457	⁶ 6,400	⁶ 19,800	9,500	30,800
Industrial do.	644	10,931	520	9,389	W	W
Silver ³ metric tons	32	4,084	40	5,578	34	4,700
Stone (crushed) thousand metric tons	⁴ 47,355	⁴ 187,400	53,368	239,297	⁴ 61,000	⁴ 290,000
Zinc ³ metric tons	44,031	56,670	40,171	40,872	44,500	45,200
Combined value of barite, cement (masonry), clays (fuller's earth), iron oxide pigments (crude), lime, stone (dimension), and values indicated by symbol W	XX	148,286	XX	123,466	XX	140,000
Total	XX	⁸ 896,533	XX	855,424	XX	⁴ 1,000,000

⁶Estimated. ^pPreliminary. ^rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

²Excludes certain clays; kind and value included with "Combined value" data.

³Recoverable content of ores, etc.

⁴Data do not add to total shown because of independent rounding.

TABLE 2
MISSOURI: CRUSHED STONE¹ SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	391	\$1,629	\$4.17
Riprap and jetty stone	3,693	12,632	3.42
Filter stone	631	2,736	4.34
Other coarse aggregate	1,020	13,456	13.19
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,697	8,573	5.05
Bituminous aggregate, coarse	1,734	7,668	4.42
Bituminous surface-treatment aggregate	563	2,403	4.27
Railroad ballast	682	3,274	4.80
Other graded coarse aggregate	1,611	7,521	4.67
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	5.12
Stone sand, bituminous mix or seal	241	1,159	4.81
Screening, undesignated	897	3,500	3.90
Other fine aggregate	W	W	2.78
Coarse and fine aggregates:			
Graded road base or subbase	8,564	32,626	3.81
Unpaved road surfacing	2,469	11,188	4.53
Terrazzo and exposed aggregate	W	W	9.88
Crusher run or fill or waste	929	3,175	3.42
Other coarse and fine aggregates	1,606	8,127	5.06
Other construction materials	141	522	3.70
Agricultural:			
Agricultural limestone ²	1,419	5,781	4.07
Chemical and metallurgical:			
Cement manufacture	4,295	15,445	3.60
Lime manufacture	362	1,671	4.62
Dead-burned dolomite manufacture	(3)	(3)	4.82
Flux stone	(3)	(3)	4.77
Chemical stone	(3)	(3)	4.13
Special:			
Asphalt fillers or extenders	(3)	(3)	4.50
Other fillers or extenders	(3)	(3)	5.51
Other specified uses not listed	317	1,882	5.94
Unspecified:⁴			
Actual	10,895	57,362	5.26
Estimated	9,213	36,967	4.01
Total⁵	53,368	239,297	4.48
Total^{6 7}	58,828	239,297	4.07

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

¹Includes dolomite, granite, limestone, limestone-dolomite, miscellaneous stone, sandstone, and traprock.

²Includes poultry grit and mineral food, and other agricultural uses.

³Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."

⁴Includes production reported without a breakdown of use and estimates for nonrespondents.

⁵Data may not add to totals shown because of independent rounding.

⁶One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

⁷Total shown in thousand short tons and thousand dollars.

Resources, Chemical Lime Co. of Fort Worth, TX, received State air-quality permits to build a lime plant in Ste. Genevieve County. The new plant is scheduled to be on-line by the end of 1995 and will employ about 40 people, the company reported. The plant will have two rotary kilns and an annual capacity of about 633,000 mt or 700,000 short tons (st), of which 363,000 mt (400,000 st) annually is scheduled for use in gas desulfurization by the Monongahela Power Co. at its Harrison, WV, powerplant. Cominco Inc. closed its Magmont Mine and mill in Iron County at the end of May 1994, due to depletion of reserves. The mine and mill complex had a rated capacity of more than 900,000 mt (in excess of 1 million st) of ore per year. During its 26-year life, the mine produced more

than 1.7 million mt (about 1.9 million st) of lead, 227,000 mt (about 250,000 st) of zinc, almost 61,700 mt (about 68,000 st) of copper, and in excess of 8 million troy ounces (249,000 kilograms) of silver with a combined value of about \$1.5 billion. Exploration continued at a slightly increased rate from that of the previous few years, although some opposition to potential mining activities was occurring, especially on National Forest land. Activities included aeromagnetic surveying, leasing, and drilling.

¹The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3
MISSOURI: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone ¹	163	'41,189	'\$157,221	'\$3.82	168	49,921	\$223,022	\$4.47
Dolomite	15	'1,461	'6,817	'4.67	16	2,198	9,069	4.13
Granite	2	W	W	3.73	2	W	W	6.08
Traprock	1	91	373	4.10	—	—	—	—
Sandstone	2	W	W	3.68	2	W	W	3.37
Miscellaneous stone	1	16	43	2.69	—	—	—	—
Total ²	XX	'44,091	'169,419	3.84	XX	53,368	239,297	4.48
Total ^{3 4}	XX	'48,602	'169,419	'3.49	XX	58,828	239,297	4.07

¹Revised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.

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

³Data may not add to totals shown because of independent rounding.

⁴One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

⁵Total shown in thousand short tons and thousand dollars.

TABLE 4
MISSOURI: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch) ¹	170	\$930	W	W	W	W
Coarse aggregate, graded ²	(³)	(³)	W	W	589	\$3,076
Fine aggregate (-3/8 inch) ⁴	(³)	(³)	W	W	W	W
Coarse and fine aggregate ⁵	(³)	(³)	W	W	883	4,154
Other construction materials	—	—	963	\$4,016	1,447	14,669
Agricultural ⁶	(³)	(³)	(³)	(³)	(³)	(³)
Chemical and metallurgical ⁸	—	—	(³)	(³)	(³)	(³)
Special ⁹	—	—	—	—	—	—
Other miscellaneous use ¹⁰	—	—	—	—	27,397	6,466
Unspecified: ¹¹						
Actual	(³)	(³)	300	1,045	3,122	15,671
Estimated	602	3,187	1,095	5,025	638	3,079
Total ¹²	3,956	24,286	3,239	13,707	7,782	47,115
Total ^{13 14}	4,361	24,286	3,570	13,707	8,578	47,115
	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch) ¹	275	1,091	1,041	4,471	W	W
Coarse aggregate, graded ²	962	4,812	2,243	10,566	W	W
Fine aggregate (-3/8 inch) ⁴	222	858	758	3,063	W	W
Coarse and fine aggregate ⁵	2,245	9,472	3,291	11,814	663	2,903
Other construction materials	—	—	—	—	595	2,734
Agricultural ⁶	(³)	(³)	42	136	(³)	(³)
Chemical and metallurgical ⁸	(³)	(³)	(³)	(³)	(³)	(³)
Special ⁹	—	—	—	—	(³)	(³)
Other miscellaneous use ¹⁰	70	261	—	—	480	2,186
Unspecified: ¹¹						
Actual	—	—	(³)	(³)	2,815	13,524
Estimated	233	958	4,702	16,319	1,480	6,627
Total ¹²	4,008	17,452	16,002	61,519	6,034	27,974
Total ^{13 14}	4,418	17,452	17,639	61,519	6,651	27,974

See footnotes at end of table.

TABLE 4—Continued

MISSOURI: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

	District 7		District 8		Unspecified within all districts	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch) ¹	55	203	W	W	(³)	(³)
Coarse aggregate, graded ²	389	1,633	W	W	—	—
Fine aggregate (-3/8 inch) ⁴	22	141	W	W	—	—
Coarse and fine aggregate ⁵	310	1,327	4,130	14,961	(³)	(³)
Other construction materials	—	—	4,012	14,529	—	—
Agricultural ⁶	(⁷)	(⁷)	(⁷)	(⁷)	—	—
Chemical and metallurgical ⁸	(⁷)	(⁷)	(⁷)	(⁷)	—	—
Special ⁹	—	—	—	—	—	—
Other miscellaneous use ¹⁰	69	277	2,197	7,344	—	—
Unspecified: ¹¹						
Actual	—	—	297	3,270	—	—
Estimated	303	1,394	159	378	—	—
Total ¹²	1,147	4,975	10,794	40,482	405	1,787
Total ^{13 14}	1,264	4,975	11,898	40,482	446	1,787

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

¹Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.²Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.³Withheld to avoid disclosing company proprietary data; included with "Total."⁴Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.⁵Includes graded road base or subbase, unpaved road surfacing, terrazzo and exposed aggregate, crusher run (select material or fill), and other coarse and fine aggregates.⁶Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.⁷Withheld to avoid disclosing company proprietary data, included with "Other miscellaneous uses."⁸Includes cement manufacture, chemical stone for alkali works, dead-burned dolomite, flux stone, and lime manufacture.⁹Includes asphalt fillers or extenders and other fillers or extenders.¹⁰Includes other specified uses not listed.¹¹Includes production reported without a breakdown by use and estimates for nonrespondents.¹²Data may not add to totals shown because of independent rounding.¹³One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.¹⁴Total shown in thousand short tons and thousand dollars.