

THE MINERAL INDUSTRY OF TENNESSEE

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

In 1997, Tennessee ranked 19th for the sixth time in the past 7 years among the 50 States in total nonfuel mineral production value,¹ according to the U.S. Geological Survey (USGS). The estimated value for 1997 was more than \$786 million, a 19% increase from that of 1996. This followed a marginal decrease from 1995 to 1996 (based on final 1996 data). The State accounted for about 2% of the U.S. total nonfuel mineral production value.

Crushed stone has been Tennessee's leading mineral commodity, by value, for more than 25 years, except for 1981 when zinc was first. In 1997, crushed stone accounted for about 43% of the State's total nonfuel mineral production value. The State's increase in value in 1997 mostly resulted from a substantial increase in the value of zinc and a smaller gain in that of crushed stone (*table 1*). Portland cement, ball clay, and construction sand and gravel values also rose and contributed to Tennessee's significant gain for the year. (All listings are in descending order of relative change.) The only nonfuel mineral commodities to show any significant decrease were those of gemstones and kaolin, all others virtually remained the same. In 1996, the increased values of crushed stone, portland cement, lime, and kaolin when combined were slightly less than the decreases that occurred in zinc, gemstones, construction sand and gravel, and fuller's earth. This resulted in the State's small net decrease for the year. All other changes were smaller and inconsequential to the net result. Compared with USGS estimates of the quantities produced in the 50 States in 1997, Tennessee remained the leading gemstone- and ball clay-producing State, 2d in zinc, 4th in barite, 7th in fuller's earth, and 11th in crushed stone. Additionally, the State's minerals industry produced significant quantities of industrial sand and gravel and common clays. Primary aluminum and raw steel were produced in Tennessee but were processed from materials obtained from other domestic and foreign sources. The State ranked 12th in the production of primary aluminum.

The following narrative information was provided by the

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending on 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 1997 USGS mineral production data published in this chapter are estimates as of January 1998. For some commodities (for example, 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. Call MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset, and request Document # 1000 for a telephone listing of all mineral commodity specialists, or call USGS information at (703) 648-4000 for the specialist's name and number. This telephone listing may also be retrieved over the Internet at <http://minerals.er.usgs.gov/minerals/contacts/comdir.html>. All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved by way of MINES FaxBack or over the Internet at <http://minerals.er.usgs.gov/minerals/>.

Tennessee Division of Geology.² Tennessee's zinc mining industry had another active year, although zinc production was down from that of 1996. Savage Zinc Co., a U.S. subsidiary of Savage Resources Ltd. (Australia), continued operation of the Elmwood-Cumberland-Gordonsville mining and milling operations in middle Tennessee and its electrolytic refinery at Clarksville. Savage continued operation of the Clinch Valley Mine in east Tennessee. ASARCO Incorporated continued operation of the Coy, Immel, and Young Mines in the Mascot-Jefferson City zinc district in east Tennessee. Its New Market Mine remained closed (the mine was closed in September 1996).

In the Coker Creek gold district of Monroe County in southeast Tennessee, the East Coast Prospector's Club dropped one of its two leases on land where the club members mine placer gold using portable dredges, sluices, and pans. Coker Creek Village operates a pan-for-fee operation for naturally occurring gold. Village personnel report that the number of recreational gold panners and tourists who pan for gold was up from 1996. Although the amount of gold recovered is very small relative to other gold districts in the United States, it continues to have a positive effect on the local tourist economy.

In the aggregate industry, Tennessee's crushed stone producers included American Limestone Co., a subsidiary of Asarco, Cornerstone Construction and Materials, Inc. (The Stone Man, Inc., etc.), the Rogers Group, Inc., and Vulcan Materials Co. Sand and gravel was dredged from the Tennessee River in the western part of the State by the following companies: Nick's Silica Co., SanGravl Co., Teague Brothers Sand and Gravel Inc., Tinker Sand and Gravel Inc., and Vulcan Materials Co. Nick's Silica Co. mostly produced industrial sand and gravel. The major sand and gravel producers in east Tennessee included the Nolicucky Sand Co., in Greene County, and the Newport Sand and Gravel Co., in Cocke County. Both companies crushed rock from alluvial deposits consisting chiefly of quartzites and sandstones.

High-calcium limestone was produced by the Franklin Limestone Co. (underground) at Crab Orchard in Cumberland County and Global Stone (formerly Tennessee Luttrell; open pit and underground) at Luttrell in Union County.

Tennessee's clay industry was also very active in 1997. General Shale mined clay and shale to supply its brick plants at Chattanooga, Johnson City, and Knoxville. Four companies mined and processed ball clay in west Tennessee as follows: H.C. Spinks Co., Kentucky-Tennessee Clay Co., Old Hickory Clay Co., and United Clays, Inc.

High-silica sand, used chiefly by the glass industry, was mined and processed in east Tennessee by Short Mountain Co., a

²Robin C. Hale, Chief Geologist (Knoxville), authored the text of mineral industry information submitted by the Tennessee Division of Geology.

subsidiary of Little Six Corp. (a Virginia-based coal company), and in west Tennessee by Unimin. Unimin operates the former Morie Mine and plant as Tennessee Silica. Short Mountain Silica is a major regional producer of high-silica sand, much of its production going to American Float Glass at Surgoinsville in Hawkins County (eastern Tennessee) for the production of window glass. Short Mountain also produces concrete, mortar, filter sand, golf course sand, and silica flour. They do not produce road aggregate because their material does not meet State specifications.

Dimension marble was produced in east Tennessee by the Imperial Black Marble Co. at Thorn Hill in Union County. In addition to producing finished stone from blocks of marble that were quarried by previous operators, the Tennessee Marble Co.

renewed quarrying activities on its property. Tile and dimension stone were produced at its Friendsville plant in Blount County. Quartzitic sandstone was produced on the Cumberland Plateau. Products included dimension stone, field stone, rough broken stone, ashlar, flagstone, and rubble. Although there are a number of individuals who independently quarry the sandstone, the three companies that quarried, sawed, and fabricated sandstone were the Cumberland Mountain Stone Co., the Silvara Stone Co., and the Tennessee Building Stone, Inc.

Three companies collected mollusk shells from the Tennessee River in the western part of the State for the pearl industry (chiefly Japan). These companies were Tennessee Shell Co., American Shell, and U.S. Shell. The American Pearl Co. produced pearls only.

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

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1995		1996		1997 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays:						
Ball	663	29,000	679	29,000	695	32,500
Kaolin	1	W	32	W	--	--
Gemstones	NA	16,900	NA	12,900	NA	9,830
Sand and gravel:						
Construction	8,020	36,700	8,380	35,300	9,790	42,300
Industrial	918	14,700	747	13,900	721	13,400
Stone, crushed	52,600	286,000	55,100	305,000	60,000	336,000
Combined value of barite, cement, clays (common, fuller's earth), copper (1995-96), lead, lime, silver (1995-96), stone (dimension marble), zinc, and values indicated by symbol W	XX	282,000	XX	266,000	XX	362,000
Total	XX	665,000	XX	662,000	XX	786,000

p/ Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

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

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

Kind	1995				1996			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	103 r/	46,900 r/	\$257,000 r/	\$5.47 r/	105	49,500	\$275,000	\$5.55
Dolomite	10 r/	W	W	5.10 r/	10	W	W	5.44
Granite	1	W	W	4.43	1	W	W	4.54
Sandstone	2	W	W	6.61	2	W	W	6.51
Miscellaneous stone	1	W	W	5.56	1	W	W	5.71
Total	XX	52,600	286,000	5.43	XX	55,100	305,000	5.53

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

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

TABLE 3
 TENNESSEE: CRUSHED STONE SOLD OR USED BY PRODUCERS
 IN 1996, BY USE 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	1,310	\$6,970	\$5.33
Filter stone	659	3,470	5.26
Coarse aggregate, graded:			
Concrete aggregate, coarse	3,360	17,700	5.27
Bituminous aggregate, coarse	12,300	69,400	5.63
Bituminous surface-treatment aggregate	1,280	8,120	6.35
Railroad ballast	369	1,800	4.86
Other graded coarse aggregate	687	3,500	5.09
Fine aggregate (-3/8 inch):			
Stone sand, concrete	887	6,720	7.58
Stone sand, bituminous mix or seal	543	3,390	6.24
Screening, undesignated	3,020	17,700	5.84
Coarse and fine aggregates:			
Graded road base or subbase	12,200	63,700	5.20
Unpaved road surfacing	1,000	5,650	5.64
Crusher run or fill or waste	1,860	8,900	4.79
Other construction materials 3/	1,630	8,270	5.09
Agricultural:			
Agricultural limestone	331	2,000	6.03
Poultry grit and mineral food	W	W	11.11
Other agricultural uses	W	W	9.59
Chemical and metallurgical:			
Cement manufacture	W	W	6.79
Lime manufacture	W	W	16.52
Flux stone	W	W	10.57
Sulfur oxide removal	W	W	4.72
Special:			
Mine dusting or acid water treatment	W	W	21.63
Other fillers or extenders	W	W	10.90
Unspecified: 4/			
Actual	4,890	24,000	4.91
Estimated	5,950	27,800	4.67
Total	55,100	305,000	5.53

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

1/ Includes dolomite, granite, limestone, miscellaneous stone, and sandstone.

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

3/ Includes other coarse aggregate, other fine aggregate, other coarse and fine aggregates, macadam, roofing granules, and terrazzo and exposed aggregate.

4/ Includes production reported without a breakdown by end use and with estimates for nonrespondents.

TABLE 4
 TENNESSEE: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1996,
 BY USE AND DISTRICT 1/ 2/

(Thousand metric tons and thousand dollars)

Use	District 2		District 3	
	Quantity	Value	Quantity	Value
Construction aggregates:				
Coarse aggregate (+1 1/2 inch) 3/	W	W	W	W
Coarse aggregate, graded 4/	9,860	53,500	8,160	47,000
Fine aggregate (-3/8 inch) 5/	W	W	W	W
Coarse and fine aggregate 6/	12,600	62,300	10,600	62,400
Agricultural 7/	(8/)	(8/)	(8/)	(8/)
Chemical and metallurgical 9/	(8/)	(8/)	(8/)	(8/)
Special 10/	(8/)	(8/)	(8/)	(8/)
Unspecified: 11/				
Actual	4,740	23,200	154	862
Estimated	3,220	14,400	2,720	13,400
Total	31,700	163,000	23,400	142,000

W Withheld to avoid disclosing company proprietary data; included with "Coarse and fine aggregate."

1/ Production reported in District 1 was included with "District 2" to avoid disclosing company proprietary data.

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

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

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

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

6/ Includes graded road base or subbase, unpaved road surfacing, crusher run (select material or fill), other coarse and fine aggregates, other construction materials, roofing granules and terrazzo and exposed aggregate.

7/ Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.

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

9/ Includes cement manufacture, flux stone, lime manufacture, and sulfur oxide removal.

10/ Includes mine dusting or acid water treatment, and other fillers or extenders.

11/ Includes production reported without a breakdown by end use and with estimates for nonrespondents.

TABLE 5
 TENNESSEE: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1996,
 BY MAJOR USE CATEGORY 1/

Use	Quantity	Value	Value
	(thousand metric tons)	(thousands)	per ton
Concrete aggregate (including concrete sand) 2/	3,050	\$14,900	\$4.88
Concrete products (blocks, bricks, pipe, decorative, etc.)	277	1,340	4.84
Asphaltic concrete aggregates and other bituminous mixtures	982	4,350	4.42
Road base and coverings 3/	1,910	5,330	2.79
Fill	115	861	7.49
Other miscellaneous uses 4/	63	634	10.06
Unspecified: 5/			
Actual	77	346	4.49
Estimated	1,900	7,580	3.99
Total or average	8,380	35,300	4.21

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

2/ Includes plaster and gunite sands.

3/ Includes road and other stabilization (cement) and snow and ice control.

4/ Includes filtration and railroad ballast.

5/ Includes production reported without a breakdown by end use and with estimates for nonrespondents.

TABLE 6
 TENNESSEE: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1996,
 BY USE AND DISTRICT 1/ 2/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2	
	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products 3/	1,660	6,820	1,670	9,410
Asphaltic concrete aggregates and road base materials 4/	2,210	5,620	802	4,910
Other miscellaneous uses 5/	-	-	63	634
Unspecified: 6/				
Actual	77	346	-	--
Estimated	1,350	4,570	548	3,000
Total	5,300	17,400	3,080	18,000

1/ Production reported in District 3 was included with "District 2" to avoid disclosing company proprietary data.

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

3/ Includes plaster and gunite sands.

4/ Includes fill, road and other stabilization (cement), and snow and ice control.

5/ Includes filtration and railroad ballast.

6/ Includes production reported without a breakdown by end use and with estimates for nonrespondents.