

THE MINERAL INDUSTRY OF TENNESSEE

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

In 1999, the preliminary estimated value¹ of nonfuel mineral production for Tennessee was \$710 million, according to the U.S. Geological Survey (USGS). This was about a 1% increase from that of 1998,² following a marginal decrease from 1997 to 1998. Tennessee remained 20th in rank among the 50 States in total nonfuel mineral production value, of which the State accounted for about 2% of the U.S. total.

Crushed stone has been Tennessee's leading mineral commodity, by value, for more than 25 years, except for 1981 when zinc was first. In 1999 crushed stone accounted for about 54% of the State's total nonfuel mineral production value. Tennessee's increase in value in 1999 resulted mostly from a \$13 million rise in crushed stone, plus smaller yet significant increases in the values of construction and industrial sand and gravel and portland cement. (All listings are in descending order of relative change.) Increases also occurred in ball clay, gemstones, and masonry cement, but these were inconsequential to the net result. The only substantial decrease was a more than \$12 million drop in the value of zinc. Most other nonfuel minerals showed relatively small decreases or remained the same. In 1998, crushed stone, up \$21 million, construction sand and gravel, up \$10.3 million, portland cement, and salt led the State's increase in nonfuel mineral value. A substantial drop in the value of zinc plus significant decreases in gemstones, lime, and fuller's earth resulted in a small net decrease for the year (table 1).

Compared with USGS estimates of the quantities produced in the 50 States in 1999, Tennessee remained the leading gemstone- and ball clay-producing State, second in zinc, and third in barite. The State continued to be 10th in the production of crushed stone and industrial sand and gravel, and was a significant producer of common clays. Primary aluminum and

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 1999 USGS mineral production data published in this chapter are preliminary estimates as of May 2000, 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 for 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.

²Values, percentage calculations, and rankings for 1998 may vary from the Minerals Yearbook, Area Reports: Domestic 1998, Volume II, owing to the revision of preliminary 1998 to final 1998 data. Data for 1999 are preliminary and are expected to change; related rankings may also be subject to change.

raw steel were produced in Tennessee, but were processed from materials obtained from other domestic and foreign sources. The State ranked 10th in the production of primary aluminum.

The Tennessee Division of Geology provided the following narrative information.³ In 1999, a total of 303 nonfuel mineral operations were registered in 80 counties throughout the State.

Ball clay was mined by the Gleason Brick Co., H.C. Spinks Co., Kentucky-Tennessee Clay Co., Old Hickory Clay Co., and Unimin Corp. in west Tennessee. Also, General Shale Products Corp. operated nine ball clay mines in four counties in east Tennessee to supply its brick production plants. General Shale Products Corp. joined the Wienerberger Group headquartered in Vienna, Austria, in July 1999. Fullers earth was mined in west Tennessee in Hardeman County by Moltan Co.

Yates Construction Co. owns barite mines in McMinn and Monroe Counties. The open pit mines produced pharmaceutical grade barite, but only the McMinn Mine was in production.

Construction sand and gravel was produced at 92 sites in 31 counties and operated by 57 different companies. Companies operating five or more sites included: Ford Construction Co., Memphis Stone and Gravel Co., and Standard Construction Co. in District 1 (west Tennessee), and Bradley Stone and Gravel Inc. in the eastern part of District 2 (middle Tennessee).

Tennessee's crushed stone industry had the widest production distribution and produced limestone and dolomite, except the Maymead Lime Co. which produced crushed granite in Johnson County. Crushed stone was produced in 64 counties by 63 different companies, 18 of which were operated by county governments. The top three producers were (1) Vulcan Materials Co., which operated 33 quarries in 24 counties; (2) Rogers Group, Inc., which operated 25 quarries in 22 counties; and (3) American Limestone Co., which operated 8 quarries in 5 counties.

The Tennessee Marble Co. quarried Holston Marble for dimension stone from Blount County, and the Imperial Black Marble Co. produced dimension stone from the Maryville Limestone quarry in Grainger County. Quartzitic sandstone was quarried on the Cumberland Plateau for dimension stone, flagstone, and ashlar. Although there were a number of individuals who independently quarried the sandstone, no quarries were registered with the State in 1999.

The American Shell Co. and the Tennessee Shell Co. harvested mollusk shells from the Tennessee River and sold crushed shells for seeds in the cultured-pearl industry. The American Pearl Co. farmed pearls in the Tennessee River in Benton County.

The Coker Creek gold district in Monroe County suffered a loss when the main structure at Coker Creek Village was

³Peter Lemizki, Chief Geologist with the Tennessee Division of Geology in Knoxville, authored the text of mineral industry information submitted by that agency.

destroyed by fire in the fall of 1999. Coker Creek Village supported the local economy by attracting tourists to pan for natural gold in Coker Creek. Plans are to rebuild and continue the gold panning for a fee operation.

Lime plants operated by Bowater Southern Paper Corp. in McMinn County and Global Stone Tenn-Luttrell, Inc. in Union County produced high-calcium quicklime and high-calcium hydrated lime. Global Stone Tenn-Luttrell was owned by Global Stone Corp., which was acquired by Oglebay Norton Co., in a stock purchase in the spring of 1998.

Three active operations mining high-silica sand were in Carol, Hawkins, and Madison Counties. Short Mountain Silica Co. operated the only mine in east Tennessee, and Unimin Corp. and U.S. Silica Co. operated mines in west Tennessee.

Grupo Mexico S.A. de C.V., purchased from ASARCO Incorporated four zinc mines in Knox and Jefferson Counties: the New Market, Young, Immel, and Coy Mines. The New Market Mine continued on standby status. The Young, Immel, and Coy Mines operated at 4,200 metric tons per day (t/d), 1,900 t/d, and 1,130 t/d, respectively.

In February 1999, Pasma Ltd. completed the takeover of

Savage Resources Ltd., and acquired the electrolytic zinc plant in Clarksville and underground mines at Gordonsville and Clinch Valley. Prior to the takeover, in the spring of 1998, Savage Zinc Inc., announced plans for a \$400 million expansion of the Clarksville Zinc Plant (The Oak Ridger, 1998). The Clarksville Zinc Plant was commissioned in 1979 and operated at approximately 95,000 metric tons per year, which accounted for 28% of U.S. zinc production. The plant was one of two companies in the United States that produced primary cadmium as a byproduct during roasting and leaching of the zinc concentrate. The mines at Gordonsville (including the Elmwood and Cumberland Mines) in Smith County produced the highest grade zinc concentrate in the world at 64.5% and were also one of the largest sources of germanium in the world. The Clinch Valley Mine in Grainger County was reopening after being on standby for care and maintenance.

Reference Cited

The Oak Ridger, 1998, Savage Zinc plans \$400M expansion, The Oak Ridger, p. 5.

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

(Thousand metric tons and thousand dollars)

Mineral	1997		1998 r/		1999 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays: Ball	689	29,200	712	30,100	719	30,800
Gemstones	NA	9,740	NA	W	NA	W
Sand and gravel:						
Construction	8,650	39,500	9,410	49,800	9,740	52,500
Industrial	898	16,500	999	17,100	1,050	18,900
Stone: Crushed	60,400	349,000	63,600	370,000	64,000	383,000
Combined values of barite, cement, clays [common, fuller's earth, kaolin (1997-98)], copper (1997-98), lead, lime, salt (1998-99), silver (1998-99), stone (dimension marble), zinc, and values indicated by symbol W	XX	263,000	XX	237,000	XX	225,000
Total	XX	707,000	XX	705,000	XX	710,000

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

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

Kind	1997				1998			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	108	54,300	\$316,000	\$5.82	111	56,800	\$329,000	\$5.80
Dolomite	10	W	W	5.49	10	6,200	37,600	6.05
Granite	1	W	W	4.65	1	W	W	4.97
Sandstone	2	W	W	7.01	2	W	W	8.91
Total or average	XX	60,400	349,000	5.79	XX	63,600	370,000	5.83

W Withheld to avoid disclosing 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.

TABLE 3
 TENNESSEE: CRUSHED STONE SOLD OR USED BY PRODUCERS
 IN 1998, BY USE 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	\$5.34
Riprap and jetty stone	1,350	\$7,920	5.87
Filter stone	999	5,270	5.27
Other coarse aggregate	699	3,710	5.30
Coarse aggregate, graded:			
Concrete aggregate, coarse	3,590	20,900	5.83
Bituminous aggregate, coarse	11,200	69,600	6.20
Bituminous surface-treatment aggregate	1,270	8,280	6.52
Railroad ballast	89	539	6.06
Other graded coarse aggregate	3,620	23,500	6.48
Fine aggregate (-3/8 inch):			
Stone sand, concrete	1,150	9,140	7.92
Stone sand, bituminous mix or seal	118	779	6.60
Screening, undesignated	3,210	19,800	6.17
Other fine aggregate	437	2,850	6.51
Coarse and fine aggregates:			
Graded road base or subbase	15,200	81,600	5.35
Unpaved road surfacing	77	369	4.79
Terrazzo and exposed aggregate	W	W	5.51
Crusher run or fill or waste	1,700	8,160	4.80
Other coarse and fine aggregates	1,790	10,800	6.04
Other construction materials	W	W	6.52
Agricultural limestone	432	3,150	7.29
Chemical and metallurgical:			
Cement manufacture	W	W	4.41
Lime manufacture	W	W	15.45
Sulfur oxide removal	W	W	5.27
Special:			
Mine dusting or acid water treatment	9	197	21.89
Other fillers or extenders	178	2,780	15.63
Roofing granules	W	W	7.15
Unspecified: 3/			
Actual	5,900	32,900	5.58
Estimated	7,900	38,900	4.92
Total or average	63,600	370,000	5.83

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 dolomite, granite, limestone, and sandstone.

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

TABLE 4
 TENNESSEE: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1998,
 BY USE AND DISTRICT 1/

(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) 2/	W	W	1,860	9,310	W	W
Coarse aggregate, graded 3/	W	W	8,080	48,700	W	W
Fine aggregate (-3/8 inch) 4/	W	W	1,620	9,970	W	W
Coarse and fine aggregate 5/	W	W	7,760	38,400	W	W
Other construction materials	--	--	W	W	W	W
Agricultural 6/	W	W	W	W	W	W
Chemical and metallurgical 7/	--	--	W	W	W	W
Special 8/	--	--	--	--	W	W
Unspecified: 9/						
Actual	--	--	5,120	28,200	776	4,670
Estimated	850	3,680	5,700	28,500	1,350	6,670
Total	7,140	45,500	30,900	168,000	25,500	157,000

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

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

4/ Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesigned), and other fine aggregates.

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

6/ Includes agricultural limestone.

7/ Includes cement manufacture, lime manufacture, and sulfur oxide removal.

8/ Includes mine dusting or acid water treatment, other fillers or extenders, and roofing granules.

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

TABLE 5
 TENNESSEE: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1998,
 BY MAJOR USE CATEGORY 1/

Use	Quantity	Value	Unit
	(thousand metric tons)	(thousands)	value
Concrete aggregate 2/	2,960	\$19,700	\$6.67
Concrete products (blocks, bricks, pipe, decorative, etc.)	200	981	4.91
Asphaltic concrete aggregates and other bituminous mixtures	641	3,230	5.04
Road base and coverings	1,200	4,590	3.83
Road stabilization (cement)	104	427	4.11
Fill	180	794	4.41
Other miscellaneous uses 3/	30	264	8.80
Unspecified: 4/			
Actual	1,030	6,030	5.86
Estimated	3,070	13,700	4.48
Total or average	9,410	49,800	5.29

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

2/ Includes plaster and gunite sands.

3/ Includes filtration.

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

TABLE 6
 TENNESSEE: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1998,
 BY USE AND DISTRICT 1/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products 2/	1,990	14,000	W	W	W	W
Asphaltic concrete aggregates and other road base materials 3/	1,380	4,290	W	W	W	W
Other miscellaneous uses 4/	W	W	W	W	W	W
Unspecified: 5/						
Actual	W	W	W	W	W	W
Estimated	2,390	9,910	206	808	470	3,020
Total	6,580	32,700	1,920	9,900	910	3,020

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

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

2/ Includes plaster and gunite sands.

3/ Includes road and other stabilization (cement).

4/ Includes fill and filtration.

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