

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 1998, the preliminary estimated value¹ of nonfuel mineral production for Tennessee was \$709 million, according to the U.S. Geological Survey (USGS). This was a marginal increase from that of 1997,² and followed a nearly 7% increase in 1997 from that of 1996. Tennessee remained 20th in rank among the 50 States in total nonfuel mineral production value, of which the State accounted for almost 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 1998, crushed stone accounted for about 54% of the State's total nonfuel mineral production value. Tennessee's increase in value in 1998 mostly resulted from a \$35 million rise in the value of crushed stone and from smaller though substantial increases in salt, portland cement, and construction sand and gravel values. (All listings are in descending order of relative change.) The only substantial decrease was a more than \$40 million drop in the value of zinc. Most other nonfuel minerals showed relatively small increases. In 1997, crushed stone also led the State's increase that year, rising by \$44 million, further supported by significant yet smaller increases (less than \$5 million) in portland cement, construction and industrial sand and gravel, and fuller's earth (table 1). Similarly small decreases occurred in zinc, gemstones, ball clay, masonry cement, and lime.

Compared with USGS estimates of the quantities produced in the 50 States in 1998, Tennessee remained the leading² gemstone- and ball clay-producing State, second in zinc, and third in barite. The State rose to 10th from 11th in crushed stone and continued as the 10th largest producer of industrial sand and gravel. Additionally, the State's minerals industry produced significant quantities of common clays. Primary aluminum and raw steel were produced in Tennessee but were processed from materials obtained from other domestic and

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 1998 USGS mineral production data published in this chapter are preliminary estimates as of February 1999 and are expected to change. For some mineral 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. A telephone listing for the specialists may be retrieved over the Internet at <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 <http://minerals.usgs.gov/minerals>; facsimile copies may be obtained from MINES FaxBack.

²Values, percentage calculations, and rankings for 1997 may vary from the *Minerals Yearbook, Area Reports: Domestic 1997, Volume II*, owing to the revision of preliminary 1997 to final 1997 data. Data for 1998 are preliminary and expected to change, while related rankings may also be subject to change.

foreign sources. The State ranked 10th in the production of primary aluminum.

The Tennessee Division of Geology provided the following narrative information.³ The Mascot-Jefferson City's zinc mining industry in East Tennessee, which has had an active history of production since 1854, has experienced significant change over the past few years. ASARCO Incorporated's New Market Mine was on standby, while the company's Young, Immel, and Coy Mines remained active operations. Savage Zinc Co.'s Clinch Valley Mine is expected to remain on standby for a couple of years for exploration and development. In Middle Tennessee, Savage Zinc's Elmwood, Gordonsville, and Cumberland Mines were idled from the end of July until mid-January 1999 because of a strike by the miners.

The East Coast Prospector's Club dropped one of its two leases in the Coker Creek gold district of Monroe County. Club members mine placer gold using portable dredges, sluices, and pans. Coker Creek Village operates a pan for fee for naturally occurring gold. Although the amount of gold recovered is relatively small compared to other gold-producing areas in the United States, the Village's operations have a positive effect on the local tourist economy.

In regard to industrial minerals, Tennessee's crushed stone industry produces limestone and dolomite, with the exception of the Maymead Lime Co., which produces crushed granite in uppermost East Tennessee. The State's major producers include Vulcan Materials Co. with 31 quarries, The Rogers Group with 19 quarries, the American Limestone Co. with 7 quarries, and the Stone Man with 4 quarries. American Limestone also processes and markets tailings from Asarco's Coy Mine. Sand and gravel are dredged from the Tennessee River in the western part of the State by the following companies: Ingram Materials, SanGravl Co., Santana Dredging Co., Teague Brothers Sand and Gravel, Inc., and Tinker Sand and Gravel. Vulcan Materials Co. sold its sand and gravel dredging operation to Ingram Materials. The Bolivar Sand Co. dredged sand from its pits in and around Bolivar, Hardeman County. The Nolichucky Sand Co. and the Newport Sand and Gravel Co. in East Tennessee produce crushed stone from alluvial deposits consisting of quartzite and sandstone.

Oglebay Norton Co. acquired the high-calcium limestone mine at Luttrell, northeast of Knoxville, from the previous operator, Global Stone Inc. (formerly Global Stone Tennessee Luttrell, Inc.).

High-silica sand, chiefly for the glass industry, was mined and processed from sandstone by Short Mountain Silica in

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

East Tennessee and by Tennessee Silica (a subsidiary of Unimin Corp.) at its pits in West Tennessee.

Tennessee's clay industry continued to be very active in 1998. Four companies mined and processed ball clay and kaolin in western Tennessee: H.C. Spinks Co., Kentucky-Tennessee Clay Co., Old Hickory Clay Co., and United Clays, Inc. Gleason Brick Co. mined clay and shale to supply its brick plants in the eastern portion of the State at Chattanooga, Johnson City, and Knoxville.

The Tennessee Marble Co. quarries marble for dimension stone and tile at its Friendsville quarry in Blount County, and the Imperial Black Marble Co. produces dimension stone at its

Thorn Hill quarry in Grainger County. Quartzitic sandstone is quarried on the Cumberland Plateau for dimension stone, flagstone, rough broken stone, ashlar, 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., Silvara Stone Co., and Tennessee Building Stone, Inc. Independent operators also gather rough field stone for decorative purposes.

The American Shell Co. harvests clams from the Tennessee River and exports the shells that are crushed and used for seeds for Japan's cultured-pearl industry.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN TENNESSEE 1/ 2/
(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1996		1997 r/		1998 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays:						
Ball	679	29.000	659	27.400	679	28.800
Kaolin	32	W	W	W	--	--
Gemstones	NA	12.900	NA	9.740	NA	10.000
Sand and gravel:						
Construction	8.380	35.300	8.650	39.500	9.070	42.600
Industrial	747	13.900	898	16.500	890	15.100
Stone: Crushed	55.100	305.000	60.400	349.000	64.000	384.000
Combined values of barite, cement, clays (common, fuller's earth), copper (1996-97), lead, lime, salt (1998), silver, stone (dimension marble), zinc, and values indicated by symbol W						
	XX	265,000 r/	XX	265,000	XX	228,000
Total	XX	661,000 r/	XX	707,000	XX	709,000

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 three significant digits; may not add to totals shown.

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

Kind	1996				1997			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	105	49.500	\$275.000	\$5.55	108	54.300	\$316.000	\$5.82
Dolomite	11	W	W	5.45	10	W	W	5.49
Granite	1	W	W	4.54	1	W	W	4.65
Sandstone	2	W	W	6.51	2	W	W	7.01
Total	XX	55.100	305.000	5.53	XX	60.400	349.000	5.79

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 1997, BY USE 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
<u>Coarse aggregate (+1 1/2 inch):</u>			
Riprap and jetty stone	1,200	\$6,920	\$5.79
Filter stone	681	3,800	5.58
Other coarse aggregate 3/	647	5,210	8.06
<u>Coarse aggregate, graded:</u>			
Concrete aggregate, coarse	3,370	18,800	5.58
Bituminous aggregate, coarse	12,700	74,700	5.86
Bituminous surface-treatment aggregate	1,450	9,200	6.33
Railroad ballast	500	2,510	5.02
Other graded coarse aggregate	2,240	16,100	7.19
<u>Fine aggregate (-3/8 inch):</u>			
Stone sand, concrete	966	7,870	8.14
Stone sand, bituminous mix or seal	468	2,920	6.23
Screening, undesignated	2,730	17,100	6.28
Other fine aggregate	313	2,080	6.64
<u>Coarse and fine aggregates:</u>			
Graded road base or subbase	13,700	73,500	5.36
Unpaved road surfacing	288	1,080	3.76
Crusher run or fill or waste	2,140	10,500	4.92
Other coarse and fine aggregates	681	5,870	8.61
Other construction materials 4/	476	1,950	4.10
<u>Agricultural:</u>			
Agricultural limestone	529	3,570	6.74
Poultry grit and mineral food	25	343	13.72
Other agricultural uses	1	20	20.00
<u>Chemical and metallurgical:</u>			
Cement manufacture	W	W	W
Lime manufacture	593	9,800	16.53
Sulfur oxide removal	W	W	W
<u>Special:</u>			
Mine dusting or acid water treatment	6	130	21.67
Other fillers or extenders	188	2,790	14.86
Other miscellaneous uses: Waste material	52	58	1.12
<u>Unspecified: 5/</u>			
Actual	6,740	32,400	4.80
Estimated	6,090	32,200	5.29
Total	60,400	349,000	5.79

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, except unit value; may not add to totals shown.

3/ Includes macadam.

4/ Includes terrazzo and exposed aggregate.

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

TABLE 4
 TENNESSEE: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1997,
 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	1,760	8,900	757	4,720
Coarse aggregate, graded 3/	W	W	9,360	52,400	8,280	49,200
Fine aggregate (-3/8 inch) 4/	W	W	1,790	10,500	2,170	15,800
Coarse and fine aggregate 5/	W	W	7,470	37,000	7,120	42,100
Other construction materials 6/	--	--	W	W	W	W
Agricultural 7/	W	W	192	1,070	43	459
Chemical and metallurgical 8/	--	--	W	W	W	W
Special 9/	--	--	--	--	194	2,920
Unspecified: 10/						
Actual	--	--	4,540	22,700	2,200	9,650
Estimated	850	3,680	3,110	18,000	2,130	10,500
Total	7,040	44,200	28,800	153,000	24,500	152,000

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

1/ Data are rounded to 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), and screening (undesigned).

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

6/ Includes waste material.

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

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

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

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

TABLE 5
 TENNESSEE: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1997,
 BY MAJOR USE CATEGORY 1/

Use	Quantity (thousand metric tons)	Value (thousands)	Value per ton
Concrete aggregate (including concrete sand) 2/	2,770	\$14,700	\$5.31
Concrete products (blocks, bricks, pipe, decorative, etc.)	236	1,180	4.98
Asphaltic concrete aggregates and other bituminous mixtures	1,060	5,560	5.24
Road base and coverings 3/	1,310	4,710	3.59
Fill	41	215	5.24
Other miscellaneous uses 4/	25	227	9.08
Unspecified: 5/			
Actual	886	4,370	4.93
Estimated	2,320	8,520	3.67
Total or average	8,650	39,500	4.56

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).

4/ Includes filtration and railroad ballast.

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

TABLE 6
 TENNESSEE: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1997,
 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/	1,700	8,410	W	W	W	W
Asphaltic concrete aggregates and other bituminous mixtures	745	3,270	185	917	130	1,370
Road base and coverings 3/	962	2,620	W	W	W	W
Other miscellaneous uses 4/	W	W	21	149	W	W
Unspecified: 5/						
Actual	W	W	W	W	--	--
Estimated	1,720	5,270	225	1,140	379	2,120
Total	5,780	22,600	1,860	9,230	1,000	7,860

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

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).

4/ Includes fill, filtration, and railroad ballast.

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