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2005 Minerals Yearbook

TENNESSEE

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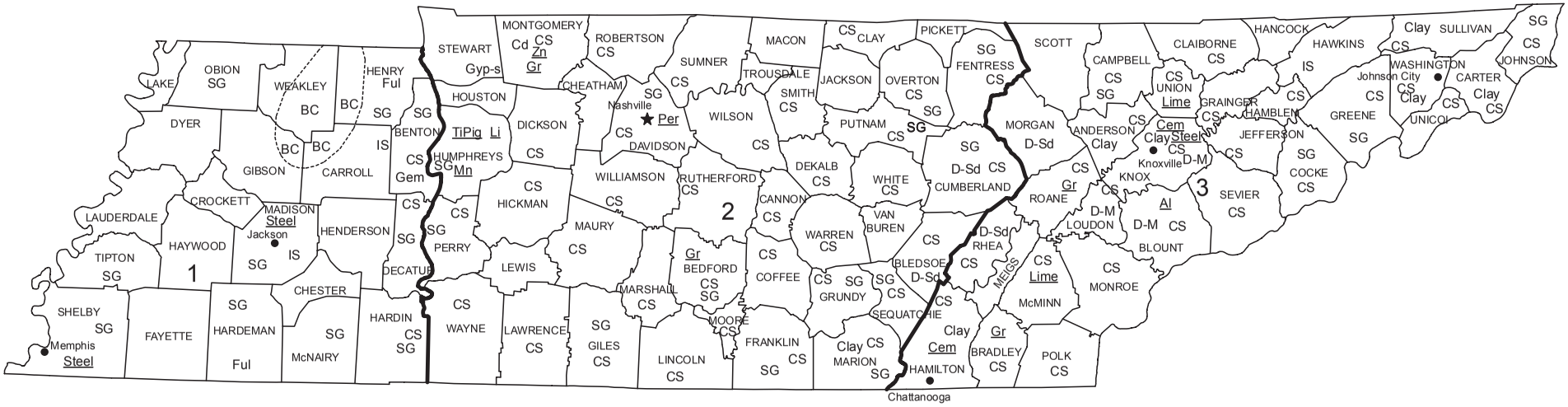
TENNESSEE



LEGEND

- County boundary
- ★ Capital
- ● City
- 1 Crushed stone/sand and gravel districts

MINERAL SYMBOLS (Major producing areas)

Al	Aluminum plant	D-M	Dimension marble	IS	Industrial sand	Steel	Steel plant
BC	Ball clay	D-Sd	Dimension sandstone	Li	Lithium plant	TiPig	Titanium dioxide pigment plant
Cd	Cadmium (See Zn)	Ful	Fuller's earth	Lime	Lime plant	Zn	Zinc plant (Cd byproduct cadmium)
Cem	Cement plant	Gem	Gemstones	Mn	Manganese dioxide plant		
Clay	Common clay and shale	Gr	Graphite plant	Per	Perlite plant		Concentration of mineral operations
CS	Crushed stone	Gyp-s	Synthetic gypsum	SG	Construction sand and gravel		

0 50 Kilometers

Source: Tennessee Department of Environment and Conservation, Division of Geology/U.S. Geological Survey (2005)

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 2005, Tennessee's nonfuel raw mineral production was valued[1] at $770 million, based upon annual U.S. Geological Survey (USGS) data. This was a $118 million or 18.1% increase from the State's total nonfuel mineral production value of 2004, following a 4.7% increase from that of 2003. Tennessee was 26th in rank (24th in 2004) among the 50 States in total nonfuel mineral production value and accounted for 1.4% of the U.S. total.

Crushed stone has been Tennessee's leading nonfuel mineral commodity, by value, for nearly five decades (except in 1981 when zinc was first); crushed stone went ahead of cement (portland and masonry) in 1957. In 2005, crushed stone accounted for nearly 63% of the State's total nonfuel mineral production value. Cement was the second-leading nonfuel mineral commodity, followed by construction sand and gravel, ball clay, industrial sand and gravel, and lime.

The largest increases in nonfuel mineral value in 2005 came from the production of crushed stone and cement, the unit values of each showing significant increases. Crushed stone production increased by more than 10%, while its resultant value rose by $101 million, or by nearly 27%. Cement production also showed a relatively small increase (company proprietary data), while the commodity's value rose by more than 12% (table 1). Smaller yet significant increases took place in the values of construction sand and gravel, up by $4 million, or more than 8% (with a small decrease in production), and lime, up by nearly $1.5 million (production also down slightly). The only substantial decrease in value took place in zinc owing to the April 2004 closing of the State's only remaining active zinc mine, Pasminco Ltd.'s (of Australia) Clinch Valley Mine in Grainger County, TN.

In 2005, Tennessee continued to be the leading ball clay- and gemstone-producing State, 8th in the quantity of fuller's earth produced, and 10th in crushed stone. The State remained a producer of substantial quantities of portland cement, industrial sand and gravel, lime, and common clays (in descending order of value). Primary aluminum and raw steel were produced in Tennessee but were processed from materials obtained from other domestic and foreign sources. The State ranked seventh (sixth in 2004) in the production of primary aluminum.

The Tennessee Division of Geology[2] (TDG) provided the following narrative information. Data and information in the following text are those reported by the TDG, based upon its own surveys and estimates. By yearend 2004, approximately 330 nonfuel mineral operations were permitted in 82 counties across the State.

Commodity Review

Industrial Minerals

Clay and Shale.—There was no change in the number of clay mines or companies operating in the State from the previous year. Ball clay and kaolin were mined from the Eocene-age Claiborne and Wilcox Formations in Carroll, Gibson, Henry, and Weakly Counties, northwest Tennessee. Companies operating in the State were Boral Bricks Inc., H.C. Spinks Clay Company Inc. (owned by Franklin Minerals Inc.), Kentucky-Tennessee Clay Co. (a member of IMERYS Minerals Ltd.), Old Hickory Clay Co., and United Clay Product Inc. (owned by the Unimin Corp.). Fuller's earth (montmorillonite) was mined in Hardeman County by Moltan Co. and in Henry County by American Colloid Co.

General Shale Brick, Inc. (the U.S. subsidiary of Wienerberger AG located in Vienna, Austria) operated seven shale mines in Anderson, Carter, Knox, Sullivan, and Washington Counties in east Tennessee to supply its brick production plants. General Shale Brick broke ground on a new corporate headquarters in Johnson City, TN (General Shale Brick, Inc., 2005a§).

In December, General Shale Brick announced plans to build another concrete block plant in Knoxville, TN. Combined with the company's concrete block plants in Piney Flats, TN, and Louisville, KY, the new plant will bring General Shale's block production to more than 30 million units annually (General Shale Brick, Inc., 2005b§). Two other companies operated two shale mines in Hamilton and Marion Counties in southeast Tennessee.

Gemstones.—The freshwater pearl was designated the official Tennessee State gem in 1979. On April 12, 2005, the historic Tennessee River Freshwater Pearl Farm and Museum located in Benton County was designated the official site of freshwater pearl culturing in the State of Tennessee (Tennessee River Freshwater Pearl, 2004§[3]). The American Pearl Co. operated the only freshwater pearl farm in North America.

American Shell Co., Tennessee Shell Co., and The American Pearl Co. exported mollusk shells from the Tennessee River to pearl-producing countries. Approximately 90% of all cultured pearls begin with a mother-of-pearl nucleus taken from the shell of a Tennessee mussel.

Sand and Gravel, Construction.—Construction sand and gravel was produced at 94 sites located in 29 counties and

[1]The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the 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 2005 USGS mineral production data published in this chapter are those available as of December 2006. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL http://minerals.usgs.gov/minerals.

[2]Peter Lemiszki, Chief Geologist with the Tennessee Division of Geology in Knoxville authored the text of the State mineral industry information provided by that agency.

[3]References that include a section mark (§) are found in the Internet References Cited section.

operated by 58 different companies, which was similar to the situation in 2004. Companies operating at least five sites each were Ford Construction Co., Memphis Stone and Gravel Co., and Standard Construction Co. located in District 1 (west Tennessee). Industrial sand was mined in Hawkins County by Short Mountain Silica Co. and Fine Sands, LLC. Unimin Corp. operated two industrial sand mines in Benton County, and Teague Transports, LLC. operated one mine in Madison County.

Stone, Crushed and Dimension.—The crushed stone industry operated 157 quarries in 2005. Dolomite and limestone were produced at 154 quarries and underground mines located primarily in District 2 (middle Tennessee) and District 3 (east Tennessee). Three quarries in Johnson County produced crushed granite and quartzite. Crushed limestone and dolomite were produced in 66 counties by 45 different companies and 15 county highway departments. Vulcan Materials Co. operated 37 quarries in 29 counties, Rogers Group Inc. operated 25 quarries in 23 counties, and Rinker Materials operated 12 quarries in 7 counties.

Holston limestone was quarried for dimension marble in Blount, Knox, and Loudon Counties by Tennessee Marble Co. and Tennessee Valley Marble Inc. Six companies operated eight dimension sandstone quarries in the Pennsylvanian Crab Orchard Sandstone in Bledsoe, Cumberland, Morgan, and Rhea Counties.

Other Industrial Minerals.—Synthetic gypsum was produced from Tennessee Valley Authority byproducts at the Allied Custom Gypsum plant in Stewart County. Lime plants operated by Bowater Southern Paper Corp. in McMinn County produced high-calcium quicklime, and Global Stone Tenn-Luttrell Co. in Union County produced high-calcium quicklime and hydrated lime. In May 2005, Oglebay Norton Co. completed the unification of its Global Stone Tenn Luttrell Co. operations under the name O-N Minerals (Oglebay Norton Co., 2005§).

Metals

Zinc.—Zinc mining and processing operations continued to be suspended in all of Tennessee's zinc mines. There were no plans to reopen the mines in the Mascot-Jefferson City district. Zinifex Limited operated the electrolytic zinc plant in Clarksville (Montgomery County). Production increased by 7.5% to 115,000 metric tons per year. The Clarksville zinc plant also produced cadmium and sulfuric acid.

Awards

Rogers Group Hillsboro Quarry in Hillsboro, TN, received the 2005 National Stone, Sand & Gravel Association Showplace Award for superior performance in plant beautification (Rogers Group, Inc. 2005a§). In addition, Rogers Group's Northern Middle Tennessee Division received the 2005 National Stone, Sand & Gravel Association Community Achievement Award (Rogers Group, Inc. 2005b§).

Internet References Cited

General Shale Brick, Inc., 2005a (December 6), General Shale Brick building new headquarters in Johnson City, Press Release, accessed March 13, 2008, at URL http://www.generalshale.com/news.php.

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Rogers Group, Inc. 2005a (April 8), NSSGA selects Rogers Group, Inc. for five about face awards, News Release, accessed March 13, 2008, at URL http://www.rogersgroupinc.com/aboutrgi/rginews/2005pressreleases/NSSGA-AboutFaceAwards.pdf.

Rogers Group, Inc. 2005b (January 14), NSSGA selects Rogers Group's northern middle Tennessee division for community achievement award, News Release, accessed March 13, 2008, at URL http://www.rogersgroupinc.com/aboutrgi/rginews/2004-nssga-communityrelationsawards-gallatin.htm.

Tennessee River Freshwater Pearl, 2004, Tennessee River freshwater pearl museum, farm, tour, accessed March 13, 2008, at URL http://www.birdsongresort.net/news/pearl_farm_bill/bill.html.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN TENNESSEE[1, 2]

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2003		2004		2005	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays:						
Ball	766	33,400	762	34,300	740	32,500
Common	304	585	365	3,140	372	3,210
Fuller's earth	92 [e]	5,000 [e]	W	W	W	W
Sand and gravel:						
Construction	7,550	44,100	7,830	47,500	7,570	51,500
Industrial	961	21,800	975	26,100	985	26,500
Stone, crushed	55,100	354,000	57,900	381,000	63,900	482,000
Combined values of cadmium (byproduct in zinc concentrates [2004]), cement, clays (kaolin), gemstones, lime, salt, stone (dimension marble), zinc (2003-04), and values indicated by symbol W	XX	164,000	XX	160,000	XX	174,000
Total	XX	623,000	XX	652,000	XX	770,000

[e]Estimated. W Withheld to avoid disclosing company proprietary data. Withheld values included in "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	2004 Number of quarries	2004 Quantity (thousand metric tons)	2004 Value (thousands)	2005 Number of quarries	2005 Quantity (thousand metric tons)	2005 Value (thousands)
Limestone[2]	109	55,600	$365,000	110	62,900	$474,000
Dolomite	5	1,640	12,300	1	W	W
Granite	1	483	2,230	1	515	3,880
Sandstone	1	217	2,030	1	W	W
Total	XX	57,900	381,000 r	XX	63,900	482,000

rRevised. 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]Includes limestone-dolomite reported with no distinction between the two.

TABLE 3
TENNESSEE: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2005, BY USE[1]

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Riprap and jetty stone	935	6,800
Filter stone	777	4,470
Other coarse aggregate	739	6,120
Total	2,450	17,400
Coarse aggregate, graded:		
Concrete aggregate, coarse	321	2,030
Bituminous aggregate, coarse	12,200	92,800
Bituminous surface-treatment aggregate	W	W
Railroad ballast	W	W
Other graded coarse aggregate	5,470	44,300
Total	18,500	142,000
Fine aggregate (-⅜ inch):		
Stone sand, concrete	1,960	17,400
Stone sand, bituminous mix or seal	(2)	(2)
Screening, undesignated	2,400	18,000
Other fine aggregate	1,500	12,900
Total	5,860	48,300
Coarse and fine aggregates:		
Graded road base or subbase	8,980	53,700
Unpaved road surfacing	W	W
Crusher run or fill or waste	968	6,240
Roofing granules	W	W
Other coarse and fine aggregates	6,340	46,300
Total	16,300	106,000
Other construction materials	189	1,220
Agricultural limestone	251	2,070
Chemical and metallurgical:		
Cement manufacture	(3)	(3)
Lime manufacture	(3)	(3)
Sulfur oxide removal	(3)	(3)
Special:		
Mine dusting or acid water treatment	(3)	(3)
Other fillers of extenders	(3)	(3)
Unspecified:[4]		
Reported	10,400	79,400
Estimated	8,100	61,000
Total	18,600	141,000
Grand total	63,900	482,000

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]Withheld to avoid disclosing company proprietary data; included with "Other fine aggregates."
[3]Withheld to avoid disclosing company proprietary data; included in "Grand total."
[4]Reported and estimated production without a breakdown by end use.

TABLE 4
TENNESSEE: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2005, 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:						
Coarse aggregate (+1½ inch)[2]	W	W	1,220	7,430	W	W
Coarse aggregate, graded[3]	W	W	W	W	8,270	62,000
Fine aggregate (-⅜ inch)[4]	W	W	W	W	3,650	30,800
Coarse and fine aggregates[5]	W	W	8,780	57,100	W	W
Other construction materials	--	--	189	1,220	--	--
Agricultural[6]	W	W	W	W	W	W
Chemical and metallurgical[7]	--	--	W	W	W	W
Special[8]	--	--	--	--	W	W
Unspecified:[9]						
Reported	641	4,600	7,290	55,800	2,500	19,000
Estimated	--	--	5,900	45,000	2,200	17,000
Total	4,760	38,800	34,000	246,000	25,100	197,000

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, riprap and jetty stone, and other coarse aggregates.

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

[4]Includes screening (undesignated), stone sand bituminous mix or seal, stone sand (concrete), and other fine aggregates.

[5]Includes crusher run or fill or waste, graded road base or subbase, roofing granules, 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 and other fillers or extenders.

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

TABLE 5
TENNESSEE: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)[2]	3,110	$22,800	$7.32
Concrete products (blocks, bricks, pipe, decorative, etc.)	126	628	4.98
Asphaltic concrete aggregates and other bituminous mixtures	788	5,170	6.56
Road base and coverings	540	2,760	5.10
Fill	276	2,530	9.17
Other miscellaneous uses	29	186	6.41
Unspecified:[3]			
Reported	899	6,060	6.74
Estimated	1,800	11,400	6.30
Total or average	7,570	51,500	6.80

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

[2]Includes plaster and gunite sands.

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

TABLE 6
TENNESSEE: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005,
BY USE AND DISTRICT[1, 2]

(Thousand metric tons and thousand dollars)

Use	District 1		Districts 2 and 3	
	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products[3]	1,880	13,600	1,360	9,790
Asphaltic concrete aggregates and road base materials	738	3,710	590	4,220
Fill	135	1,200	141	1,330
Other miscellaneous uses	--	--	29	186
Unspecified:[4]				
Reported	896	6,020	2	41
Estimated	1,300	8,000	500	3,400
Total	4,910	32,500	2,670	19,000

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses."
-- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Districts 2 and 3 are combined to avoid disclosing company proprietary data.
[3]Includes plaster and gunite sands.
[4]Reported and estimated production without a breakdown by end use.