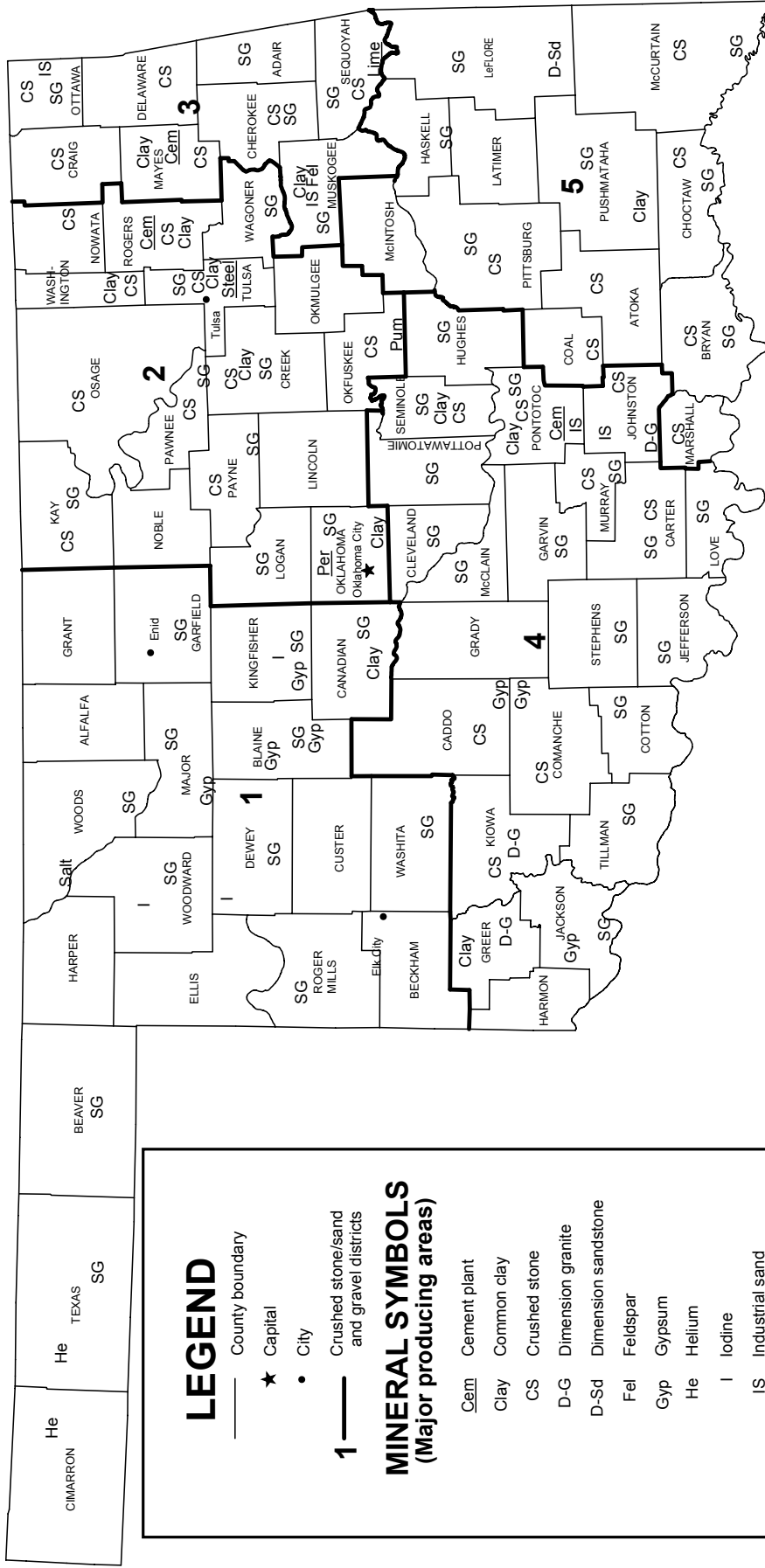


# OKLAHOMA



# THE MINERAL INDUSTRY OF OKLAHOMA

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

In 2004, Oklahoma's nonfuel raw mineral production was valued<sup>1</sup> at \$507 million, based upon annual U.S. Geological Survey (USGS) data. This was a 7.9% increase from 2003,<sup>2</sup> which was down less than 1% from 2002. The State was 31st in rank (29th in 2003) among the 50 States in total nonfuel mineral production value, of which Oklahoma accounted for more than 1% of the U.S. total value.

In 2004, crushed stone continued to be Oklahoma's leading nonfuel mineral commodity, based upon value, accounting for nearly two-fifths of the State's total nonfuel mineral production value. Crushed stone was followed by cement (portland and masonry), construction sand and gravel, industrial sand and gravel, gypsum, and iodine (descending order of value). The combined values of three of Oklahoma's four major construction materials—crushed stone, construction sand and gravel, and gypsum (descending order of value)—accounted for about 53% of the State's total value. (Data for cement were withheld to avoid disclosing company proprietary data.)

Most of Oklahoma's increase in value in 2004 resulted from increases in the production of portland cement, gypsum, and construction sand and gravel, the values of which rose \$14 million, nearly \$7 million, and about \$5 million, respectively. Smaller yet significant increases in value took place in masonry cement, Grade-A helium, crushed stone, and industrial sand and gravel (descending order of change). Relatively few commodities had decreases in value, the largest of which was in that of gemstones, down \$193,000 (table 1).

In 2003, increases in the production of construction sand and gravel and cement (masonry and portland) accounted for the largest increases in value, up about \$7 million and about \$4 million, respectively. Also showing increases in value were lime and industrial sand and gravel, up about \$2 million each. But decreases in the production and the related values of iodine, down \$5.7 million, gypsum, down \$4.4 million, and Grade-A helium and crushed stone, down about \$3 million each, resulted in the State's small overall decrease in nonfuel mineral value for the year (table 1).

Oklahoma's mines exclusively produced industrial minerals; no metals were mined in the State. In 2004, Oklahoma continued to be the only State that produced iodine, and it remained second of 4 States that produce tripoli, seventh (though tied with another State) in the quantities of common clays produced, and eighth in industrial sand and gravel. Oklahoma regained its characteristic ranking of first in gypsum (second in 2003) and rose to fourth from fifth in feldspar. Additionally, the State continued to be a significant producer of crushed stone, portland cement, construction sand and gravel, and masonry cement (descending order of value).

The narrative information that follows was provided by the Oklahoma Geological Survey<sup>3</sup> (OGS). Production data in the text that follows are those reported by the OGS based upon that agency's own surveys and estimates. Data may differ from some production figures or other data as reported to the USGS.

## Mining Employment

The Oklahoma Department of Mines recorded that 342 mine operators produced nonfuel minerals from 391 mines in the State of Oklahoma in 2004; however, a total of 499 permitted mining operations. Almost all were open pit mines with the exception being salt and iodine produced from brine wells, helium produced from natural gas wells, and one underground limestone mine. The mining industry in Oklahoma directly employed 27,007 persons in 2004; this does not include those employed by iodine and helium operators.

In 2004, the Oklahoma Miner Training Institute (OMTI) held 310 classes for a total of 21,208 classroom hours of instruction in which 89 coal miners and 4,515 metal/nonmetal miners were trained. The OMTI operates under the direction of the Oklahoma Mining Commission. The OMTI resides at Eastern Oklahoma State College in Wilburton, Oklahoma, and provides mine safety and health classes. Classes are held on a regular schedule at the college or at mine sites throughout the State for the convenience of miners and operators. All training provided by the OMTI is free of charge to mining companies who hold mining permits in Oklahoma.

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<sup>1</sup>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 2004 USGS mineral production data published in this chapter are those available as of December 2005. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—also can be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

<sup>2</sup>Values, percentage calculations, and rankings for 2003 may differ from the Minerals Yearbook, Area Reports: Domestic 2003, Volume II, owing to the revision of preliminary 2003 to final 2003 data. Data and rankings for 2004 are considered to be final and are not likely to change significantly.

<sup>3</sup>Stanley T. Krukowski, Industrial Minerals Geologist III with the Oklahoma Geological Survey, authored the text of the State mineral industry information provided by that agency.

## Commodity Review

### *Industrial Minerals*

**Dimension Stone.**—Continued demand for dimension stone products in Oklahoma and across the United States increased and continued to influence stone production, particularly in LeFlore and Haskell Counties. Growth in residential housing markets was responsible for much of this increase. Products in demand included building stone, decorative stone, field stone, flagstone, and natural stone landscaping products. Limestone, granite, and sandstone were the principal resources mined in Oklahoma for these products.

**Iodine.**—Iodine was produced from oil field brines in the northwestern quadrant of Oklahoma from deep wells in the Anadarko basin. The Woodward trench, a south-trending paleovalley in the Morrowan (basal Pennsylvanian) sandstones, contained brines with iodine concentrations as high as 700 parts per million (ppm). Two companies operated their own production wells and plant facilities, processing subsurface brines to produce iodine—Woodward Iodine Corporation, in Woodward County and Iochem Corporation in Dewey County.

A third company, North American Brine Resources (NABR) in Kingfisher County, operated a miniplant that served as an oilfield-injection-disposal site. NABR collected oilfield brines from a number of producing oil and gas wells in nearby northwestern Oklahoma, then extracted iodine from the brines, and finally injected the brines into wells at the plant site for disposal. In 2004, NABR completed the dismantling of its iodine production facility in Woodward County.

In 2004, Brine Electric, Inc. was founded to support the iodine industry in two ways. The first was to generate electricity by recovering geothermal energy from subsurface brines used as feedstock for iodine production. Brine temperatures at the wellhead were near or above 80° C (176° F). To process brine cost effectively, the temperature must range between 35° C and 40° C. Thermal energy was lost from the feedstock brine during the cooling phase prior to iodine production. Brine Electric planned to apply commercial technology that used the Kalina cycle to recover low-level thermal energy for power generation. Others participating in the Brine Electric power generation project included Iochem Corp. (Oklahoma City, OK); Nathaniel Energy (Denver, CO); Northwestern Electric Power Cooperative (Woodward, OK); and OG&E and High Plains Resource Conservation and Development (Buffalo, OK). Plans were to develop a 1 to 2 megawatt demonstration plant near Vici, OK, during the next few years.

Brine Electric's second phase called for designing mobile ion exchange units that could extract iodine from production wells, reinjection wells, or other spent-brine sources from current iodine producers. The basic concept was to extract iodine at remote sites, and ship the iodine concentrates for processing at some central production facility. Brine Electric estimated that field trials could begin 2006.

**Lime.**—Oglebay Norton Co. (owner of Global Stone Corporation) filed for Chapter 11 bankruptcy protection on February 23, 2004, in order to pursue a financial restructuring to reduce Oglebay's indebtedness and to provide more financial flexibility. Global Stone's St. Claire lime plant in Marble City, OK, produced quicklime, hydrated lime, and chemical grade limestone (including ground calcium carbonate). The lime operation was for sale in 2003, but Oglebay rescinded the decision to sell in early 2004. A U.S. bankruptcy court approved the company's reorganization plan in November 2004, and the company officially emerged from bankruptcy protection on January 31, 2005.

### **Government Programs**

The Oklahoma Geological Survey (OGS) continued work on the USGS-sponsored STATEMAP program (<http://www.ogs.ou.edu/geolmapping/statemap/index.htm>). The following 7.5-minute quadrangles, which represent the Oklahoma City metropolitan area, were completed in 2004—Arcadia (OGQ-55), Bethany (OGQ-48), Bethany NE (OGQ-53), Britton (OGQ-49), Choctaw (OGQ-47), Edmond (OGQ-54), Jones (OGQ-51), Midwest City (OGQ-46), Mustang (OGQ-45), Piedmont (OGQ-52), and Spencer (OGQ-50). The focus of the geologic mapping project included environmental, engineering, and natural resource issues. The maps were published as Open-File Reports and were available through OGS Publication Sales (<http://www.ogs.ou.edu/pubs.php>).

TABLE 1  
NONFUEL RAW MINERAL PRODUCTION IN OKLAHOMA<sup>1,2</sup>

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2002		2003		2004	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays, common	1,030	2,250	1,160	2,390	1,150	2,410
Gemstones	NA	197	NA	197	NA	4
Gypsum, crude	2,520	18,500	2,250	14,100	3,250	20,800
Iodine, crude metric tons	1,420	21,600	1,090	15,900	1,130	15,900
Sand and gravel:						
Construction	10,200	41,300	11,000	48,500	12,000	53,700
Industrial	1,320	28,400	1,360	29,700	1,390	31,600
Stone:						
Crushed	45,000	196,000	40,100	193,000	40,200	195,000
Dimension	17	2,100	17	2,100	17	2,100
Tripoli metric tons	12,700	2,290	10,600	1,960	32,100	2,120
Combined values of cement, feldspar, helium [crude (2002)], Grade-A], lime, salt	XX	160,000	XX	163,000	XX	183,000
Total	XX	473,000	XX	470,000	XX	507,000

NA Not available. XX Not applicable.

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

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

TABLE 2  
OKLAHOMA: CRUSHED STONE SOLD OR USED, BY KIND<sup>1</sup>

Kind	2002				2003				2004			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone <sup>2</sup>	41	35,500	\$151,000	\$4.26	41	33,300	\$163,000	\$4.90	43	33,500	\$163,000	\$4.85
Dolomite	1	W	W	5.00	1	W	W	4.85	--	--	--	--
Granite	5	5,500	20,700	3.76	4	3,170	12,900	4.06	4	W	W	5.02
Sandstone and quartzite	8	3,300	19,900	6.05	8	3,030	14,000	4.63	6	2,620	11,400	4.37
Miscellaneous stone	1	W	W	3.74	1	W	W	3.11	2	W	W	4.94
Total or average	XX	45,000	196,000	4.34	XX	40,100	193,000	4.80	XX	40,200	195,000	4.84

W Withheld to avoid disclosing company proprietary data; included in "Total or average." XX Not applicable. -- Zero.

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

<sup>2</sup>Includes limestone-dolomite reported with no distinction between the two.

TABLE 3a  
 OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, BY USE<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
<b>Construction:</b>			
<b>Coarse aggregate (+1½ inch):</b>			
Riprap and jetty stone	496	\$3,420	\$6.90
Filter stone	136	909	6.70
Other coarse aggregates	328	1,570	4.79
Total or average	960	5,900	6.15
<b>Coarse aggregate, graded:</b>			
Concrete aggregate, coarse	937	6,510	6.95
Bituminous aggregate, coarse	173	1,080	6.22
Bituminous surface-treatment aggregate	514	3,780	7.34
Other graded coarse aggregates	6,150	37,900	6.16
Total or average	7,780	49,300	6.33
<b>Fine aggregate (-¾ inch):</b>			
Stone sand, concrete	W	W	4.28
Stone sand, bituminous mix or seal	W	W	4.89
Screening, undesignated	1,670	6,830	4.08
Other fine aggregates	697	3,300	4.73
Total or average	2,370	10,100	4.28
<b>Coarse and fine aggregates:</b>			
Graded road base or subbase	956	5,140	5.38
Crusher run or fill or waste	4,630	20,900	4.52
Other coarse and fine aggregates	356	1,570	4.41
Total or average	5,940	27,600	4.65
Other construction materials <sup>2</sup>	(3)	(3)	41.94
<b>Agricultural:</b>			
Agricultural limestone	29	121	4.17
Poultry grit and mineral food	(3)	(3)	8.16
<b>Chemical and metallurgical:</b>			
Cement manufacture	(4)	(4)	3.12
Lime manufacture	(4)	(4)	4.75
Total or average	1,270	4,510	3.54
Special, other fillers or extenders	(3)	(3)	8.16
Other miscellaneous uses and specified uses not listed	40	197	4.93
<b>Unspecified:<sup>5</sup></b>			
Reported	17,300	76,400	4.41
Estimated	4,300	17,000	3.99
Total or average	21,600	93,500	4.32
Grand total or average	40,100	193,000	4.80

W Withheld to avoid disclosing company proprietary data; included with "Other fine aggregates."

<sup>1</sup>Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

<sup>2</sup>Includes building products.

<sup>3</sup>Withheld to avoid disclosing company proprietary data; included in "Grand total or average."

<sup>4</sup>Withheld to avoid disclosing company proprietary data; included in "Total or average."

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

TABLE 3b  
 OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
<b>Construction:</b>			
<b>Coarse aggregate (+1½ inch):</b>			
Riprap and jetty stone	281	\$1,920	\$6.84
Filter stone	55	322	5.85
Other coarse aggregates	329	1,510	4.59
Total or average	665	3,750	5.65
<b>Coarse aggregate, graded:</b>			
Concrete aggregate, coarse	451	3,380	7.50
Bituminous aggregate, coarse	W	W	7.40
Bituminous surface-treatment aggregate	W	W	8.11
Railroad ballast	W	W	6.61
Other graded coarse aggregates	10,400	58,300	5.62
Total or average	11,900	69,700	5.84
<b>Fine aggregate (-¾ inch):</b>			
Stone sand, concrete	W	W	4.25
Stone sand, bituminous mix or seal	W	W	9.38
Screening, undesignated	1,560	6,850	4.39
Other fine aggregates	247	1,190	4.83
Total or average	2,020	8,970	4.44
<b>Coarse and fine aggregates:</b>			
Graded road base or subbase	149	1,140	7.66
Unpaved road surfacing	(2)	(2)	4.40
Crusher run or fill or waste	5,020	23,400	4.65
Other coarse and fine aggregates	498	2,190	4.41
Total or average	5,670	26,700	4.71
Other construction materials	1	11	11.00
<b>Agricultural:</b>			
Agricultural limestone	W	W	4.04
Poultry grit and mineral food	W	W	8.82
Total or average	83	605	7.29
<b>Chemical and metallurgical:</b>			
Cement manufacture	2,890	9,860	3.42
Lime manufacture	(3)	(3)	4.68
Special, other fillers or extenders	(3)	(3)	8.82
Other miscellaneous uses and specified uses not listed	(3)	(3)	5.02
<b>Unspecified:<sup>4</sup></b>			
Reported	12,300	57,300	4.65
Estimated	4,200	15,000	3.68
Total or average	16,500	72,700	4.40
Grand total or average	40,200	195,000	4.84

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

<sup>1</sup>Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

<sup>2</sup>Withheld to avoid disclosing company proprietary data; included with "Other coarse and fine aggregates."

<sup>3</sup>Withheld to avoid disclosing company proprietary data; included in "Grand total or average."

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

TABLE 4a

OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, BY USE AND DISTRICT<sup>1,2</sup>

(Thousand metric tons and thousand dollars)

Use	District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Construction:</b>						
Coarse aggregate (+1½ inch) <sup>3</sup>	W	W	W	W	W	W
Coarse aggregate, graded <sup>4</sup>	W	W	W	W	W	W
Fine aggregate (-¾ inch) <sup>5</sup>	W	W	W	W	W	W
Coarse and fine aggregate <sup>6</sup>	W	W	W	W	W	W
Other construction materials <sup>7</sup>	--	--	--	--	--	--
Agricultural <sup>8</sup>	W	W	W	W	--	--
Chemical and metallurgical <sup>9</sup>	--	--	W	W	W	W
Special <sup>10</sup>	--	--	W	W	--	--
Other miscellaneous uses and specified uses not listed	--	--	40	197	--	--
<b>Unspecified:<sup>11</sup></b>						
Reported	3,220	15,800	2,290	9,170	8,460	36,700
Estimated	1,200	4,700	590	2,200	--	--
Total	8,520	45,000	4,380	19,000	19,000	90,800
<b>District 5</b>						
	Quantity	Value				
<b>Construction:</b>						
Coarse aggregate (+1½ inch) <sup>3</sup>	W	W				
Coarse aggregate, graded <sup>4</sup>	W	W				
Fine aggregate (-¾ inch) <sup>5</sup>	W	W				
Coarse and fine aggregate <sup>6</sup>	W	W				
Other construction materials <sup>7</sup>	W	W				
Agricultural <sup>8</sup>	--	--				
Chemical and metallurgical <sup>9</sup>	--	--				
Special <sup>10</sup>	--	--				
Other miscellaneous uses and specified uses not listed	--	--				
<b>Unspecified:<sup>11</sup></b>						
Estimated	2,500	10,000				
Total	8,260	37,900				

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

<sup>1</sup>No crushed stone was produced in District 1.<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.<sup>3</sup>Includes filter stone, riprap and jetty stone, and other coarse aggregates.<sup>4</sup>Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), and other graded coarse aggregates.<sup>5</sup>Includes screening (undesignated), stone sand (bituminous mix or seal), stone sand (concrete), and other fine aggregates.<sup>6</sup>Includes crusher run (select material or fill), graded road base or subbase, and other coarse and fine aggregates.<sup>7</sup>Includes building products.<sup>8</sup>Includes agricultural limestone and poultry grit and mineral food.<sup>9</sup>Includes cement and lime manufacture.<sup>10</sup>Includes other fillers or extenders.<sup>11</sup>Reported and estimated production without a breakdown by end use.



TABLE 4b

OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE AND DISTRICT<sup>1,2</sup>

(Thousand metric tons and thousand dollars)

Use	District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Construction:</b>						
Coarse aggregate (+1½ inch) <sup>3</sup>	W	W	W	W	W	W
Coarse aggregate, graded <sup>4</sup>	W	W	W	W	9,950	56,600
Fine aggregate (-¾ inch) <sup>5</sup>	W	W	W	W	W	W
Coarse and fine aggregate <sup>6</sup>	W	W	W	W	W	W
Other construction materials	--	--	1	11	--	--
Agricultural <sup>7</sup>	W	W	W	W	--	--
Chemical and metallurgical <sup>8</sup>	W	W	W	W	W	W
Special <sup>9</sup>	--	--	W	W	--	--
Other miscellaneous uses and specified uses not listed	--	--	--	--	W	W
<b>Unspecified:<sup>10</sup></b>						
Reported	4,740	24,300	944	4,160	3,790	16,300
Estimated	300	1,300	600	2,300	1,100	3,800
Total	7,990	40,800	4,300	19,600	19,900	98,500
<b>District 5</b>						
	Quantity	Value				
<b>Construction:</b>						
Coarse aggregate (+1½ inch) <sup>3</sup>	W	W				
Coarse aggregate, graded <sup>4</sup>	1,200	7,140				
Fine aggregate (-¾ inch) <sup>5</sup>	W	W				
Coarse and fine aggregate <sup>6</sup>	W	W				
Other construction materials	--	--				
Agricultural <sup>7</sup>	--	--				
Chemical and metallurgical <sup>8</sup>	--	--				
Special <sup>9</sup>	--	--				
Other miscellaneous uses and specified uses not listed	--	--				
<b>Unspecified:<sup>10</sup></b>						
Reported	2,840	12,500				
Estimated	2,200	8,000				
Total	7,990	35,600				

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

<sup>1</sup>No crushed stone was produced in District 1.<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.<sup>3</sup>Includes filter stone, riprap and jetty stone, and other coarse aggregates.<sup>4</sup>Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregates.<sup>5</sup>Includes screening (undesignated), stone sand (bituminous mix or seal), stone sand (concrete), and other fine aggregates.<sup>6</sup>Includes crusher run or fill or waste, graded road base or subbase, unpaved road surfacing, and other coarse and fine aggregates.<sup>7</sup>Includes agricultural limestone and poultry grit and mineral food.<sup>8</sup>Includes cement and lime manufacture.<sup>9</sup>Includes other fillers or extenders.<sup>10</sup>Reported and estimated production without a breakdown by end use.

TABLE 5a  
 OKLAHOMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003,  
 BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	3,500	\$18,100	\$5.17
Plaster and gunitite sands	66	388	5.88
Concrete products (blocks, bricks, pipe, decorative, etc.)	90	481	5.34
Asphaltic concrete aggregates and other bituminous mixtures	548	2,380	4.35
Road base and coverings <sup>2</sup>	832	2,720	3.27
Road and other stabilization (lime)	19	66	3.47
Fill	871	2,060	2.36
Other miscellaneous uses <sup>3</sup>	1	16	16.00
Unspecified: <sup>4</sup>			
Reported	1,400	6,600	4.71
Estimated	3,700	16,000	4.24
Total or average	11,000	48,500	4.42

<sup>1</sup>Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

<sup>2</sup>Includes road and other stabilization (cement).

<sup>3</sup>Includes snow and ice control.

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

TABLE 5b  
 OKLAHOMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004,  
 BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	2,170	\$13,200	\$6.09
Plaster and gunitite sands	60	354	5.88
Concrete products (blocks, bricks, pipe, decorative, etc.)	18	126	6.88
Asphaltic concrete aggregates and other bituminous mixtures	527	2,580	4.89
Road base and coverings	809	2,870	3.54
Fill	1,100	2,130	1.94
Other miscellaneous uses <sup>2</sup>	3	17	6.62
Unspecified: <sup>3</sup>			
Reported	3,590	15,600	4.34
Estimated	3,700	17,000	4.58
Total or average	12,000	53,700	4.49

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

<sup>2</sup>Includes snow and ice control.

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

TABLE 6a  
 OKLAHOMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003,  
 BY USE AND DISTRICT<sup>1,2</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2 and 3		District 4 and 5	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products <sup>3</sup>	W	W	1,870	9,310	W	W
Asphaltic concrete aggregates and road base materials <sup>4</sup>	W	W	509	2,290	W	W
Fill	221	437	299	1,030	351	596
Other miscellaneous uses <sup>5</sup>	1,000	5,380	--	--	1,670	7,150
Unspecified: <sup>6</sup>						
Reported	21	209	467	1,660	914	4,730
Estimated	300	1,400	1,600	6,500	1,700	7,800
Total	1,570	7,420	4,780	20,800	4,640	20,300

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses." -- Zero.

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

<sup>2</sup>Districts 2 and 3 and districts 4 and 5 are combined to avoid disclosing company proprietary data.

<sup>3</sup>Includes plaster and gunite sands.

<sup>4</sup>Includes road and other stabilization (cement and lime).

<sup>5</sup>Includes snow and ice control.

<sup>6</sup>Reported and estimated production without a breakdown by end use.

TABLE 6b  
 OKLAHOMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004,  
 BY USE AND DISTRICT<sup>1,2</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		Districts 2 and 4		Districts 3 and 5	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products <sup>3</sup>	750	4,520	1,300	8,200	191	955
Asphaltic concrete aggregates and road base materials	298	850	W	W	W	W
Fill	175	258	857	1,790	65	82
Other miscellaneous uses <sup>4</sup>	3	16	631	2,350	407	2,240
Unspecified: <sup>5</sup>						
Reported	13	129	3,500	15,100	81	369
Estimated	230	990	2,500	12,000	920	4,100
Total	1,460	6,760	8,840	39,200	1,660	7,790

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses."

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

<sup>2</sup>Districts 2 and 4 and districts 3 and 5 are combined to avoid disclosing company proprietary data.

<sup>3</sup>Includes plaster and gunite sands.

<sup>4</sup>Includes snow and ice control.

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