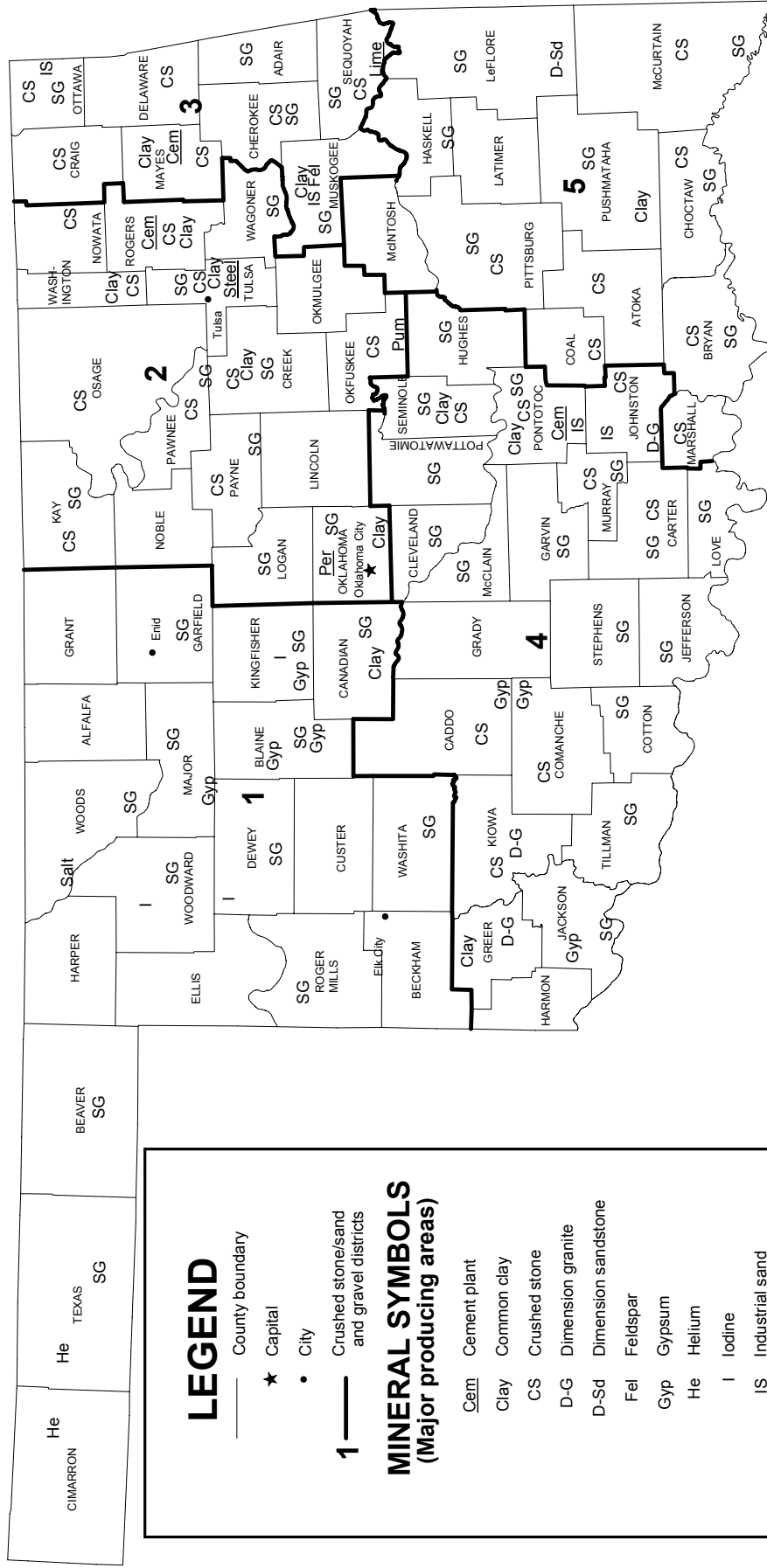


# OKLAHOMA



# 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 2001, the estimated value<sup>1</sup> of nonfuel raw mineral production for Oklahoma was \$530 million, based upon preliminary U.S. Geological Survey (USGS) data. This was a 12% increase from that of 2000<sup>2</sup> and followed a 7.3% increase from 1999 to 2000. The State rose in rank to 28th from 31st among the 50 States in total nonfuel mineral production value, of which Oklahoma accounted for nearly 1.5% of the U.S. total.

In 2001, crushed stone continued to be Oklahoma's leading nonfuel mineral commodity, accounting for about two-fifths of the State's total nonfuel mineral production value. Based upon value, crushed stone was followed by cement (masonry and portland), construction sand and gravel, industrial sand and gravel, gypsum, and iodine. 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 more than 50% of the total value. Further information regarding portland cement is withheld to protect company proprietary data.

In 2000, increases in crushed stone (up \$23 million), portland cement (up more than \$14 million), and gypsum (up \$3.4 million) led the State's increase for the year, moderated somewhat by decreases in the values of construction sand and gravel, iodine, and lime. All other nonfuel minerals had changes in value of less than \$1 million (table 1).

Oklahoma's mines exclusively produced industrial minerals; no metals were mined in the State. Based upon USGS estimates of the quantities produced in the 50 States during 2001, Oklahoma remained the only State that produced iodine and continued to be first in gypsum, second of 4 States that produce tripoli, third of 3 States in crude helium, and fifth in feldspar. The State rose in rank to seventh from eighth in industrial sand and gravel and was a significant producer of crushed stone, masonry and portland cements, construction sand and gravel,

common clays, dimension stone, and gemstones (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.

In April 2001, Martin Marietta Materials Inc. acquired Meridian Aggregates Co. for \$235 million. Meridian operates eight stone quarries and sales yards in five counties in Oklahoma, the largest being at Mill Creek in Johnston County. Martin Marietta Materials Inc. acquired Material Producers Inc. of Norman, OK, in June 2001. Material Producers operates a limestone quarry near Davis, OK, serving the Norman and Oklahoma City areas, and has an annual capacity of about 1.5 million metric tons (Mt), with reserves in excess of 85 Mt. Three affiliated companies operated by Material Producers also were included in the deal: Norman Asphalt operates an asphalt plant, Norman Concrete runs a ready mixed concrete plant, and Tri-Mat is a trucking company.

Texas Industries, Inc. (TXI) of Dallas, TX began construction on its aggregate operation in Johnston County near Mill Creek, OK, in 2001. The 9-million-metric-ton-per-year-capacity plant was scheduled for completion in 2002. The TXI green field operation will produce crushed limestone for the regional aggregate market. In Tulsa County, Watkins Sand Co. began operating its Cardinal sand and gravel dredging operation in the Arkansas River in December 2001. In Rogers County, Sherwood Construction Co. of Catoosa, OK, began operating its Greenhill quarry, mining limestone for the aggregate market.

In July 2001, Lafarge S.A. became the world's largest maker of cement when it purchased Blue Circle Industries PCL. As a result of the acquisition, the Blue Circle, Inc. cement plant in Tulsa, OK, became part of Lafarge.

In April 2000, several business leaders in the Oklahoma aggregates industry created the Oklahoma Aggregate Association (OKAA), which incorporated in July 2001. It provides a medium for the members to coordinate their efforts to discuss and resolve issues of common concern and interest in the State. The OKAA addresses issues related to aggregates, construction material producers, dimension stone, and other allied industries. The scope of the issues addressed includes governmental affairs/environmental/safety, industry promotion and marketing, public image—internal and external communications, increasing membership, specifications, and production. Additional information about the OKAA is available on the Internet at URL <http://www.okaa.org>.

<sup>1</sup>The 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 2001 USGS mineral production data published in this chapter are preliminary estimates as of August 2002 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. Specialist contact information may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>; alternatively, specialists' names and telephone numbers may be obtained by calling USGS information at (703) 648-4000 or by calling the USGS Earth Science Information Center at 1-888-ASK-USGS (275-8747). All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

<sup>2</sup>Values, percentage calculations, and rankings for 2000 may differ from the Minerals Yearbook, Area Reports: Domestic 2000, Volume II, owing to the revision of preliminary 2000 to final 2000 data. Data for 2001 are preliminary and are expected to change; related rankings may also change.

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

The Oklahoma Geological Survey (OGS) continued its geologic mapping of the State in cooperation with the USGS under the STATEMAP component of the USGS National Cooperative Geologic Mapping Program. Selected areas are mapped in detail at 1:24,000 scale (7.5-minute topographic quadrangles). Statewide, the geologic mapping program will continue on a regional basis at a 1:100,000 scale; this supplants previously published 1:250,000 scale maps. Work on the following 7.5-minute quadrangles was completed in 2001: Franklin, Moore, Oklahoma City SE, and Oklahoma City SW.

The Buffalo, OK, 1:100,000-scale map also was completed in 2001. The focus of the geologic mapping program include associated environmental, engineering, and natural resource issues. In addition, the OGS increased its attention on its industrial minerals program by creating the industrial minerals geologist position in 2000-01. The program's goal is to provide more information to the public about the scope of industrial minerals geology and the role and potential of industrial minerals development within the State.

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

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1999		2000		2001 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays, common	757	2,050	757	2,060	757	2,060
Gemstones	NA	268	NA	197	NA	197
Gypsum, crude	3,510	20,100	2,830	23,500	2,650	23,300
Iodine, crude	1,620	23,800	1,470	21,500	1,710	20,900
Sand and gravel:						
Construction	10,200	41,200	9,210	35,500	10,100	39,500
Industrial	1,470	30,900	1,480	30,700	1,480	30,700
Stone:						
Crushed	36,200 r/	145,000 r/	39,300	168,000	49,000	216,000
Dimension	3,480	635	5,910	1,530	6,000	1,500
Combined values of cement, feldspar, helium, lime, salt, tripoli	XX	177,000	XX	180,000	XX	187,000
Total	XX	441,000	XX	473,000	XX	530,000

r/ Revised. p/ Preliminary. NA Not available. 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  
OKLAHOMA: CRUSHED STONE SOLD OR USED, BY KIND 1/

Kind	1999				2000			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	42	28,000	\$111,000	\$3.98	41	31,200	\$134,000	\$4.28
Dolomite	3	W	W	3.31	3	1,460	5,000	3.42
Granite	5	3,680	16,400	4.47	5	3,850	14,300	3.71
Sandstone	8	2,470	10,800	4.36	7	2,510	14,400	5.73
Shell	--	--	--	--	1	W	W	3.50
Miscellaneous stone	2	W	W	1.79	2	W	W	3.71
Total or average	XX	36,200 r/	145,000 r/	4.00	XX	39,300	168,000	4.28

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

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

TABLE 3  
OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS  
IN 2000, BY USE 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit Value
<b>Construction:</b>			
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	428	\$2,730	\$6.39
Filter stone	25	176	7.04
Other coarse aggregate	475	1,660	3.50
Total or average	928	4,570	4.93
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,700	10,200	6.01
Bituminous aggregate, coarse	842	5,240	6.23
Bituminous surface-treatment aggregate	568	4,820	8.49
Railroad ballast	W	W	4.30
Other graded coarse aggregate	9,180	37,800	4.12
Total or average	12,300	58,100	4.73
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	4.13
Stone sand, bituminous mix or seal	157	742	4.73
Screening, undesignated	2,820	11,500	4.06
Other fine aggregate	1,330	5,110	3.84
Total or average	4,310	17,300	4.02
Coarse and fine aggregates:			
Graded road base or subbase	1,780	8,360	4.71
Unpaved road surfacing	650	3,290	5.06
Crusher run or fill or waste	3,220	13,800	4.29
Other coarse and fine aggregates	1,370	5,160	3.78
Total or average	7,010	30,600	4.37
Other construction materials 3/	1,250	5,380	4.32
Agricultural, limestone	(4/)	(4/)	3.47
Chemical and metallurgical:			
Cement manufacture	(4/)	(4/)	4.66
Flux stone	(4/)	(4/)	4.70
Unspecified: 5/			
Reported	6,230	23,800	3.82
Estimated	4,900	18,000	3.57
Total or average	11,200	41,400	3.71
Grand total or average	39,300	168,000	4.28

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

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

2/ Includes dolomite, granite, limestone, miscellaneous stone, sandstone, and shell.

3/ Includes building products.

4/ Withheld to avoid disclosing company proprietary data; included in "Grand total."

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

TABLE 4  
OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2000, BY USE AND DISTRICT 1/ 2/

(Thousand metric tons and thousand dollars)

Use	District 2		District 3		District 4		District 5	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1 1/2 inch) 3/	161	1,270	42	230	W	W	W	W
Coarse aggregate, graded 4/	W	W	W	W	7,950	31,400	2,220	13,200
Fine aggregate (-3/8 inch) 5/	W	W	W	W	3,170	12,700	522	2,080
Coarse and fine aggregate 6/	2,270	11,600	416	1,760	2,370	9,320	1,950	7,940
Other construction materials 7/	--	--	80	442	997	4,120	169	817
Agricultural 8/	W	W	W	W	--	--	W	W
Chemical and metallurgical 9/	W	W	--	--	W	W	W	W
Unspecified: 10/								
Reported	4,080	15,800	2,150	8,010	--	--	--	--
Estimated	62	210	890	3,000	1,800	6,900	2,200	7,500
Total	9,550	44,900	4,290	17,700	18,000	72,000	7,560	33,800

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

1/ No production reported in District 1.

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

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

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

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

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

7/ Includes building products.

8/ Includes agricultural limestone.

9/ Includes cement manufacture and flux stone.

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

TABLE 5  
OKLAHOMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2000,  
BY MAJOR USE CATEGORY 1/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	4,660	\$18,700	\$4.01
Concrete products (blocks, bricks, pipe, decorative, etc.) 2/	46	232	5.04
Asphaltic concrete aggregates and other bituminous mixtures	278	734	2.64
Road base and coverings	209	530	2.54
Fill	1,030	1,780	1.72
Other miscellaneous uses	107	1,140	10.62
Unspecified: 3/			
Reported	1,110	4,520	4.06
Estimated	1,800	7,900	4.06
Total or average	9,210	35,500	3.85

1/ Data are rounded to no more than three significant digits, except unit value; 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  
OKLAHOMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2000,  
BY USE AND DISTRICT 1/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2	
	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand) 2/	715	1,960	1,910	6,510
Concrete products (blocks, bricks, pipe, decorative, etc.)	--	--	42	214
Asphaltic concrete aggregates and other bituminous mixtures	W	W	166	414
Road base and coverings	W	W	--	--
Fill	122	198	664	1,190
Other miscellaneous uses	205	765	11	42
Unspecified: 3/				
Reported	--	--	458	1,110
Estimated	440	2,200	250	860
Total	1,480	5,160	3,500	10,300
	Districts 3 and 5 4/		District 4	
	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand) 2/	184	868	1,850	9,350
Concrete products (blocks, bricks, pipe, decorative, etc.)	--	--	--	--
Asphaltic concrete aggregates and other bituminous mixtures	W	W	8	18
Road base and coverings	W	W	51	85
Fill	78	171	167	218
Other miscellaneous uses	120	584	33	491
Unspecified: 3/				
Reported	6	22	650	3,390
Estimated	460	2,300	630	2,500
Total	844	3,970	3,390	16,000

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

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.

4/ Districts 3 and 5 are combined to avoid disclosing company proprietary data.