

# THE MINERAL INDUSTRY OF OKLAHOMA

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

Oklahoma climbed to 32d from 34th in rank among the 50 States in total nonfuel mineral production value<sup>1</sup> in 1997, according to the U.S. Geological Survey (USGS). The estimated value for 1997 was \$411 million, a more than 11% increase over that of 1996. This increase followed a 3.4% increase from 1995 to 1996 (based on final 1996 data). The State accounted for 1% of the U.S. total nonfuel mineral production value.

In 1997, crushed stone and portland cement continued as Oklahoma's top two nonfuel mineral commodities, accounting for about 33% and 30%, respectively, of the State's total nonfuel mineral value. The combined values of construction materials—crushed stone, portland and masonry cements, construction sand and gravel, and gypsum, in descending order of value—accounted for 77% of the total value. Oklahoma's increase in value in 1997 mostly resulted from the higher values of crushed stone, iodine, salt, construction sand and gravel, and portland cement, in descending order of increase (*table 1*). Only common and fire clays and crude helium showed relatively small value decreases, while industrial sand and gravel and feldspar remained at the same levels. In 1996, an increase in portland cement was balanced out by an equal decrease in crushed stone. Most other nonfuel minerals had relatively small increases in value, resulting in the State's net increase.

Oklahoma's mines exclusively produced industrial minerals; no metals were mined in the State. Based on USGS estimates of the quantities produced in the 50 States during 1997, Oklahoma remained the only State that produced iodine; first in crude gypsum; second of four States producing tripoli; third of three crude helium-producing States; fifth in feldspar; and eighth in industrial sand and gravel. Additionally, significant quantities of crushed stone, portland and masonry cements, and common clays were produced in the State.

The following narrative information was provided by the Oklahoma Geological Survey<sup>2</sup> (OGC), which reported that

<sup>1</sup>The 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 1997 USGS mineral production data published in this chapter are estimates as of January 1998. For some 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. Call MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset, and request Document # 1000 for a telephone listing of all mineral commodity specialists, or call USGS information at (703) 648-4000 for the specialist's name and number. This telephone listing may also be retrieved over the Internet at <http://minerals.er.usgs.gov/minerals/contacts/comdir.html>. All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved by way of MINES FaxBack or over the Internet at <http://minerals.er.usgs.gov/minerals/>.

<sup>2</sup>Kenneth S. Johnson, Associate Director of the Oklahoma Geological Survey, authored the text of State minerals information submitted by the agency.

industrial-mineral activity in the State continued to increase during 1997. Production has been level or has been rising steadily over the past several years for several of the major commodities, including gypsum for wallboard and plasters; crushed stone for aggregate, railroad ballast, and fill; cement for highways, housing, and commercial buildings; iodine for pharmaceuticals, disinfectants, and animal feed; dimension stone for houses and commercial buildings; and sand and gravel for various construction projects. Construction activities that held steady or increased somewhat in 1997 included highway construction and residential and commercial building.

In 1997, gypsum production dropped slightly, but the price underwent a moderate increase. Most Oklahoma wallboard plants operated at near-capacity during the year, and there was little room to expand to meet the rising national and regional demand. Republic Gypsum Co. is now adding a second board line at its plant in Duke, Jackson County (southwest Oklahoma); this will significantly increase the company's capacity by the end of 1998.

Crushed stone demand rose in 1997, due largely to highway construction, the need for granite and rhyolite as railroad ballast, and the need for aggregate on roads and drilling pads in the oil and gas drilling business. Most Oklahoma highways are now being built with a concrete surface, which increases the demand for aggregate and cement.

Iodine production increased slightly during 1997, but the value rose significantly above that of 1996. The price of iodine held steady at about \$18 per kilogram during most of the year, which was a significant increase over the \$11 to \$15 per kilogram price in 1996. Three companies are operating four facilities in northwest Oklahoma, and the companies have drilled several new producing wells during the year.

The number of mining permits in Oklahoma dropped slightly in 1997, but the acreage under permit has risen. The Oklahoma Department of Mines (ODM) issued a total of 435 permits in 1997, covering a total of about 17,000 hectares. According to ODM, many more companies are opting to obtain a Life Expectancy Permit, as allowed under the State's 1994 law. Under this law, a company may submit a mining plan only once to cover the mine's life expectancy, instead of undergoing a permit review every 5 years. Of permits on file for 1997, ODM reports that 174 (40%) have been secured under the "life expectancy" provision.

Oklahoma is scheduled to host the 34th Forum on the Geology of Industrial Minerals on May 2-6, 1998, in Norman. This prestigious annual meeting will be attended by about 150 specialists in the geology, production, and marketing of a wide range of industrial minerals throughout the United States and elsewhere in the world.

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

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1995		1996		1997 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	95	7,250	101	8,850 e/	103	9,200 e/
Portland	1,740	110,000	1,750	118,000 e/	1,780	122,000 e/
Clays:						
Common	674	3,580	799	4,090	772	3,550
Fire	--	--	23	W	--	--
Gemstones	NA	W	NA	603	NA	995
Gypsum, crude	2,830	17,000	2,690	16,500	2,610	18,400
Iodine, crude metric tons	1,210	12,500	1,270	14,600	1,330	24,000
Sand and gravel:						
Construction	7,800	25,100	7,910	27,700	9,120	32,700
Industrial	1,250	25,400	1,350	27,200	1,350	27,200
Stone:						
Crushed 3/	31,100	125,000	28,300	117,000	31,500	134,000
Dimension metric tons	9,170 3/	2,350 3/	9,710	2,220	9,760	2,230
Combined value of feldspar, helium [crude, Grade-A (1996-97)], lime, salt, stone [crushed shell and traprock, dimension quartzite and sandstone (1995)], tripoli (1995-96), and values indicated by symbol W	XX	28,700	XX	32,300	XX	36,000
Total	XX	357,000	XX	369,000	XX	411,000

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

3/ Excludes certain stones; kind and value included with "Combined value" figure.

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

Kind	1995				1996			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	46 r/	21,700 r/	\$88,500 r/	\$4.07	45	21,000	\$82,800	\$3.95
Dolomite	5 r/	3,830 r/	16,100 r/	4.20	5	2,990	12,600	4.20
Granite	3	W	W	5.21	3	W	W	5.15
Traprock	1	1,490	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)
Sandstone	5	W	W	4.93	6	W	W	4.96
Shell	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)
Slate	1	12	66	5.50	1	15	84	5.60
Miscellaneous stone	1	27	118	4.37	1	91	402	4.42
Total	XX	31,100	125,000	4.01	XX	28,300	117,000	4.14

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

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Excludes shell and traprock (1995 value only) from State total to avoid disclosing company proprietary data.

TABLE 3  
OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS  
IN 1996, BY USE 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
<b>Coarse aggregate (+1 1/2 inch):</b>			
Riprap and jetty stone	140	\$987	\$7.05
Filter stone	81	433	5.35
Other coarse aggregate	W	W	5.00
<b>Coarse aggregate, graded:</b>			
Concrete aggregate, coarse	2,550	13,000	5.10
Bituminous aggregate, coarse	997	5,860	5.87
Bituminous surface-treatment aggregate	367	2,390	6.52
Railroad ballast	697	3,820	3.34
Other graded coarse aggregate	W	W	4.81
<b>Fine aggregate (-3/8 inch):</b>			
Screening, undesignated	966	2,320	2.40
Other fine aggregate 3/	356	1,450	4.08
<b>Coarse and fine aggregates:</b>			
Graded road base or subbase	2,170	7,890	3.64
Unpaved road surfacing	W	W	4.88
Terrazzo and exposed aggregate	W	W	4.83
Crusher run or fill or waste	1,650	6,450	3.90
Other coarse and fine aggregates	W	W	3.92
Other construction materials 4/	348	1,500	4.32
Agricultural limestone	(5/)	(5/)	3.82
<b>Chemical and metallurgical:</b>			
Cement manufacture	(5/)	(5/)	2.81
Flux stone	(5/)	(5/)	4.54
Special, other fillers or extenders	(5/)	(5/)	6.62
<b>Unspecified: 6/</b>			
Actual	13,700	55,500	4.05
Estimated	1,910	7,530	3.95
Total	28,300	117,000	4.14

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

1/ Includes dolomite, granite, limestone, miscellaneous stone, sandstone, and slate; excludes shell and traprock from State total to avoid disclosing company proprietary data.

2/ Data are rounded to three significant digits; may not add to totals shown.

3/ Includes stone sand (concrete) and stone sand (bituminous mix or seal).

4/ Includes lightweight aggregate (slate).

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

6/ Includes production reported without a breakdown by end use and with estimates for nonrespondents.

TABLE 4  
OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1996, BY USE AND DISTRICT 1/ 2/ 3/

(Thousand metric tons and thousand dollars)

Use	District 2		District 3		District 4		District 5	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>Construction aggregates:</b>								
Coarse aggregate (+1 1/2 inch) 4/	86	515	W	W	W	W	W	W
Coarse aggregate, graded 5/	1,250	7,050	W	W	W	W	W	W
Fine aggregate (-3/8 inch) 6/	767	1,890	W	W	W	W	W	W
Coarse and fine aggregate 7/	1,780	6,470	W	W	W	W	1,050	4,160
Other construction materials 8/	--	--	1,450	6,130	1,780	8,630	2,160	11,200
Agricultural 9/	(10/)	(10/)	(10/)	(10/)	--	--	(10/)	(10/)
Chemical and metallurgical 11/	(10/)	(10/)	--	--	(10/)	(10/)	(10/)	(10/)
Special 12/	--	--	--	--	(10/)	(10/)	--	--
<b>Unspecified: 13/</b>								
Actual	2,690	13,000	(10/)	(10/)	8,890	35,800	658	2,840
Estimated	108	250	195	788	816	3,300	788	3,190
<b>Total</b>	<b>7,700</b>	<b>31,400</b>	<b>3,130</b>	<b>10,800</b>	<b>12,500</b>	<b>52,200</b>	<b>4,990</b>	<b>22,900</b>

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

1/ No crushed stone was produced in District 1.

2/ Excludes shell and traprock from State total to avoid disclosing company proprietary data.

3/ Data are rounded to three significant digits; may not add to totals shown.

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

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

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

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

8/ Includes lightweight aggregate (slate).

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

11/ Includes cement manufacture and flux stone.

12/ Includes other fillers or extenders.

13/ Includes production reported without a breakdown by end use and with estimates for nonrespondents.

TABLE 5  
OKLAHOMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1996,  
BY MAJOR USE CATEGORY 1/

Use	Quantity	Value (thousands)	Value per ton
	(thousand metric tons)		
Concrete aggregate (including concrete sand)	3,210	\$13,200	\$4.11
Plaster and gunite sands	1	5	5.00
Concrete products (blocks, bricks, pipe, decorative, etc.)	152	530	3.49
Asphaltic concrete aggregates and other bituminous mixtures	308	745	2.42
Road base and coverings 2/	407	1,170	2.88
Fill	990	1,680	1.69
Other miscellaneous uses	2	27	13.50
<b>Unspecified: 3/</b>			
Actual	1,490	6,100	4.09
Estimated	1,340	4,240	3.16
<b>Total or average</b>	<b>7,910</b>	<b>27,700</b>	<b>3.50</b>

1/ Data are rounded to three significant digits, except value per ton may not add to totals shown.

2/ Includes road and other stabilization (cement) and snow and ice control.

3/ Includes production reported without a breakdown by end use and with estimates for nonrespondents.

TABLE 6  
 OKLAHOMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1996, BY USE AND DISTRICT 1/ 2/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products 3/	235	896	1,560	4,640	1,570	8,190
Asphaltic concrete aggregates and road base materials 4/	348	804	847	1,620	510	1,170
Other miscellaneous uses	2	27	--	--	--	--
Unspecified: 5/						
Actual	739	2,530	--	--	752	3,570
Estimated	53	328	569	1,920	720	1,990
Total	1,380	4,580	2,980	8,190	3,550	14,900

1/ Production reported in District 3 and 5 was included with "District 4" to avoid disclosing company proprietary data.

2/ Data are rounded to three significant digits; may not add to totals shown.

3/ Includes plaster and gunite sands.

4/ Includes fill, and snow and ice control.

5/ Includes production reported without a breakdown by end use and with estimates for nonrespondents.