

# THE MINERAL INDUSTRY OF TEXAS

This chapter has been prepared under a Memorandum of Understanding between the U.S. Bureau of Mines, U.S. Department of the Interior, and the Bureau of Economic Geology, The University of Texas at Austin, for collecting information on all nonfuel minerals.

Texas ranked eighth in the Nation in nonfuel mineral value<sup>1</sup> in 1994, down from fifth in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was more than \$1.4 billion, almost a 3% decrease from that of 1993. This followed a more than 11% increase in 1993 compared with that of 1992. The State accounted for more than 4% of the U.S. total. More than 85% of the State's nonfuel mineral value came from industrial minerals, especially portland cement, crushed stone, construction sand and gravel, lime, and salt. These five accounted for 75% of the total. Magnesium metal, extracted from seawater, was the only metal produced from the State's own resources. Very small quantities of iron ore

were mined for industrial use as a cattle feed nutrient, road aggregate, and in the manufacture of cement. Compared with 1993, the value of the following nonfuel minerals increased: crushed stone, magnesium metal, industrial sand and gravel, masonry cement, common clays, gypsum, crude helium, ball clays, fuller's earth, magnesium compounds, and iron ore. The value of the following decreased: portland cement, construction sand and gravel, lime, salt, frash sulfur, grade-A helium, sodium sulfate, talc and pyrophyllite, and fluorspar.

Compared to USBM estimates of the quantities of minerals produced in the other 49 States during 1994, Texas remained first in crushed stone and magnesium metal; second

TABLE 1  
NONFUEL RAW MINERAL PRODUCTION IN TEXAS<sup>1</sup>

Mineral	1992		1993		1994 <sup>p</sup>		
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	
Cement:							
Masonry	thousand metric tons	W	W	245	\$18,365	316	\$23,700
Portland	do.	6,840	\$308,749	8,127	397,600	7,820	383,000
Clays <sup>2</sup>	do.	2,237	12,610	2,183	17,441	2,260	21,200
Gemstones		NA	3,834	NA	400	NA	W
Gypsum (crude)	thousand metric tons	1,624	9,920	1,756	10,088	1,920	11,100
Helium (crude)	million cubic meters	W	W	6	5,385	6	5,940
Lime	thousand metric tons	1,337	83,359	1,604	103,274	1,280	82,100
Salt	do.	7,985	76,125	8,253	76,054	7,960	76,000
Sand and gravel:							
Construction	do.	41,404	166,362	<sup>e</sup> 47,100	<sup>e</sup> 195,000	42,000	176,400
Industrial	do.	<sup>f</sup> 1,392	<sup>f</sup> 26,501	1,433	28,558	W	W
Stone:							
Crushed	do.	<sup>e</sup> 64,682	<sup>e</sup> 253,100	70,772	279,245	<sup>e</sup> 75,800	<sup>e</sup> 315,000
Dimension	do.	W	W	W	W	<sup>e</sup> 46,500	<sup>e</sup> 7,900
Sulfur (Frasch)	do.	1,495	W	1,164	W	W	W
Talc and pyrophyllite	metric tons	235,919	5,720	235,857	5,662	262,000	5,630
Combined value of clays [ball, bentonite, fuller's earth, kaolin], fluorspar (1993-94), helium (Grade-A), iron ore (usable), magnesium compounds, magnesium metal, sodium sulfate (natural), and values indicated by symbol							
W		XX	357,458	XX	311,041	XX	301,000
Total		XX	<sup>f</sup> 1,303,738	XX	1,448,113	XX	<sup>3</sup> 1,410,000

<sup>e</sup>Estimated. <sup>p</sup>Preliminary. <sup>r</sup>Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

<sup>2</sup>Excludes certain clays; kind and value included with "Combined value" data.

<sup>3</sup>Data do not add total shown because of independent rounding.

TABLE 2  
**TEXAS: CRUSHED STONE<sup>1</sup> SOLD OR USED BY PRODUCERS IN 1993, BY USE**

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
<b>Coarse aggregate (+1 1/2 inch):</b>			
Riprap and jetty stone	598	\$3,960	\$6.62
Filter stone	102	531	5.21
Other coarse aggregate	W	W	3.93
<b>Coarse aggregate, graded:</b>			
Concrete aggregate, coarse	10,860	50,789	4.68
Bituminous aggregate, coarse	4,967	24,122	4.86
Bituminous surface-treatment aggregate	1,452	8,328	5.74
Railroad ballast	438	2,230	5.09
Other graded coarse aggregate	2,042	8,534	4.18
<b>Fine aggregate (-3/8 inch):</b>			
Stone sand, concrete	1,850	8,113	4.39
Stone sand, bituminous mix or seal	1,760	4,724	2.68
Screening, undesignated	795	1,954	2.46
Other fine aggregate	470	1,603	3.41
<b>Coarse and fine aggregates:</b>			
Graded road base or subbase	20,225	54,888	2.71
Unpaved road surfacing	105	385	3.67
Terrazzo and exposed aggregate	7	351	50.14
Crusher run or fill or waste	1,192	2,338	1.96
Other coarse and fine aggregates	369	913	2.47
Other construction materials	419	2,104	5.02
Roofing granules	W	W	6.06
<b>Agricultural:</b>			
Agricultural limestone	315	1,274	4.04
Poultry grit and mineral food	193	1,797	9.31
<b>Chemical and metallurgical:</b>			
Cement manufacture	10,885	30,361	2.79
Lime manufacture	1,557	7,160	4.60
Dead-burned dolomite manufacture	(?)	(?)	3.74
Flux stone	(?)	(?)	5.50
Glass manufacture	(?)	(?)	10.95
Sulfur oxide removal	(?)	(?)	4.31
<b>Special:</b>			
Asphalt fillers or extenders	(?)	(?)	10.79
Whiting or whiting substitute	(?)	(?)	27.48
Other fillers or extenders	384	8,344	21.73
Other specified uses not listed	1,078	11,429	10.60
<b>Unspecified:<sup>3</sup></b>			
Actual	1,942	11,072	5.70
Estimated	6,767	31,941	4.72
Total	70,772	279,245	3.95
Total <sup>4 5</sup>	78,013	279,245	3.58

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

<sup>1</sup>Includes dolomite, granite, limestone, limestone-dolomite, and miscellaneous stone.

<sup>2</sup>Withheld to avoid disclosing company proprietary data; included with "Other specified uses not listed."

<sup>3</sup>Includes production reported without a breakdown by use and estimates for nonrespondents.

<sup>4</sup>One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

<sup>5</sup>Total shown in thousand short tons and thousand dollars.

in portland cement, salt, sodium sulfate, common clays, talc and pyrophyllite, fluorspar, and crude helium; third in gypsum and grade-A helium; one of five States producing zeolites; sixth in magnesium compounds; seventh in dimension stone; and one of the top seven bentonite clay-producing States. The State climbed in rank from third to second in ball clays and from fifth to third in the production of masonry cement, while dropping in the following: from first to second in frash sulfur; second to sixth in construction sand and gravel; fourth to sixth in lime; and sixth to seventh in industrial sand and gravel. In addition to the primary production of magnesium metal, Texas had a strong metals industry which produced raw steel, aluminum, copper, lead, and smaller amounts of other metals. Sources of plant feed were mostly scrap metal, with some ores coming from other domestic or foreign sources. Texas was among the top seven State's that produced raw steel with an estimated output of nearly 3.8 million metric tons (4.2 million short tons), as reported by the American Iron and Steel Institute.

According to the Texas Bureau of Economic Geology, an overall pattern of declining unemployment rates occurred in Texas, becoming especially apparent during the last half of 1994.

Unemployment in December was down to 5.8%, the lowest rate since 1989; Texas employers created 246,000 jobs during the year. Despite this positive trend, the number of workers employed in Texas mining and oil and gas extraction industries decreased by about 7.6% for the year. As reported by the Texas Employment Commission, employment in the mining industry totaled 159,300 in December 1994, while jobs that were available in the oil and gas extraction industry stood at about 151,200. In other mining and mineral-related developments, Texas highway construction and business expansion and relocation of businesses from other States stimulated the production of construction materials in 1994. Aggregate production (construction sand and gravel and crushed stone) increased 7% during the year. While the Texas legislature, which normally meets only in odd-numbered years, held no special legislative sessions during 1994, the issue of registration for geologists in Texas was scheduled for presentation during the regular 1995 legislative session.

The term value means the total monetary value as represented by either mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

TABLE 3  
TEXAS: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1991				1993			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	124	54,064	\$190,883	\$3.53	125	65,265	\$254,082	\$3.89
Dolomite	2	W	W	3.47	2	W	W	3.05
Marble	24	W	W	32.73	20	W	W	37.55
Calcareous marl	2	W	W	4.35	2	W	W	3.11
Granite	2	W	W	4.68	14	25	186	7.44
Traprock	3	887	4,641	5.23	3	250	1,807	7.23
Sandstone	9	1,094	7,465	6.82	6	825	5,272	6.39
Quartzite	1	305	W	W	1	W	W	8.42
Miscellaneous stone	17	1,140	3,402	2.98	11	2,206	7,197	3.26
Total <sup>1</sup>	XX	59,664	225,664	3.78	XX	70,772	279,245	3.95
Total <sup>2,3</sup>	XX	65,768	225,664	3.43	XX	78,013	279,245	3.58

<sup>1</sup>Revised. W Withheld to avoid disclosing company proprietary data; included with "Total." XX Not applicable.

<sup>2</sup>Data may not add to totals shown because of independent rounding.

<sup>3</sup>One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

<sup>4</sup>Total shown in thousand short tons and thousand dollars.

TABLE 4  
**TEXAS: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT**

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Construction aggregates:</b>						
Coarse aggregate (+1 1/2 inch) <sup>2</sup>	—	—	—	—	W	W
Coarse aggregate, graded <sup>3</sup>	303	2,860	—	—	W	W
Fine aggregate (-3/8 inch) <sup>4</sup>	101	600	( <sup>5</sup> )	( <sup>5</sup> )	W	W
Coarse and fine aggregate <sup>6</sup>	336	1,172	( <sup>5</sup> )	( <sup>5</sup> )	W	W
Other construction materials <sup>7</sup>	—	—	—	—	463	2,886
Agricultural <sup>8</sup>	—	—	( <sup>5</sup> )	( <sup>5</sup> )	—	—
Chemical and metallurgical <sup>9</sup>	—	—	—	—	( <sup>5</sup> )	( <sup>5</sup> )
Special <sup>10</sup>	—	—	—	—	—	—
<b>Unspecified:<sup>11</sup></b>						
Actual	—	—	( <sup>5</sup> )	( <sup>5</sup> )	—	—
Estimated	525	2,839	( <sup>5</sup> )	( <sup>5</sup> )	( <sup>5</sup> )	( <sup>5</sup> )
Total <sup>12</sup>	1,265	7,471	810	4,002	2,827	12,798
Total <sup>13 14</sup>	1,394	7,471	893	4,002	3,116	12,798
Use	District 4		District 5		District 6 <sup>1</sup>	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Construction aggregates:</b>						
Coarse aggregate (+1 1/2 inch) <sup>2</sup>	( <sup>5</sup> )	( <sup>5</sup> )	220	1,280	—	—
Coarse aggregate, graded <sup>3</sup>	W	W	10,574	50,906	—	—
Fine aggregate (-3/8 inch) <sup>4</sup>	W	W	2,216	7,327	—	—
Coarse and fine aggregate <sup>6</sup>	W	W	6,490	22,162	—	—
Other construction materials <sup>7</sup>	2,098	8,191	( <sup>5</sup> )	( <sup>5</sup> )	—	—
Agricultural <sup>8</sup>	—	—	( <sup>5</sup> )	( <sup>5</sup> )	—	—
Chemical and metallurgical <sup>9</sup>	( <sup>5</sup> )	( <sup>5</sup> )	4,780	14,438	—	—
Special <sup>10</sup>	—	—	( <sup>5</sup> )	( <sup>5</sup> )	—	—
<b>Unspecified:<sup>11</sup></b>						
Actual	—	—	1,551	8,869	—	—
Estimated	1,224	4,985	1,902	7,636	—	—
Total <sup>12</sup>	3,898	14,539	28,438	119,196	—	—
Total <sup>13 14</sup>	4,297	14,539	31,347	119,196	—	—

See footnotes at end of table.

TABLE 4—Continued  
**TEXAS: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT**

(Thousand metric tons and thousand dollars)

Use	District 7		District 8		District 9	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch) <sup>2</sup>	W	W	—	—	—	—
Coarse aggregate, graded <sup>3</sup>	7,749	33,038	77	319	32	272
Fine aggregate (-3/8 inch) <sup>4</sup>	2,353	7,494	1	6	56	210
Coarse and fine aggregate <sup>6</sup>	11,334	25,993	159	664	( <sup>5</sup> )	( <sup>5</sup> )
Other construction materials <sup>7</sup>	628	3,711	—	—	( <sup>5</sup> )	( <sup>5</sup> )
Agricultural <sup>8</sup>	( <sup>5</sup> )	( <sup>5</sup> )	—	—	—	—
Chemical and metallurgical <sup>9</sup>	6,928	22,490	—	—	—	—
Special <sup>10</sup>	( <sup>5</sup> )	( <sup>5</sup> )	—	—	—	—
Unspecified: <sup>11</sup>						
Actual	26	209	—	—	—	—
Estimated	989	5,985	109	865	65	192
Total <sup>12</sup>	30,804	113,111	346	1,854	2,384	6,274
Total <sup>13 14</sup>	33,956	113,111	381	1,854	2,628	6,274

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

<sup>1</sup>Withheld to avoid disclosing company proprietary data; included with "District 5."

<sup>2</sup>Includes filter stone, riprap and jetty stone, and other coarse aggregate.

<sup>3</sup>Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregate.

<sup>4</sup>Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.

<sup>5</sup>Withheld to avoid disclosing company proprietary data; included with "Total."

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

<sup>7</sup>Includes roofing granules.

<sup>8</sup>Includes agricultural limestone and poultry grit and mineral food.

<sup>9</sup>Includes cement manufacture, dead-burned dolomite manufacture, flux stone, glass manufacture, lime manufacture, and sulfur oxide removal.

<sup>10</sup>Includes asphalt fillers or extenders, other fillers or extenders, whiting or whiting substitute, and other specified uses not listed.

<sup>11</sup>Includes production reported without a breakdown by use and estimates for nonrespondents.

<sup>12</sup>Data may not add to totals shown because of independent rounding.

<sup>13</sup>One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

<sup>14</sup>Total shown in thousand short tons and thousand dollars.