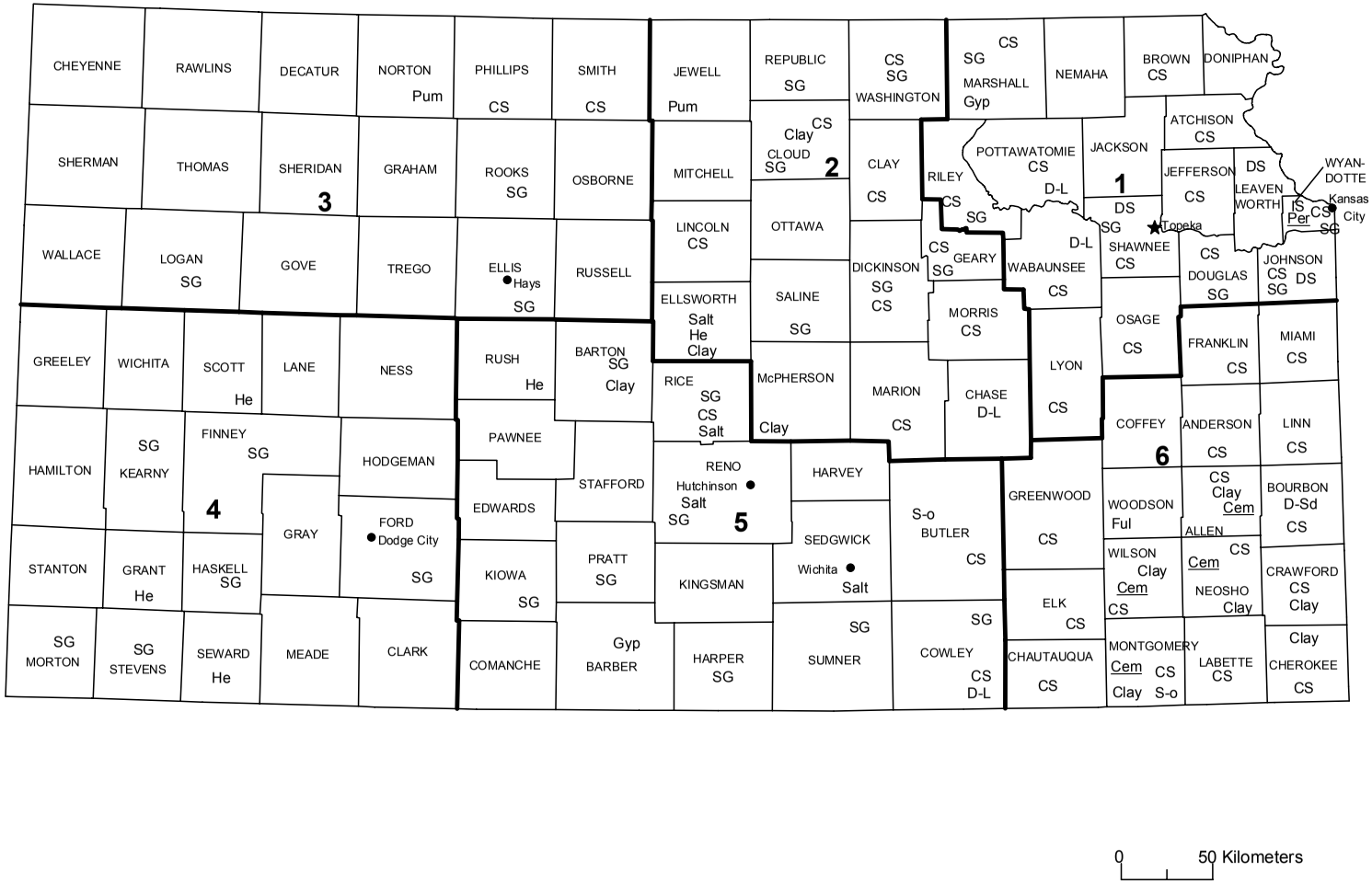
KANSAS



LEGEND

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

MINERAL SYMBOLS (Major producing areas)

Cem	Cement plant
Clay	Common clay
CS	Crushed stone
D-L	Dimension limestone
D-Sd	Dimension sandstone
DS	Dimension stone
Ful	Fuller's earth
Gyp	Gypsum
He	Helium
IS	Industrial sand
Per	Perlite plant
Pum	Pumice and pumicite
S-o	Sulfur (oil)
Salt	Salt
SG	Construction sand and gravel

Source: Kansas Geological Survey/U.S. Geological Survey (2004)

THE MINERAL INDUSTRY OF KANSAS

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

In 2004, Kansas' nonfuel raw mineral production was valued[1] at $754 million, based upon annual U.S. Geological Survey (USGS) data. This was an increase of 8.3% from that of 2003[2] and followed a 1.3% increase from 2002 to 2003. The State was 23d in rank (21st in 2003) among the 50 States in total nonfuel mineral production value, of which Kansas accounted for nearly 1.7% of the U.S. total.

Portland cement, Grade-A helium, salt, and crushed stone were Kansas' leading nonfuel mineral commodities in 2004, accounting for about 28%, 25%, 17%, and 14%, respectively, and collectively about 84% of the State's total nonfuel mineral production value. In 2004, increases in the production and values of cement (portland and masonry), Grade-A helium, and crude helium, the values of which were up by about $40 million, $10 million, and $8 million, respectively, led the State's rise in nonfuel mineral production value for the year. Other smaller yet sizable value increases came from salt, up $4 million, and gypsum, up about $2 million. The largest decreases came from those of common clays, down by $2.5 million, and construction sand and gravel and crushed stone, down about $2 million each (table 1).

In 2003, the largest increases in nonfuel mineral value were those of construction sand and gravel and common clays, up by about $6 million each, crushed stone, up $5 million, and salt, up $4 million. Offsetting these somewhat were decreases that occurred in the values of portland cement, down about $7 million, and Grade-A helium, down about $2 million (table 1).

In 2004, Kansas continued to be the Nation's leading producer of Grade-A helium and crude helium (first of 2 producing States); it also remained 5th in the production of salt, and 8th in gypsum. Additionally, significant quantities of portland cement, crushed stone, and common clays, (descending order of value) were produced in the State. Production of nonfuel minerals in Kansas has consisted entirely of industrial minerals since 1970, following nearly a century (since 1877) of metallic mineral mining in the State. The last zinc and lead mining operation closed in 1970 owing in part to low zinc prices, low-grade ore, and the high operating costs of required pollution control systems.

The following narrative information was provided by the Kansas Geological Survey[3] (KGS).

Employment

Data from the Labor Management Information Services of the Kansas Department of Labor reported that the annual average employment in all aspects of mining during 2004 was 7,041 people. This represents an 8% increase from the average employment reported in 2003. The oil and gas industry employees were the majority, with the remainder employed in the coal and nonmetallic, nonfuel mining operations. The nonfuel industrial-mineral operations employed approximately 1,093 people, with an average salary of $40,092. This represents a 5.8% decrease in the number of employees and a 1.3% increase in average salary reported compared with respective values in 2003.

Mine Reclamation

The Kansas Governor's Mined Land Reclamation Award for 2004 went to Fogle South Quarry in Ottawa and Central Sand Company in Wichita. The Fogle South Quarry also received the national Noncoal Mine Reclamation Award from the National Association of State Land Reclamationists.

Legislation and Government Programs

The Kansas legislature in 2004 passed a Senate bill 364, which charged the chief engineer of Division of Water Resources and the Kansas Geological Survey to study and develop recommendations regarding 1) the use of water banking as it pertains to sand and gravel pits, 2) calculation of evapotranspiration and its effects on consumptive use from sand and gravel pits, and 3) the pollution control and flood control impacts of diverting water runoff into sand and gravel pits. They are to report to the House Environment Committee and Senate Natural Resources Committee by January 20, 2006 (Rex Buchanan, Associate Director for Public Outreach, Kansas Geological Survey, written commun., August 22, 2005).

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[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 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.

[2]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.

[3]Gregory C. Ohlmacher, an Associate Scientist with the Kansas Geological Survey, authored the text of the State mineral industry information provided by that agency.

The Kansas Supreme Court upheld a State law passed in 2001 banning local governments from selling aggregate to the public (U.S. Geological Survey, 2003). A Bourbon County, Kansas, judge had ruled that the city could sell a limited amount of aggregate for small jobs in Fort Scott because aggregate for small jobs is not readily available.

The 2004 Kansas Field Conference led by the Kansas Geological Survey took State legislators to a coalbed methane exploration site and the Bayer Stone Quarry (both are in Chase County). The coalbed methane exploration site was one of two that were drilled by Penn Virginia Oil and Gas out of Kingsport, TN. The target coalbed was 600 meters deeper and thicker than coals used in the established fields in southeastern Kansas. Bayer Stone, Inc. quarries and finishes limestone for the outside of commercial and residential buildings, as well as countertops, floor tiles, windowsills, and other uses inside homes and buildings. The field conference guidebook is available from the Kansas Geological Survey (Sawin and others, 2004).

Interest in developing coalbed methane remained high in Kansas. Approximately 380 million cubic meters of coalbed methane was produced in 2004.

Legislation and Government Programs

Geologic mapping continued with Federal matching funding from the STATEMAP program, a component of the USGS National Cooperative Mapping Program. One county geologic map was completed during 2004: a digital upgrade map of Pottawatomie County (KGS M-110). Geologic field mapping continued during the year in Cheyenne, Crawford, Edwards, Geary, Morton, Pawnee, Republic, Saline, Sedgwick, and Washington Counties. Digital efforts and reviews of maps continued for Barber, Clark, Cheyenne, Crawford, Ford, Gray, Hodgeman, Neosho, Osborne, and Wabaunsee Counties.

A total of 66 open-file reports (OFR) were filed with the library at the Kansas Geological Survey. Preliminary geologic maps of Crawford County and the Tallgrass Prairie National Preserve were released along with reports on coalbed methane, energy resources, geophysical studies, ground water studies, and other geologic studies.

References Cited

Sawin, R.S., Buchanan, R.C., and McCauley, J.R., 2004, The Kansas Flint Hills Energy, Prairie, and Preservation: Kansas Geological Survey Open-File Report 2004-22.

U.S. Geological Survey, 2003, The mineral industry of Kansas, *in* Area reports—Domestic: U.S. Geological Survey Minerals Yearbook 2001, v. II, p. 18.1-18.5.

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

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2002		2003		2004	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement, portland	2,350	181,000 [e]	2,270	173,000 [e]	2,690	212,000 [e]
Clays, common	642	4,280	632	10,000	621	7,460
Gemstones	NA	1	NA	1	NA	1
Helium, Grade-A million cubic meters	78	181,000	77	179,000	82	189,000
Salt	2,630	119,000	2,770	123,000	2,890	127,000
Sand and gravel, construction	9,560	28,700	10,700	34,900	9,930	32,800
Stone:						
Crushed	21,300 [r]	106,000 [r]	20,700	111,000	19,800	109,000
Dimension	15	1,900	15	1,640	14	1,730
Combined values of cement (masonry), clays (fuller's earth), gypsum (crude), helium (crude), pumice and pumicite, sand and gravel (industrial)	XX	64,800	XX	65,100	XX	75,300
Total	XX	687,000 [r]	XX	696,000	XX	754,000

[e]Estimated. [r]Revised. 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 three significant digits; may not add to totals shown.

TABLE 2
KANSAS: CRUSHED STONE SOLD OR USED, BY KIND[1]

	2002				2003				2004			
Kind	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	99	W	W	$5.00	111	W	W	$5.39	106	W	W	$5.53
Quartzite	2	W	W	4.06	2	W	W	4.22	2	W	W	4.09
Total or average	XX	21,300 r	$106,000 r	4.98 r	XX	20,700	$111,000	5.36	XX	19,800	$109,000	5.49

rRevised. W Withheld to avoid disclosing company proprietary data; included in "Total or average." XX Not applicable.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.

TABLE 3a

KANSAS: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, BY USE[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1½ inch):			
Riprap and jetty stone	82	$946	$11.54
Filter stone	W	W	8.84
Other coarse aggregates	207	1,790	8.65
Total or average	289	2,740	9.47
Coarse aggregate, graded:			
Concrete aggregate, coarse	188	1,540	8.19
Bituminous aggregate, coarse	(2)	(2)	6.61
Bituminous surface-treatment aggregate	(2)	(2)	5.79
Other graded coarse aggregates	1,460	9,930	6.82
Total or average	1,650	11,500	6.97
Fine aggregate (-⅜ inch):			
Screening, undesignated	423	1,500	3.54
Other fine aggregates	154	1,170	7.62
Total or average	577	2,670	4.63
Coarse and fine aggregates:			
Graded road base or subbase	249	1,180	4.73
Unpaved road surfacing	727	3,640	5.00
Crusher run or fill or waste	(3)	(3)	8.53
Other coarse and fine aggregates	814	5,620	6.90
Total or average	1,790	10,400	5.83
Agricultural limestone	(4)	(4)	6.42
Chemical and metallurgical, cement manufacture	(4)	(4)	5.15
Other miscellaneous uses and specified uses not listed	1,300	7,000	5.39
Unspecified:[5]			
Reported	9,960	49,700	4.99
Estimated	2,100	11,000	5.37
Total or average	12,000	60,800	5.06
Grand total or average	20,700	111,000	5.36

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

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

[2]Withheld to avoid disclosing company proprietary data; included with "Other graded coarse aggregates."

[3]Withheld to avoid disclosing company proprietary data; included with "Other coarse and fine aggregates."

[4]Withheld to avoid disclosing company proprietary data; included in "Grand total or average."

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

TABLE 3b

KANSAS: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1½ inch):			
Macadam	W	W	$4.96
Riprap and jetty stone	128	$1,290	10.05
Filter stone	W	W	8.67
Total or average	265	2,300	8.69
Coarse aggregate, graded:			
Concrete aggregate, coarse	W	W	6.39
Bituminous aggregate, coarse	451	3,720	8.25
Bituminous surface-treatment aggregate	W	W	2.76
Total or average	476	3,850	8.08
Fine aggregate (-⅜ inch):			
Stone sand, bituminous mix or seal	(2)	(2)	4.96
Screening, undesignated	295	1,240	4.20
Coarse and fine aggregates:			
Graded road base or subbase	379	1,870	4.93
Unpaved road surfacing	548	2,540	4.63
Crusher run or fill or waste	(3)	(3)	8.45
Other coarse and fine aggregates	568	4,080	7.18
Total or average	1,500	8,490	5.68
Agricultural limestone	24	114	4.75
Chemical and metallurgical, cement manufacture	1,910	12,000	6.30
Unspecified:[4]			
Reported	12,600	65,200	5.18
Estimated	2,800	15,000	5.62
Total or average	15,300	80,700	5.26
Grand total or average	19,800	109,000	5.49

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

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

[2]Withheld to avoid disclosing company proprietary data; included in "Unspecified: Reported."

[3]Withheld to avoid disclosing company proprietary data; included with "Other coarse and fine aggregates."

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

TABLE 4a

KANSAS: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, BY USE AND DISTRICT[1, 2]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch)[3]	W	W	W	W	--	--
Coarse aggregate, graded[4]	990	7,170	--	--	--	--
Fine aggregate (-⅜ inch)[5]	W	W	W	W	--	--
Coarse and fine aggregate[6]	519	3,250	W	W	126	594
Agricultural[7]	W	W	--	--	--	--
Chemical and metallurgical[8]	--	--	--	--	--	--
Other miscellaneous use	1,300	7,000	--	--	--	--
Unspecified:[9]						
Reported	3,850	19,300	1,510	7,180	--	--
Estimated	380	2,000	570	3,000	80	410
Total	7,710	43,100	2,220	10,900	203	1,010

	District 5		District 6	
	Quantity	Value	Quantity	Value
Construction:				
Coarse aggregate (+1½ inch)[3]	W	W	6	48
Coarse aggregate, graded[4]	W	W	W	W
Fine aggregate (-⅜ inch)[5]	W	W	W	W
Coarse and fine aggregate[6]	W	W	727	3,580
Agricultural[7]	W	W	W	W
Chemical and metallurgical[8]	--	--	W	W
Other miscellaneous use	--	--	--	--
Unspecified:[9]				
Reported	541	2,760	4,070	20,500
Estimated	--	--	1,000	5,600
Total	1,150	7,330	9,400	48,600

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]No crushed stone was produced in District 4.

[3]Includes filter stone, riprap and jetty stone, and other coarse aggregates.

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

[5]Includes screening (undesignated) and other fine aggregates.

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

[7]Includes agricultural limestone.

[8]Includes cement manufacture.

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

TABLE 4b

KANSAS: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE AND DISTRICT[1, 2]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch)[3]	W	W	W	W	--	--
Coarse aggregate, graded[4]	W	W	--	--	--	--
Fine aggregate (-⅜ inch)[5]	W	W	W	W	--	--
Coarse and fine aggregate[6]	W	W	W	W	W	W
Agricultural[7]	W	W	W	W	--	--
Chemical and metallurgical[8]	--	--	--	--	--	--
Unspecified:[9]						
Reported	4,280	22,700	1,550	7,350	--	--
Estimated	1,200	7,000	570	3,000	24	130
Total	6,400	35,600	2,210	11,000	137	665

	District 5		District 6	
	Quantity	Value	Quantity	Value
Construction:				
Coarse aggregate (+1½ inch)[3]	W	W	W	W
Coarse aggregate, graded[4]	W	W	W	W
Fine aggregate (-⅜ inch)[5]	W	W	W	W
Coarse and fine aggregate[6]	W	W	W	W
Agricultural[7]	W	W	--	--
Chemical and metallurgical[8]	--	--	1,910	12,000
Unspecified:[9]				
Reported	542	2,770	6,180	32,300
Estimated	--	--	990	5,300
Total	1,090	6,840	9,950	54,500

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]No crushed stone was produced in District 4.

[3]Includes filter stone, macadam, and riprap and jetty stone.

[4]Includes concrete aggregate (coarse), bituminous aggregate (coarse), and bituminous surface-treatment aggregate.

[5]Includes screening (undesignated) and stone sand (bituminous mix or seal).

[6]Includes crusher run or fill or waste, graded road base or subbase, unpaved road surfacing, and other coarse and fine aggregates.

[7]Includes agricultural limestone.

[8]Includes cement manufacture.

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

TABLE 5a
KANSAS: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	2,470	$7,580	$3.07
Plaster and gunite sands	76	221	2.89
Concrete products (blocks, bricks, pipe, decorative, etc.)	30	114	3.83
Asphaltic concrete aggregates and other bituminous mixtures	935	3,190	3.41
Road base and coverings	1,880	5,390	2.87
Road and other stabilization (cement and lime)	231	489	2.12
Fill	1,250	2,870	2.30
Snow and ice control	150	594	3.97
Railroad ballast	33	276	8.48
Other miscellaneous uses	229	641	2.80
Unspecified:[2]			
Reported	688	3,900	5.67
Estimated	2,700	9,600	3.53
Total or average	10,700	34,900	3.26

[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Reported and estimated production without a breakdown by end use.

TABLE 5b
KANSAS: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	1,380	$4,710	$3.41
Plaster and gunite sands	20	60	3.05
Concrete products (blocks, bricks, pipe, decorative, etc.)	3	27	10.10
Asphaltic concrete aggregates and other bituminous mixtures	589	3,000	5.09
Road base and coverings[2]	1,480	4,460	3.01
Fill	802	1,640	2.04
Snow and ice control	66	245	3.73
Other miscellaneous uses	13	166	12.38
Unspecified:[3]			
Reported	1,840	5,710	3.10
Estimated	3,700	13,000	3.43
Total or average	9,930	32,800	3.31

[1]Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.
[2]Includes road and other stabilization (cement and lime).
[3]Reported and estimated production without a breakdown by end use.

TABLE 6a

KANSAS: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand)	737	2,570	190	832	77	238
Plaster and gunite sands	W	W	W	W	3	14
Concrete products (blocks, bricks, pipe, decorative, etc.)	W	W	--	--	--	--
Asphaltic concrete aggregates and other bituminous mixtures	187	759	W	W	W	W
Road base and coverings[2]	42	176	217	833	363	770
Fill	134	522	194	530	21	59
Snow and ice control	16	57	21	86	4	11
Other miscellaneous uses[3]	13	71	69	329	8	18
Unspecified:[4]						
Reported	7	37	5	11	--	--
Estimated	960	3,000	150	480	35	120
Total	2,100	7,190	846	3,100	511	1,230

	District 4		District 5		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand)	229	668	1,230	3,250	9	26
Plaster and gunite sands	17	58	W	W	--	--
Concrete products (blocks, bricks, pipe, decorative, etc.)	W	W	20	52	--	--
Asphaltic concrete aggregates and other bituminous mixtures	65	182	537	1,720	69	211
Road base and coverings[2]	880	2,240	560	1,770	12	31
Fill	116	299	785	1,460	(5)	(5)
Snow and ice control	75	240	32	193	2	7
Other miscellaneous uses[3]	4	21	303	980	--	--
Unspecified:[4]						
Reported	140	2,200	537	1,660	--	--
Estimated	650	3,200	940	2,900	--	--
Total	2,180	9,090	4,940	13,900	92	275

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]Includes road and other stabilization (cement and lime).

[3] Includes railroad ballast.

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

[5]Less than ½ unit.

TABLE 6b

KANSAS: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004, BY USE AND DISTRICT[1,2]

(Thousand metric tons and thousand dollars)

Use	District 1		Districts 2 and 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand)	686	2,690	113	372	64	169
Concrete products (blocks, bricks, pipe, decorative, etc.)[3]	W	W	3	11	W	W
Asphaltic concrete aggregates and other bituminous mixtures	330	1,790	W	W	W	W
Road base and coverings[4]	106	815	418	921	365	933
Fill	233	655	21	49	46	108
Snow and ice control	W	W	15	56	W	W
Other miscellaneous uses	38	208	52	235	61	233
Unspecified:[5]						
Reported	2	12	--	--	--	--
Estimated	880	2,900	740	2,800	900	3,600
Total	2,280	9,090	1,360	4,430	1,440	5,030

Use	District 5		Unspecified districts	
	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand)	517	1,480	--	--
Concrete products (blocks, bricks, pipe, decorative, etc.)[3]	11	48	--	--
Asphaltic concrete aggregates and other bituminous mixtures	100	656	59	192
Road base and coverings[4]	582	1,760	11	29
Fill	501	825	--	--
Snow and ice control	18	55	3	11
Other miscellaneous uses	(6)	1	--	--
Unspecified:[5]				
Reported	1,840	5,690	--	--
Estimated	1,200	3,500	--	--
Total	4,770	14,000	73	232

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]Includes road and other stabilization (cement and lime).

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

[6]Less than ½ unit.