

# THE MINERAL INDUSTRY OF IOWA

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

In 1998, the preliminary estimated value<sup>1</sup> of nonfuel mineral production was \$524 million, according to the U.S. Geological Survey (USGS). This was almost an 8% increase from that of 1997,<sup>2</sup> and followed a 5.7% increase in 1997 from that of 1996. Iowa rose in rank to 28th from 30th among the 50 States in total nonfuel mineral production value, of which the State accounted for more than 1% of the U.S. total.

Crushed stone remained the leading commodity, accounting for about 45% of the State's total nonfuel mineral value, followed by portland cement with more than 39% and construction sand and gravel with more than 10%. Most of Iowa's increase in value in 1998 resulted from the increases in crushed stone, \$19 million, and portland cement, \$11 million, and was further supported by smaller yet significant increases in crude gypsum and construction sand and gravel (table 1). Only peat decreased (marginally). In 1997, the increased values of portland cement up \$18 million, and crushed stone up \$13 million, accounted for most of the State's \$26 million increase.

Compared with USGS preliminary estimates of quantities produced in the other 49 States in 1998, Iowa remained 3d<sup>2</sup> in crude gypsum and 10th in portland cement. Additionally, the State was a significant producer of crushed stone and construction sand and gravel. No metals were mined in Iowa; all of the State's metal production, such as raw steel, resulted from the processing of materials acquired from other domestic and foreign sources.

The Geological Survey Bureau (GSB) of the Iowa Department of Natural Resources provided the following narrative information.<sup>3</sup> In 1998, Iowa recorded 240 licensed mineral producers operating 1,070 registered mineral production sites in a total of 97 counties. Of the 240 licensed

<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 1998 USGS mineral production data published in this chapter are preliminary estimates as of February 1999 and are expected to change. For some mineral 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. A telephone listing for the specialists may be retrieved over the Internet at <http://minerals.usgs.gov/minerals/contacts/comdir.html>; by using MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset (request Document #1000 for a telephone listing of all mineral commodity specialists); or by calling USGS information at (703) 648-4000 for the specialist's name and number. All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at <http://minerals.usgs.gov/minerals>; facsimile copies may be obtained from MINES FaxBack.

<sup>2</sup>Values, percentage calculations, and rankings for 1997 may vary from the *Minerals Yearbook, Area Reports: Domestic 1997, Volume II*, owing to the revision of preliminary 1997 to final 1997 data. Data for 1998 are preliminary and expected to change, while related rankings may also be subject to change.

<sup>3</sup>Robert McKay, Research Geologist, authored the text of minerals industry information provided by the Iowa Geological Survey Bureau.

producers, 9 had regional offices based outside of Iowa and 31 were Iowa county governments.

The 31 licensed county governments operated a total of 113 registered sites. Of the county-operated sites, 13 produced crushed stone, 100 produced sand and gravel, and 1 of those operations produced both crushed stone and sand and gravel. Five counties operated crushed stone quarries, and Fayette County, with eight registered sites, operated the greatest number of county-licensed quarries. The other 26 county governments operated sand and gravel pits, and Kossuth County, with 10 registered sites, operated the greatest number of county-licensed sand and gravel pits.

The greatest number of registered sites and the widest production distribution in any product class was in sand and gravel. Sand and gravel was produced in 86 counties from a total of 602 registered sites. Western Iowa, with its deeply buried bedrock, hosted the top 10 counties in terms of the number of sand and gravel sites. These top 10 western counties had 191 active sand and gravel pits representing slightly more than 30% of the total number of active sand and gravel pits statewide. Sac County, with 25 registered sand and gravel pits, had the greatest number of sand and gravel production sites of all the counties statewide. Hallett Materials Co. operated the greatest number of sand and gravel sites with a total of 52 sites spread across 21 counties.

Crushed stone (mined exclusively from sedimentary limestone or dolostone strata) was produced from 462 registered sites distributed across 66 counties. Of these 462 crushed stone sites, 9 were underground mine operations. Northeastern Iowa, with its readily accessible shallow bedrock, hosted 9 of the top 10 counties in terms of their number of crushed stone sites. These top 9 northeastern counties had 227 active quarries, representing 49% of the total number of active crushed stone production sites statewide. Winneshiek County, with 40 registered quarries, had the greatest number of crushed stone sites of all counties statewide. Wendling Quarries, Inc. operated the greatest number of quarries with a total of 61 sites spread across 10 counties, while Martin Marietta Materials Inc. operated the greatest number of underground mines with 3 mines in 3 separate counties (Story, Webster, and Poweshiek Counties). Martin Marietta Aggregates of Southeast Iowa, Inc., a new licensee in 1997, continued operational control over one underground limestone mine, the Durham Mine in Marion County. The Schildberg Construction Co., Inc. of Greenfield, IA, completed its first full year of production at the Atlantic underground limestone mine in Cass County. The operation of the Atlantic Mine, which Schildberg commenced in 1997, is comprised of a 5-meter face, room and pillar style, in the Bethany Falls Limestone. This is the first and only underground mine in the State to operate in the Pennsylvanian age limestones of southwest Iowa.

Crude gypsum was produced in 3 counties by 5 companies operating at a total of 14 sites. The United States Gypsum

Co., having the largest number of production sites, operated 7 of these 14 sites, with 6 quarries (categorized as 1 site in the USGS database) in Webster County and 1 underground mine in Des Moines County. Webster County remained the leader in terms of the number of gypsum operations, with 12 quarries operated by 3 different companies. Georgia Pacific Corp. continued supplying its board plant with gypsum rock from National Gypsum Co.'s Kaufmann-George Quarry in the northern part of the district. Georgia Pacific, which discontinued mining operations at its Elkhorn Township Quarry in 1997 because of inadequate reserves, had been a longtime producer of gypsum rock in Webster County.

Clay was produced at 11 sites in 6 counties by 7 different companies. Clay used in the manufacture of portland cement was mined at 6 pits in Cerro Gordo and Scott Counties, and clay used for other clay products (primarily brick) was taken from four pits in Dallas, Woodbury, and Webster Counties. Clay material was mined at one registered site for fill material.

The GSB completed a new open file map entitled *Potential Aggregate Resources of Linn County*. The map, prepared at a scale of 1:100,000, delineates areas of potential sand and gravel resources and of shallow bedrock suitable for quarrying. The map is available from the GSB.

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

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1996		1997		1998 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement: Portland	2,390	177,000 e/	2,550	195,000 e/	2,640	206,000
Clays: Common	478	1,180	287	976	293	996
Gemstones	NA	481	NA	91	NA	91
Gypsum, crude	2,090	12,800	2,080	12,200	2,070	14,900
Sand and gravel: Construction	13,300	54,600	12,600	51,300	13,000	54,700
Stone: Crushed	34,400	202,000	37,300	215,000	40,400	234,000
Combined values of cement (masonry), lime, peat, sand and gravel (industrial)	XX	11,100	XX	12,500	XX	13,500
Total	XX	460,000	XX	486,000	XX	524,000

e/ Estimated. 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 three significant digits; may not add to totals shown.

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

Kind	1996				1997			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone 2/	208	34,400	\$202,000	\$5.88	198	37,200	\$215,000	\$5.77
Dolomite	3	42	169	4.02	1	41	141	3.44
Total	XX	34,400	202,000	5.88	XX	37,300	215,000	5.76

XX Not applicable.

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

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

TABLE 3  
IOWA: CRUSHED STONE SOLD OR USED BY PRODUCERS  
IN 1997, BY USE 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
<u>Coarse aggregate (+1 1/2 inch):</u>			
Macadam	279	\$1,320	\$4.73
Riprap and jetty stone	112	883	7.88
Filter stone	533	1,730	3.25
Other coarse aggregate	43	336	7.81
<u>Coarse aggregate, graded:</u>			
Concrete aggregate, coarse	1,520	9,370	6.18
Bituminous aggregate, coarse	663	3,730	5.62
Bituminous surface-treatment aggregate	210	1,350	6.43
Other graded coarse aggregate 3/	212	1,180	5.57
<u>Fine aggregate (-3/8 inch):</u>			
Stone sand, concrete	81	625	7.72
Stone sand, bituminous mix or seal	180	708	3.93
Screening, undesignated	164	721	4.40
<u>Coarse and fine aggregates:</u>			
Graded road base or subbase	1,710	8,720	5.11
Unpaved road surfacing	4,610	22,000	4.77
Terrazzo and exposed aggregate	7	16	2.29
Crusher run or fill or waste	416	1,150	2.76
Other coarse and fine aggregates	11	47	4.27
Other construction materials	209	793	3.79
<u>Agricultural:</u>			
Agricultural limestone	844	3,410	4.04
Other agricultural uses	W	W	13.43
<u>Chemical and metallurgical:</u>			
Cement manufacture	3,250	23,000	7.09
Lime manufacture	W	W	4.29
Flux stone	W	W	6.42
Glass manufacture	W	W	12.37
<u>Special:</u>			
Asphalt fillers or extenders	W	W	14.75
Roofing granules	W	W	7.72
<u>Unspecified: 4/</u>			
Actual	11,000	69,600	6.34
Estimated	10,400	58,300	5.62
<b>Total</b>	<b>37,300</b>	<b>215,000</b>	<b>5.76</b>

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

1/ Includes dolomite, limestone, and limestone-dolomite.

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

3/ Includes railroad ballast.

4/ Includes reported and estimated production without a breakdown by end use.

TABLE 4  
IOWA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1997, BY USE AND DISTRICT 1/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantitv	Value	Quantitv	Value	Quantitv	Value	Quantitv	Value
<b>Construction aggregates:</b>								
Coarse aggregate (+1 1/2 inch) 2/	--	--	91	467	W	W	717	2,980
Coarse aggregate, graded 3/	--	--	573	3,660	W	W	1,430	8,420
Fine aggregate (-3/8 inch) 4/	--	--	81	352	W	W	216	1,090
Coarse and fine aggregate 5/	--	--	1,690	8,650	198	1	3,160	12,400
Other construction materials	--	--	W	W	W	W	W	W
Agricultural 6/	--	--	281	1,410	W	W	363	1,660
Chemical and metallurgical 7/	--	--	W	W	--	--	W	W
Special 8/	--	--	--	--	--	--	W	W
Unspecified: 9/								
Actual	W	W	W	W	W	W	W	W
Estimated	W	W	W	W	W	W	W	W
Total	1,120	7,360	8,070	54,700	5,320	35,500	10,700	45,600
Use	District 5		District 6		Unspecified districts			
	Quantitv	Value	Quantitv	Value	Quantitv	Value		
<b>Construction aggregates:</b>								
Coarse aggregate (+1 1/2 inch) 2/	--	--	133	1	--	--		
Coarse aggregate, graded 3/	--	--	508	3,260	--	--		
Fine aggregate (-3/8 inch) 4/	--	--	125	1	--	--		
Coarse and fine aggregate 5/	--	--	1,830	10,900	--	--		
Other construction materials	--	--	W	W	--	--		
Agricultural 6/	--	--	168	1	--	--		
Chemical and metallurgical 7/	--	--	--	--	--	--		
Special 8/	--	--	--	--	--	--		
Unspecified: 9/								
Actual	W	W	W	W	913	6,190		
Estimated	W	W	W	W	--	--		
Total	6,050	36,600	5,100	28,800	913	6,190		

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

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

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

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

4/ Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesigned).

5/ 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.

6/ Includes agricultural limestone and other agricultural uses.

7/ Includes cement manufacture, lime manufacture, and flux stone.

8/ Includes asphalt fillers or extenders and other uses.

9/ Includes reported and estimated production without a breakdown by end use.

TABLE 5  
IOWA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1997,  
BY MAJOR USE CATEGORY 1/

Use	Quantity (thousand metric tons)	Value (thousands)	Value per ton
Concrete aggregate (including concrete sand)	2,380	\$10,100	\$4.24
Plaster and gunite sands	52	299	5.75
Concrete products (blocks, bricks, pipe, decorative, etc.)	86	817	9.50
Asphaltic concrete aggregates and other bituminous mixtures	594	2,110	3.55
Road base and coverings	1,890	5,080	2.69
Fill	959	2,470	2.58
Snow and ice control	84	296	3.52
Other miscellaneous uses 2/	57	482	8.46
Unspecified: 3/			
Actual	2,660	14,400	5.39
Estimated	3,800	15,300	4.02
Total or average	12,600	51,300	4.08

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

2/ Includes railroad ballast and roofing granules.

3/ Includes reported and estimated production without a breakdown by end use.

TABLE 6  
IOWA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1997,  
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	446	2,140	450	2,070	175	638
Concrete products 2/	28	164	39	527	W	W
Asphaltic concrete aggregates	171	660	81	392	290	781
Road base and coverings	760	2,280	W	W	603	1,670
Fill	307	898	71	209	107	288
Snow and ice control	W	W	29	132	24	87
Other miscellaneous uses 3/	W	W	24	285	W	W
Unspecified: 4/						
Actual	927	6,350	W	W	W	W
Estimated	965	3,050	441	2,030	2,170	9,280
Total	3,640	15,600	1,960	8,190	4,230	17,100
Use	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate	816	3,130	--	--	489	2,100
Concrete products 2/	34	200	--	--	W	W
Asphaltic concrete aggregates	W	W	--	--	W	W
Road base and coverings	--	--	W	W	W	W
Fill	129	328	--	--	345	747
Snow and ice control	W	W	--	--	--	--
Other miscellaneous uses 3/	--	--	W	W	W	W
Unspecified: 4/						
Actual	278	942	--	--	W	W
Estimated	93	381	128	540	--	--
Total	1,390	5,090	196	801	1,150	4,430

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

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

2/ Includes plaster and guniting sands.

3/ Includes railroad ballast and roofing granules.

4/ Includes reported and estimated production without a breakdown by end use.