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2005 Minerals Yearbook

WISCONSIN

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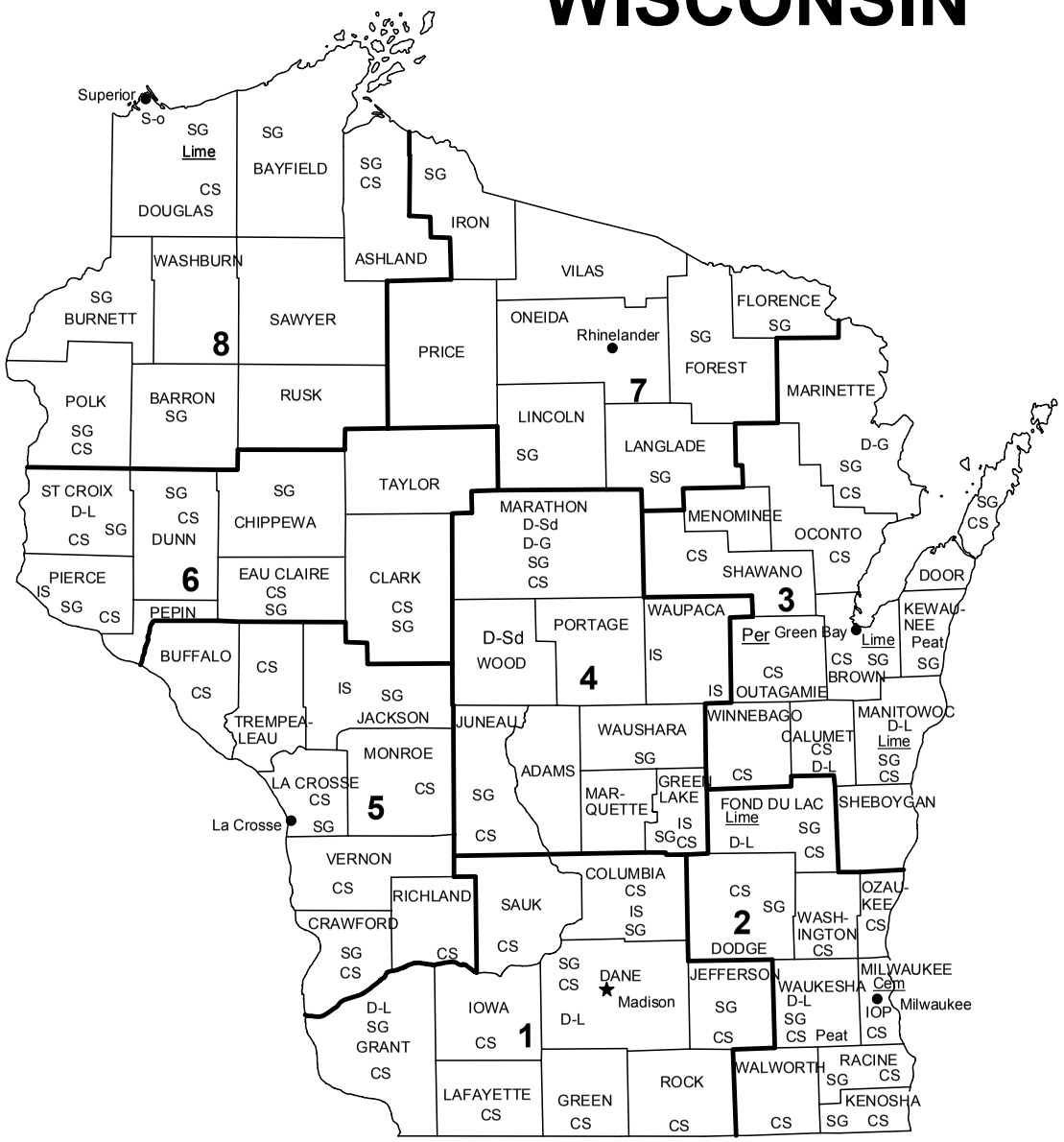
WISCONSIN



LEGEND

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

MINERAL SYMBOLS
(Major producing areas)

Cem	Cement plant
CS	Crushed stone
D-G	Dimension granite
D-L	Dimension limestone
D-Sd	Dimension sandstone
IOP	Iron oxide pigments
IS	Industrial sand
Lime	Lime plant
Peat	Peat
Per	Perlite plant
S-o	Sulfur (oil)
SG	Construction sand and gravel

0 50 Kilometers

Source: Wisconsin Geological and Natural History Survey/U.S. Geological Survey (2005)

THE MINERAL INDUSTRY OF WISCONSIN

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

In 2005, Wisconsin's nonfuel raw mineral production was valued[1] at $562 million, based upon annual U.S. Geological Survey (USGS) data. This was an 18.3% increase from the State's total nonfuel mineral value for 2004, which had increased nearly 14% from 2003 to 2004. The State ranked 34th (33d in 2004) among the 50 States in total nonfuel mineral production value and accounted for 1% of the U.S. total value. [Because data for peat and portland cement have been withheld (company proprietary data), the actual total values for 2003 to 2005 are somewhat higher than those reported in table 1.]

Crushed stone and construction sand and gravel were (in descending order of value) Wisconsin's leading nonfuel minerals in 2005 (a reversal from the order of 2004), accounting for more than 40% and 34%, respectively, of the State's reportable total nonfuel raw mineral production value (table 1). These were followed by lime, representing about 11% of the total value, industrial sand and gravel, nearly 10%, and dimension stone, nearly 5% of the total value.

The State's top four nonfuel mineral commodities had substantial to moderate increases in unit value, and virtually all the State's mineral commodities rose in production and value in 2005, only peat showing a decrease in value as well as a decrease in production. Both crushed stone and construction sand and gravel production decreased slightly, but their values rose 32% and 7%, respectively, the unit value of crushed stone rising by more than 33%. A 5% increase in industrial sand and gravel production led to a nearly 19% increase in the commodity's value, while a 4.5% increase in lime production resulted in a nearly 14% rise in its value. A nearly 20% increase in dimension stone production led to a 16% increase in the commodity's value (table 1). With a modest increase in portland cement production, its value rose substantially.

In 2005, Wisconsin continued to be third in the quantities of industrial sand and gravel produced and rose to first from second in dimension stone production and to eighth from ninth in that of lime. Although production only marginally decreased, the State dropped to 10th from 7th in construction sand and gravel. Additionally, the State was a significant producer of crushed stone.

The following narrative information was provided by the Wisconsin Geological and Natural History Survey.[2] In 2005, Wisconsin's nonmetallic mineral industry remained strong, led by production of construction aggregates, dimension limestone, and industrial sand. Other minerals and mineral products included lime, dimension sandstone and granite, landscape materials, roofing granules, agricultural lime, peat, specialty aggregates, and clays for construction use. Many mineral producers actively sought permits for new production sites to ensure future reserves and invested in expansion or modernization of existing operations to meet current and future demand. There was no active metallic mining or exploration drilling in Wisconsin in 2005.

Exploration Activities, Discoveries, and Mine Development

In 2005, Wisconsin aggregate producers continued to actively seek new reserves to replace operations that were nearing depletion or could not be expanded owing to encroaching residential development. A prime consideration in aggregate exploration in and around major urban areas such as southeast Wisconsin has become whether permits and zoning can be obtained before development makes mining an impractical land use. Producers of dimension limestone, sandstone, and landscape stone products have followed the lead of the aggregate industry in seeking new reserves in less developed regions where permitting is easier. Industrial sand producers were active in expanding operations and seeking new reserves in anticipation of demand from the drilling and glass industries.

There has been no significant metallic mineral exploration or leasing activity in Wisconsin since the last regulated exploration drill hole was completed in January 1998. Although there has been no metallic exploration activity in Wisconsin, there has been considerable interest in activity in adjacent areas of Upper Michigan. Some interest was also raised in Ashland County by a proposal to restart iron mining in the western Penokee-Gogebic Iron Range. Although active mining ended in 1965, iron mining companies retained ownership of significant acreage of surface and mineral rights with the intention of developing taconite resources in the future.

Commodity Review

Industrial Minerals

Industrial Sand and Gravel.—Industrial sand producers experienced a strong demand for foundry sand and an increased demand for hydrofrac sand for the oil industry. In 2005, there was significant interest in prospecting for new sand mines to satisfy the hydrofrac market and to provide material for Wisconsin's glass manufacturers. A range of industrial sand products are produced from the Cambrian-age Galesville sandstone, the Ordovician-age St. Peter sandstone, and from Quaternary-age deposits.

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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 2005 USGS mineral production data published in this chapter are those available as of December 2006. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL http://minerals.usgs.gov/minerals.

[2]Bruce A. Brown, Geologist (nonmetallic minerals), and Thomas J. Evans, Geologist (metallic minerals), both of the Wisconsin Geological and Natural History Survey, coauthored the text of the State mineral industry information provided by that agency.

Lime.—The lime industry has remained steady in terms of number of plants, but producers investigated modernizing existing plants and made plans to expand existing quarry operations both for lime production and byproducts such as aggregate and riprap.

Stone, Dimension.—Dimension limestone production is concentrated in the Silurian rocks of eastern Wisconsin, centered on the Byron area of Fond du Lac County, the Chilton area of Calumet County, and the Sussex-Lannon area of Waukesha County. Products include a variety of veneer stone colors and styles, paving and flagstone, cut and finished building stone, riprap, and a variety of landscape stone materials. Strong demand for upscale housing has resulted in several producers planning to expand and modernize veneer and paving stone plants. A similar range of building and landscape materials was produced from silica-cemented sandstone beds in the Cambrian-age rocks of central Wisconsin. Output has increased with the opening of one new quarry and plant in Wood County in 2004. The demand for landscape stone has resulted in local quarries, including some aggregate operations, producing rough dimension stone from the Ordovician-age Prairie du Chien and Galena-Platteville limestones. Many sand and gravel producers saved and sold large boulders for landscaping use. Stones for use in landscaping, including glacial boulders, weathered limestone blocks, washed gravel, and grus (disaggregated weathered granite) have become an increasingly lucrative sideline for many aggregate and stone producers.

Quarrying of the well-known red monument granite of the Wausau area, and gray granite from Amberg in Marinette County continued on a limited basis. Cut blocks and slabs are sold to finishers and fabricators because the finishing plants at Wausau are now closed. Precambrian-age hardrock (granite, traprock, quartzite) material is increasingly in demand for breakwater stone, riprap, railroad ballast, roofing granules, aggregates requiring high durability such as seal coat chips, and specialty aggregate for terrazzo and exposed aggregate structural panels.

Metals

Wisconsin has had no metal mining since the closing of the Flambeau copper mine near Ladysmith in Rusk County in 1997. Following the sale of the undeveloped Crandon massive sulfide deposit to local Native American communities in 2003, Wisconsin Department of Natural Resources (DNR) significantly reduced its metallic mining regulatory program and staff. The only current regulatory activity related to metal mining is long-term monitoring of the reclaimed Flambeau property.

Environmental Issues and Reclamation

In 2005, the DNR convened its Nonmetallic Mining Advisory Committee to begin revisions of Wisconsin's nonmetallic mining reclamation rules (N.R. 135), which required reclamation of all new mines and existing mines operating as of September 1, 2001. By 2005, operators were required to have reclamation plans approved by the county or other administrative authority, and financial assurance in place. The revisions were necessary to remove startup language, clarify differences between operational and reclamation issues, resolve fee-related issues, and strengthen the DNR role in technical dispute resolution. Progress was also made in terms of legislation and rule revisions to streamline the air quality permitting process for portable crushing plants.

Legislation and Government Programs, and Outreach Activities

The aggregate industry was concerned by the diversion of more than $430 million from the Transportation Fund to the General Fund in the 2005-07 biennial budget. When combined with the $675 million diverted in the 2003-05 budget, more than $1.1 billion has been removed from transportation funding. Proposed legislation that repeals gasoline tax indexing and refunds of the fuel tax paid by schools and local governments would further reduce funds available for transportation. Recent bills proposed to limit eminent domain, protect property rights, and streamline the air-quality permit application process may have a long-term benefit to the mineral industry.

A law enacted in 2004 requires municipalities or counties doing comprehensive (Smart Growth) planning to notify mine owners and operators of any action that affects future mining operations. Wisconsin's nonmetallic mining reclamation law (Dept. of Natural Resources N.R. 135) provides for registration of mines in operation that have undeveloped nonmetallic mineral deposits in order to protect reserves from future local zoning changes that preclude mining (Wisconsin Department of Natural Resources, 2006§[3]). There was an increase in registration activity in 2005 in reaction to attempts by local governments to use comprehensive planning to eliminate aggregate mining as a permitted land use. The statewide planning process is scheduled to be completed in 2010.

In 2005, the Wisconsin mineral industry continued to recognize the need for good public relations. Large and small operators hosted open house events and educational programs for neighbors and K-12 students from local schools. They provided demonstrations of quarrying activities including blasting and operation of construction equipment. Most events also provided educational activities relating to environmental issues, geology, and the importance of minerals to society.

Internet Reference Cited

Wisconsin Department of Natural Resources, 2006 (November), Nonmetalic Mining Reclamation Chapter NR 135.02, accessed May 28, 2008, at URL http://www.legis.state.wi.us/rsb/code/nr/nr135.pdf.

[3]A reference that includes a section mark (§) is found in the Internet Reference Cited section.

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

(Thousand metric tons and thousand dollars)

Mineral	2003		2004		2005	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement, portland	W	(3)	W	(3)	W	(3)
Gemstones	NA	6	NA	6	NA	6
Lime	757	46,000	850	53,900	888	61,300
Peat	W	(3)	W	(3)	W	(3)
Sand and gravel:						
Construction	38,500	150,000	43,400	178,000	43,200	191,000
Industrial	1,930	40,200	2,140	47,000	2,250	55,700
Stone:						
Crushed	35,900	160,000	39,300 r	172,000 r	38,900	227,000
Dimension	101	19,700	232	23,800	278	27,600
Total	XX	417,000	XX	475,000 r	XX	562,000

rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data. 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.
[3]Value excluded to avoid disclosing company proprietary data.

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

Kind	2004			2005		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Limestone[2]	157	32,500	$139,000	199	31,800	$187,000
Dolomite	9	1,100	4,980	9	1,000	4,920
Granite	5 r	2,500 r	11,600 r	5	2,740	15,800
Sandstone and quartzite	3	1,490	7,490 r	3	1,580	9,920
Traprock	5	1,780	9,030	4	1,780	9,420
Total	XX	39,300 r	172,000 r	XX	38,900	227,000

rRevised. XX Not applicable.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes limestone-dolomite reported with no distinction between the two.

TABLE 3
WISCONSIN: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2005, BY USE[1]

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Macadam	302	1,790
Riprap and jetty stone	176	1,010
Filter stone	367	2,600
Other coarse aggregate	196	875
Total	1,040	6,270
Coarse aggregate, graded:		
Concrete aggregate, coarse	1,260	7,840
Bituminous aggregate, coarse	138	850
Bituminous surface-treatment aggregate	262	1,510
Railroad ballast	W	W
Other graded coarse aggregate	27	224
Total	1,690	10,400
Fine aggregate (-⅜ inch):		
Stone sand, bituminous mix or seal	(2)	(2)
Screening, undesignated	799	4,540
Other fine aggregate	261	884
Total	1,060	5,420
Coarse and fine aggregates:		
Graded road base or subbase	5,640	28,900
Unpaved road surfacing	431	1,470
Crusher run or fill or waste	143	853
Roofing granules	(3)	(3)
Other coarse and fine aggregates	770	2,870
Total	6,980	34,100
Other construction materials	157	7,970
Agricultural:		
Agricultural limestone	229	2,750
Other agricultural uses	17	65
Total	246	2,810
Chemical and metallurgical, lime manufacture	(4)	(4)
Other miscellaneous uses, refractory stone	(4)	(4)
Unspecified:[5]		
Reported	2,510	15,400
Estimated	25,000	144,000
Total	27,500	159,000
Grand total	38,900	227,000

W Withheld to avoid disclosing company proprietary data; included with "Other graded coarse aggregate."
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Withheld to avoid disclosing company proprietary data; included with "Other fine aggregate."
[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."
[5]Reported and estimated production without a breakdown by end use.

TABLE 4

WISCONSIN: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2005, BY USE AND DISTRICT[1, 2]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1½ inch)[3]	W	W	W	W	251	1,410	W	W
Coarse aggregate, graded[4]	W	W	W	W	357	2,000	--	--
Fine aggregate (-⅜ inch)[5]	W	W	W	W	430	1,930	--	--
Coarse and fine aggregate[6]	2,710	16,100	W	W	1,900	8,230	W	W
Other construction materials	--	--	--	--	157	7,970	--	--
Agricultural[7]	W	W	W	W	W	W	--	--
Chemical and metallurgical[8]	--	--	--	--	W	W	--	--
Other miscellaneous uses[9]	--	--	--	--	W	W	--	--
Unspecified:[10]								
Reported	471	3,380	693	4,100	--	--	1,350	7,960
Estimated	3,800	20,000	4,300	25,000	2,800	17,000	1,800	11,000
Total	7,680	43,400	8,720	50,300	6,120	39,300	3,390	19,600

	District 5		District 6		District 8		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1½ inch)[3]	--	--	W	W	W	W	84	368
Coarse aggregate, graded[4]	--	--	W	W	W	W	--	--
Fine aggregate (-⅜ inch)[5]	--	--	--	--	--	--	85	440
Coarse and fine aggregate[6]	--	--	W	W	W	W	267	1,180
Other construction materials	--	--	--	--	--	--	--	--
Agricultural[7]	--	--	--	--	--	--	--	--
Chemical and metallurgical[8]	--	--	--	--	--	--	--	--
Other miscellaneous uses[9]	--	--	--	--	--	--	--	--
Unspecified:[10]								
Reported	--	--	--	--	--	--	--	--
Estimated	8,000	46,000	3,000	17,000	1,300	7,800	--	--
Total	8,000	46,000	3,180	18,100	1,440	8,370	435	1,980

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

[1]No crushed stone was produced in District 7.

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

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

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

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

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

[7]Includes agricultural limestone and other agricultural uses.

[8]Includes lime manufacture.

[9]Includes refractory stone.

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

TABLE 5
WISCONSIN: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	5,980	$28,700	$4.81
Plaster and gunite sands	13	117	9.00
Concrete products (blocks, bricks, pipe, decorative, etc.)	232	1,130	4.87
Asphaltic concrete aggregates and other bituminous mixtures	1,260	4,950	3.92
Road base and coverings	5,870	22,400	3.82
Road and other stabilization (cement and lime)	389	2,370	6.10
Fill	1,890	5,620	2.97
Snow and ice control	221	1,050	4.74
Roofing granules	9	62	6.89
Other miscellaneous uses[2]	98	520	5.32
Unspecified:[3]			
Reported	7,600	40,700	5.36
Estimated	19,600	82,800	4.22
Total or average	43,200	191,000	4.41

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

TABLE 6
WISCONSIN: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005,
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
Concrete aggregates and concrete products[2]	1,010	5,430	2,020	9,300	2,040	9,510
Asphaltic concrete aggregates and other bituminous mixtures	W	W	233	812	303	1,070
Road base and coverings[4]	37	153	2,470	11,900	1,330	4,790
Fill	82	187	791	2,890	475	1,050
Snow and ice control	W	W	8	166	69	327
Other miscellaneous uses[5]	145	369		5,240	13	94
Unspecified:[6]						
Reported	220	1,640	5,840	32,200	293	1,430
Estimated	1,680	7,010	2,930	12,200	1,000	4,380
Total	3,170	15,100	14,300	69,500	5,530	22,600

	District 4		Districts 5 and 6		District 7	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products[2]	W	W	476	2,470	W	W
Asphaltic concrete aggregates and other bituminous mixtures	W	W	202	966	W	W
Road base and coverings[4]	145	554	317	1,320	190	662
Fill	104	397	357	688	38	86
Snow and ice control	--	--	59	203	W	W
Other miscellaneous uses[5]	229	1,170	14	55	235	944
Unspecified:[6]						
Reported	1,050	4,160	88	955	42	200
Estimated	4,720	19,800	3,780	16,400	1,500	6,290
Total	6,260	26,100	5,290	23,000	2,010	8,180

	District 8		Unspecified districts	
	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products[2]	422	1,900	--	--
Asphaltic concrete aggregates and other bituminous mixtures	W	W	--	--
Road base and coverings[4]	1,330	4,010	442	1,410
Fill	43	310	--	--
Snow and ice control	W	W	--	--
Other miscellaneous uses[5]	333	1,400	--	--
Unspecified:[6]				
Reported	59	144	--	--
Estimated	3,570	14,900	438	1,840
Total	5,750	22,700	880	3,250

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 5 and 6 are combined to avoid disclosing company proprietary data.

[3]Includes plaster and gunite sands.

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

[5]Includes filtration and roofing granules.

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