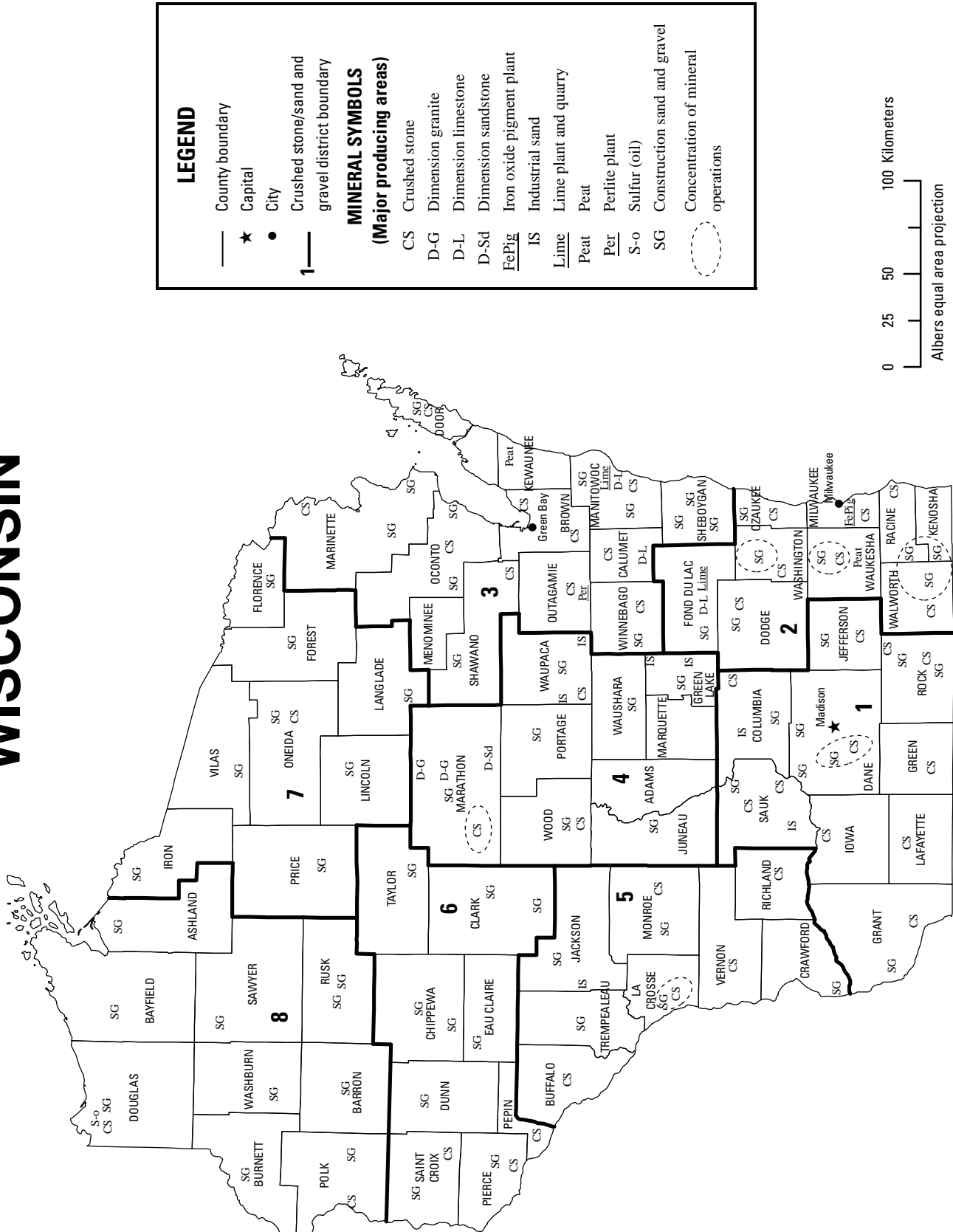




2007 Minerals Yearbook

WISCONSIN [ADVANCE RELEASE]

WISCONSIN

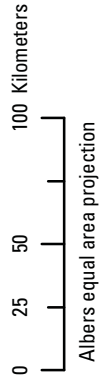


LEGEND

- County boundary
- ★ Capital
- City
- Crushed stone/sand and gravel district boundary

**MINERAL SYMBOLS
(Major producing areas)**

- CS Crushed stone
- D-G Dimension granite
- D-L Dimension limestone
- D-Sd Dimension sandstone
- FePig Iron oxide pigment plant
- IS Industrial sand
- Lime Lime plant and quarry
- Peat Peat
- Per Perlite plant
- S-o Sulfur (oil)
- SG Construction sand and gravel
- Concentration of mineral operations



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 2007, Wisconsin's nonfuel raw mineral production¹ was valued at \$540 million, based upon annual U.S. Geological Survey (USGS) data. This was a \$47 million, or 8%, decrease from the State's total nonfuel mineral value for 2006, which then had increased by \$17 million, or up nearly 3%, from that of 2005. The State was 35th in rank (34th in 2006) among the 50 States in total nonfuel mineral production value and accounted for slightly less than 1% of the U.S. total value. [Because data for peat and portland cement (2005) have been withheld (company proprietary data), the actual total values for 2005 through 2007 are somewhat higher than those reported in table 1.]

Construction sand and gravel and crushed stone were (in descending order of value) Wisconsin's leading nonfuel minerals in 2007 accounting for more than 34% and for nearly 28%, respectively, of the State's reportable total nonfuel raw mineral production value (table 1). These were followed by industrial sand and gravel, representing about 17% of the total value, lime with nearly 14.5%, and dimension stone with about 6.5% of the State's total nonfuel mineral value.

In 2007, significant increases took place in the values of industrial sand and gravel and lime, up by \$16 million and more than \$7 million, respectively. The value of construction sand and gravel also rose, up by \$4 million. But these were more than offset by a \$74 million decrease in the value of crushed stone, precipitated by a 36% decrease in the mineral commodity's production (table 1).

In 2007, Wisconsin continued to rank as the leading State in the Nation in the quantities of dimension stone produced, third in industrial sand and gravel production, and was a producer of significant quantities of crushed stone. With a 4% increase in lime production, the State rose in rank to 8th from 9th, while a 4% decrease in construction sand and gravel production, nevertheless, resulted in a rise in rank for that mineral commodity, to 10th from 11th.

The following narrative information was provided by the Wisconsin Geological and Natural History Survey² (WGNHS).

¹The 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 2007 USGS mineral production data published in this chapter are those available as of June 2009. 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>.

²Bruce A. Brown, Senior Geologist, Wisconsin Geological and Natural History Survey, authored the text of the State mineral industry information provided by that agency.

Overview

Wisconsin's nonfuel mineral industry continued to grow in 2007, but the rate of growth was slowed by a decline in aggregate production (in particular by a significant decrease in crushed stone production) caused by the slowdown in housing construction and by previously instituted funding cuts in the State government transportation budget. In 2007, based upon annual USGS data, while Wisconsin ranked first among the States in total tonnage of dimension stone produced, it ranked second based upon the mineral commodity's total mineral production value. Wisconsin's industrial sand producers had an active year, owing primarily to an increasing demand for hydrofrac sand for the petroleum and natural gas industry. Other nonmetallic minerals including landscape stone, lime, peat, roofing granules, and specialty aggregates remained relatively unchanged. Monitoring continued at the reclaimed Flambeau copper mine site in Rusk County and at the Shullsburg lead-zinc mine site in Lafayette County.

Exploration

In 2007, in the northern half of the State, granite and quartzite continued to be in demand for railroad ballast, and hardrock exploration interest was strong. Aggregate producers throughout Wisconsin continued to actively acquire and permit future reserves in anticipation of the potential consequences of Statewide comprehensive land-use planning, scheduled for completion by 2010. The aggregate industry was concerned that local plans could preclude mining or make the permitting of new sites even more difficult.

Many industrial sand producers explored for new resources, and some sought permits for new operations. Producers in eastern Wisconsin were actively exploring for new sources and to expand reserves at existing mines in the Ordovician Age St. Peter sandstone and from Quaternary Age sand deposits.

Wisconsin had no active metal mines, although the continued rise of metal prices served to encourage increased exploration activity in the adjacent Upper Peninsula of Michigan and in nearby Minnesota and to create some renewed interest in Wisconsin's undeveloped resources. There was a proposal by a Minnesota company to develop magnetic iron ore reserves on the western Gogebic Range. The company's officials presented plans for the mine and for a small-scale, high-tech steel operation which they thought would probably be both practical and profitable at some time in the future.

Commodity Review

Industrial Minerals

Sand and Gravel, Construction, and Stone, Crushed.—Many Wisconsin aggregate producers reported a slow year because of the slowdown in residential construction, but in particular to the previous cuts in State transportation funding. In the population centers of southern Wisconsin, producers heavily dependent on the paving and ready-mix concrete industries felt this slowdown after enjoying several years of significant growth. In the north, the effect was less pronounced, with several operators opening new hardrock aggregate quarries. In part for use as railroad ballast, granite and quartzite production continued.

Sand and Gravel, Industrial.—Industrial sand producers reported production to be at capacity in 2007. In addition to exploring for new resources, many producers were in the process of expanding existing mines and plants and applying for permits for new operations. Industrial sand producers were active in expanding operations and seeking new reserves in anticipation of demand from glass and drilling industries. An increasing amount of sand was used by in-State and regional glass manufacturers. Foundry sand continued to be an important share of production.

The driving force for the mineral commodity was the growing demand for hydrofrac sand, industrial sands used in the hydraulic fracturing (fracing) process to increase natural gas development from tight shales. Fracing fluids (mixtures of water, sand, and chemicals) are injected under high pressure into the shale to intersect with natural fractures, thereby releasing methane gas trapped in the natural fractures or pores while also creating a long fracture sand pack flow channel network to the wellbore. In 2007, construction began on a new surface mine near Menomonie in western Wisconsin. This mine will produce hydrofrac sand and high-purity silica sand for a nearby glass plant from the Cambrian Galesville Sandstone. A previously abandoned and reclaimed underground mine in the Cambrian Jordan Sandstone near Bay City in Pierce County was reopened.

A processing plant and rail loading facility to serve this mine was under construction at Hager City.

Stone, Dimension.—Most of Wisconsin's production was from the Silurian Age dolomite in the eastern portion of the State. The most important producing areas included the Sussex-Lannon area in Waukesha County, the Town of Byron in Fond du Lac County, and an area southwest of Chilton in Calumet County. Products ranged from landscape boulders, riprap, and paving stone, to a variety of high-value veneer and facing stone products for exterior and interior use.

Dimension granite continued to be quarried in the Wausau area, and granite, quartzite, and gabbro were quarried locally by a few small operators in northern Wisconsin. Hardrock accounted for only a small fraction of Wisconsin's dimension stone production, although quartzite and granite were in demand for riprap and breakwater stone. Nearly all of what was a small amount of monument granite produced in Wisconsin was shipped out of State for processing. Although dimension stone producers had an active year in 2007, the negative impact of the housing slowdown was beginning to be felt by some producers toward yearend.

Legislation and Government

There were few new regulatory and legislative issues of concern to the minerals industry in 2007, although the aggregate industry viewed with concern some previous legislative and regulatory action, especially that involving the diversion of money from the State's transportation fund. County and local governments were required to revise their reclamation ordinances to comply with revisions to the Wisconsin Department of Natural Resources (DNR) reclamation rules that were adopted in 2006. This process was completed with no significant problems. The Aggregate Producers of Wisconsin held a session on groundwater and mining at its annual meeting in December. A major concern was proposed DNR rules regulating high-capacity wells, which might affect mine dewatering and process water wells.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN WISCONSIN^{1,2}

(Thousand metric tons and thousand dollars)

Mineral	2005		2006		2007	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement, portland	W	W	--	--	--	--
Gemstones, natural	NA	6	NA	6	NA	6
Lime	888	61,300	922	70,700	959	78,000
Peat	W	W	W	W	W	26
Sand and gravel:						
Construction	43,200	191,000	39,600	182,000	38,200	186,000
Industrial	2,250	55,700	2,450	74,100	2,650	90,100
Stone:						
Crushed	39,800	234,000	40,000 [†]	225,000 [†]	25,600	151,000
Dimension	278	27,600	297	35,400	300	35,400
Total	XX	570,000	XX	587,000 [†]	XX	540,000

[†]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data. XX Not applicable. -- Zero.

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

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

TABLE 2
WISCONSIN: CRUSHED STONE SOLD OR USED, BY TYPE¹

Type	2006			2007		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Limestone ²	206 ^r	31,500 ^r	\$179,000 ^r	203	20,300	\$117,000
Dolomite	9	781	3,800	9	545	2,680
Marble	1	59	340	1	81	471
Granite	7 ^r	2,880 ^r	16,100 ^r	5	1,020	6,630
Traprock	5 ^r	2,960 ^r	16,500 ^r	6	3,160	20,800
Miscellaneous stone	4	1,770	9,320	2	548	2,650
Total	XX	40,000 ^r	225,000 ^r	XX	25,600	151,000

^rRevised. XX Not applicable.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

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

TABLE 3
WISCONSIN: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2007, BY USE¹

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Riprap and jetty stone	142	381
Filter stone	W	W
Other coarse aggregate	454	2,750
Coarse aggregate, graded:		
Concrete aggregate, coarse	268	2,670
Bituminous aggregate, coarse	125	1,100
Bituminous surface-treatment aggregate	W	W
Railroad ballast	W	W
Other graded coarse aggregate	839	6,540
Fine aggregate (¾ inch):		
Stone sand, bituminous mix or seal	W	W
Screening, undesignated	349	1,490
Other fine aggregate	303	1,920
Coarse and fine aggregates:		
Graded road base or subbase	2,630	12,200
Unpaved road surfacing	W	W
Crusher run or fill or waste	575	1,430
Roofing granules	W	W
Other coarse and fine aggregates	2,050	10,500
Other construction materials	1	6
Agricultural:		
Limestone	W	W
Other agricultural uses	16	62
Unspecified: ²		
Reported	654	3,790
Estimated	14,000	85,000
Total	25,600	151,000

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

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Reported and estimated production without a breakdown by end use.

TABLE 4
WISCONSIN: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2007, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	Districts 1 and 2 ²		District 3		District 4		District 5	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1½ inch) ³	453	2,470	W	W	--	--	W	W
Coarse aggregate, graded ⁴	1,260	9,050	W	W	172	2,050	W	W
Fine aggregate (-¾ inch) ⁵	410	2,240	W	W	W	W	W	W
Coarse and fine aggregate ⁶	3,690	16,600	842	3,850	W	W	W	W
Other construction materials	1	6	--	--	--	--	--	--
Agricultural ⁷	172	2,210	W	W	--	--	32	184
Unspecified: ⁸								
Reported	--	--	648	3,760	--	--	--	--
Estimated	6,300	37,000	1,900	12,000	747	4,300	3,100	23,000
Total	12,200	70,000	3,990	23,500	3,200	21,500	4,240	24,500
Use	District 6		District 7		District 8		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1½ inch) ³	2	11	--	--	--	--	48	214
Coarse aggregate, graded ⁴	30	155	--	--	--	--	--	--
Fine aggregate (-¾ inch) ⁵	--	--	--	--	--	--	84	436
Coarse and fine aggregate ⁶	98	719	--	--	--	--	231	1,020
Other construction materials	--	--	--	--	--	--	--	--
Agricultural ⁷	--	--	--	--	--	--	--	--
Unspecified: ⁸								
Reported	6	32	--	--	--	--	--	--
Estimated	768	4,500	94	548	585	3,600	--	--
Total	905	5,380	94	548	585	3,600	363	1,670

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

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Districts 1 and 2 are combined to avoid disclosing company proprietary data.

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

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

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

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

⁷Includes agricultural limestone and other agricultural uses.

⁸Reported and estimated production without a breakdown by end use.

TABLE 5
WISCONSIN: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2007,
BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	5,140	\$26,500	\$5.15
Plaster and gunitite sands	8	83	10.38
Concrete products (blocks, bricks, pipe, decorative, etc.)	219	714	3.26
Asphaltic concrete aggregates and other bituminous mixtures	639	3,320	5.19
Road base and coverings ²	5,070	19,400	3.83
Fill	1,450	4,540	3.13
Snow and ice control	283	1,500	5.30
Roofing granules	7	41	5.86
Filtration	46	3,010	65.35
Other miscellaneous uses ³	218	2,210	10.15
Unspecified: ⁴			
Reported	1,560	8,570	5.48
Estimated	24,000	120,000	4.91
Total or average	38,200	186,000	4.86

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

²Includes road and other stabilization (cement and lime).

³Includes railroad ballast.

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

TABLE 6
WISCONSIN: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2007,
BY USE AND DISTRICT¹

(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	928	5,380	2,560	13,000	685	3,270
Asphaltic concrete aggregates and road base materials ³	183	967	W	W	956	3,130
Fill	72	220	888	3,150	220	401
Snow and ice control	2	14	W	W	W	W
Roofing granules	7	41	--	--	--	--
Filtration	1	6	--	--	--	--
Other miscellaneous uses ⁴	62	311	1,330	5,160	31	152
Unspecified: ⁵						
Reported	118	782	20	109	124	529
Estimated	2,100	10,000	8,800	44,000	3,000	14,000
Total	3,470	17,700	13,600	65,900	4,970	21,900
	District 4 and 5		District 6		District 7	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products ²	282	1,050	637	3,360	W	W
Asphaltic concrete aggregates and road base materials ³	497	2,270	429	2,490	W	W
Fill	43	162	89	137	50	156
Snow and ice control	14	74	48	220	8	43
Roofing granules	--	--	--	--	--	--
Filtration	--	--	45	3,000	--	--
Other miscellaneous uses ⁴	50	253	62	1,230	328	1,230
Unspecified: ⁵						
Reported	1,140	6,250	153	842	11	53
Estimated	5,000	24,000	1,400	6,900	1,400	7,100
Total	7,000	34,200	2,880	18,100	1,850	8,530
	District 8		Unspecified districts			
	Quantity	Value	Quantity	Value		
Concrete aggregates and concrete products ²	W	W	68	348		
Asphaltic concrete aggregates and road base materials ³	789	2,720	1,280	5,250		
Fill	88	314	--	--		
Snow and ice control	W	W	6	33		
Roofing granules	--	--	--	--		
Filtration	--	--	--	--		
Other miscellaneous uses ⁴	329	1,690	15	83		
Unspecified: ⁵						
Reported	2	6	361	1,750		
Estimated	1,500	7,100	--	--		
Total	2,700	11,800	1,730	7,470		

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses." -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes plaster and gunite sands.

³Includes road and other stabilization (cement and lime).

⁴Includes railroad ballast.

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