

THE MINERAL INDUSTRY OF WISCONSIN

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 Wisconsin Geological and Natural History Survey for collecting information on all nonfuel minerals.

Wisconsin ranked 31st among the 50 States in total nonfuel mineral value¹ in 1994, climbing from 33d in 1993, according to the U.S. Bureau of Mines (USBM). The estimated value for 1994 was \$344 million, a 10% increase compared with that of 1993. This followed a substantial 40% increase in 1993 as measured against that of 1992. The State accounted for 1% of the U.S. total. The increased values of the past 2 years have, in large part, been the result of the resumption of metal mining in the State. In 1994, 19% of the State's nonfuel mineral value was accounted for by metals. From the early 1800's through 1982, metallic mineral production had been reported in the State. The Black River Falls Mine, an open pit taconite (iron ore) mine, ceased operations in the spring of 1982 due to decreased demand for steel. Following a decade of low-to-moderate metals exploration activities in the State, the Flambeau Mine came on-line and shipped its first copper, gold, and silver ore to a refinery in Canada in May 1993. Flambeau's production was the major factor in the substantial increase in nonfuel mineral value in 1993. In 1994, the gain in the value for crushed stone provided the major impact on the increased mineral value for the year, while increases in the copper and gold values, reflecting the first full year of production at the new Flambeau Mine, again contributed to the increase.

Compared with 1993, the value of crushed stone, construction sand and gravel, copper, and gold increased in 1994. Decreases occurred in dimension stone, peat, silver, and gemstones.

Compared to USBM—estimated quantities of minerals produced in the other 49 States for 1994, Wisconsin moved up from fourth to third place in the production of dimension stone, while it remained sixth in copper. Wisconsin also remained 12th of 13 U.S. gold-producing States. The State dropped from 5th to 6th in the production of industrial sand and gravel, 11th to 12th in construction sand and gravel, 12th to 13th in lime, and 9th to 13th in its ranking for peat. Wisconsin's mines produced significant quantities of crushed stone.

According to the Wisconsin Geological and Natural History Survey, the Flambeau Mining Co. produced more than 271,000 metric tons (mt), or 300,000 short tons (st), of ore averaging more than 10% copper metal at its Flambeau Mine, a small, open pit mine, near Ladysmith, in 1994. The company also reported that gold content exceeded 3.43 grams per metric ton (g/t), equivalent to 0.1 troy ounce per short ton, and silver content averaged about 68.6 g/t (2 troy ounces per short ton). Flambeau received permission to increase annual production rates from almost 320,000 mt (352,000 st) to more than 360,000 mt

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN WISCONSIN¹

Mineral	1992		1993		1994 ^p		
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	
Gemstones	NA	\$5	NA	\$45	NA	W	
Lime	thousand metric tons	473	26,579	511	30,880	511	\$30,900
Peat	do.	56	553	W	W	W	W
Sand and gravel:							
Construction	do.	26,415	77,066	^e 27,600	^e 82,800	28,100	87,000
Industrial	do.	¹ 1,303	² 26,026	1,479	31,399	W	W
Stone:							
Crushed	do.	^e 23,133	^e 89,300	26,248	98,026	^e 28,500	^e 115,400
Dimension	metric tons	^e 32,809	^e 4,227	121,573	13,098	^e 110,000	^e 12,400
Combined value of other industrial minerals and values indicated by symbol W							
		XX	(³)	XX	57,109	XX	97,800
Total		XX	^r 4223,756	XX	313,357	XX	³ 344,000

^eEstimated. ^pPreliminary. ^rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

²Excludes certain stones; value included with "Combined value" data.

³Value excluded to avoid disclosing company proprietary data.

⁴Partial total, excludes values that must be concealed to avoid disclosing company proprietary data.

⁵Data do not add to total shown because of independent rounding.

TABLE 2
WISCONSIN: CRUSHED STONE¹ SOLD OR USED BY PRODUCERS IN 1993, BY USE

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	\$3.93
Riprap and jetty stone	224	\$961	4.29
Filter stone	152	538	3.54
Other coarse aggregate	57	242	4.25
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,084	4,695	4.33
Bituminous aggregate, coarse	603	2,541	4.21
Bituminous surface-treatment aggregate	209	648	3.10
Railroad ballast	308	618	2.01
Other graded coarse aggregate	161	664	4.12
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	3.44
Stone sand, bituminous mix or seal	W	W	4.01
Screening, undesignated	532	1,556	2.92
Coarse and fine aggregates:			
Graded road base or subbase	10,315	35,183	3.41
Unpaved road surfacing	1,171	2,714	2.32
Crusher run or fill or waste	513	1,528	2.98
Other coarse and fine aggregates	67	191	2.85
Other construction materials	767	3,639	4.74
Roofing granules	(?)	(?)	7.13
Agricultural:			
Agricultural limestone	456	2,907	6.38
Poultry grit and mineral food	(?)	(?)	8.27
Chemical and metallurgical:			
Lime manufacture	(?)	(?)	3.97
Other specified uses not listed	498	3,005	6.03
Unspecified:³			
Actual	6,322	26,602	4.21
Estimated	<u>2,811</u>	<u>9,793</u>	<u>3.48</u>
Total ⁴	26,248	98,026	3.73
Total ^{5 6}	28,933	98,026	3.39

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

¹Includes dolomite, granite, limestone, limestone-dolomite, sandstone, and traprock.

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

³Includes production reported without a breakdown by use and estimates for nonrespondents.

⁴Data may not add to totals shown because of independent rounding.

⁵One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

⁶Total shown in thousand short tons and thousand dollars.

(400,000 st), decreasing its expected operating life by 11 months. Environmental compliance monitoring of the operation by the Wisconsin Department of Natural Resources (DNR) indicated no problems during the year. In other developments, Crandon Mining Co. continued its permitting activities near Crandon in northeastern Wisconsin—focusing on ground water modeling, surface-water impact assessment, and waste disposal management—for a large zinc-copper massive-sulfide ore body. Metallic mineral leasing activity and exploration continued, but at a reduced pace, throughout the year. In nonmetallic resources, the State Legislature mandated a statewide regulatory program for all nonmetallic mineral

operations. A comprehensive program of reclamation and operational requirements was to be implemented at the county level, based on administrative rules adopted by the Wisconsin DNR; rule development was initiated during the year. Administrative rule development mandated by the Legislature in 1992 covering oil and gas exploration and production was completed after public hearings were held; final promulgation of rules was expected in 1995.

¹The 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
WISCONSIN: 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	220	18,576	\$71,179	\$3.83	¹ 216	¹ 19,756	¹ 73,019	¹ 3.69
Dolomite	3	172	813	4.72	7	3,325	14,005	4.21
Granite	12	1,330	3,239	2.43	10	1,346	2,529	1.88
Traprock	(²)	(²)	(²)	(²)	2	W	W	5.35
Sandstone	3	1,401	5,244	3.74	3	W	W	4.20
Total ³	XX	¹ 21,478	¹ 80,476	¹ 3.75	XX	26,248	98,026	3.73
Total ^{4,5}	XX	¹ 23,675	¹ 80,476	3.40	XX	28,933	98,026	3.39

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

¹Includes "limestone-dolomite," reported with no distinction between the two.

²Excludes traprock.

³Data may not add to totals shown because of independent rounding.

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

⁵Total shown in thousand short tons and thousand dollars.

