

THE MINERAL INDUSTRY OF COLORADO

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 Colorado Geological Survey for collecting information on all nonfuel minerals.

Colorado remained 25th in the ranking of the 50 States in total nonfuel mineral value¹ in 1994, according to the U.S. Bureau of Mines. The estimated value for 1994 was \$440 million, a 10% increase over that of 1993. This followed nearly a 4% increase in 1993 over that of 1992. The State accounted for more than 1% of the U.S. total. A little more than two-thirds of the State's nonfuel mineral value came from industrial minerals, especially construction sand and gravel, portland cement, and crushed stone. Most of the remaining one-third resulted from gold, molybdenum, and zinc, in descending order of value. Most of the State's increased value resulted from gold, which climbed 45%; molybdenum, up 13%; and construction sand and gravel, up 11% from that of 1993. Compared with 1993, the following increased in value: construction sand and gravel, portland cement, gold, crushed stone, molybdenum, zinc, lead, industrial sand and gravel, masonry cement, gypsum, dimension stone, and kaolin clays. Decreases occurred in silver, grade-A helium, lime, peat, and gemstones.

In estimated mineral production for 1994, Colorado remained second in molybdenum, fifth in lead, and sixth in zinc. The State also dropped from 7th to 9th of the 13 U.S.

gold-producing States. Colorado continued to produce a small portion of the Nation's grade-A helium, but dropped from fourth to fifth of five producing States.

According to the Colorado Geological Survey (CGS), diamond exploration continued in the State line district of Larimer County. A 14.2-carat gem diamond was recovered at the Kelsey Lake kimberlite and bulk mineral sampling continued at the Sloan prospect. The Pikes Peak Mining Co. began mining at the Cresson Gold Mine in the Cripple Creek district in late 1994. Annual gold production from this new open pit mine was expected to be about 3,700 kilograms (120,000 troy ounces). Nearly 2,300 kilograms (73,000 ounces) of gold and about 600 kilograms (19,000 ounces) of silver were produced at Battle Mountain Gold's San Luis Gold Mine in 1994. With improvements in the economies of a number of the world's nations, the demand and the price paid for molybdenum increased. According to CGS, this, in part, spurred increases in molybdenum production at Cyprus-Amax Minerals Co.'s Henderson Mine. Molybdenum production at the Henderson Mine increased more than 8% compared with that of 1993 from nearly 10,900 metric tons in 1993 to about 11,800 tons in 1994. The demand for high-quality, low-sulfur coal

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN COLORADO¹

Mineral	1992		1993		1994 ^a	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays thousand metric tons	² 242	² \$1,796	281	\$2,158	281	\$2,160
Gemstones	NA	225	NA	258	NA	62
Gold ³ kilograms	3,763	41,741	W	W	W	W
Peat thousand metric tons	W	333	W	W	W	W
Sand and gravel (construction) do.	26,721	105,281	^e 29,000	^e 117,500	31,000	130,200
Stone:						
Crushed thousand metric tons	^e 10,886	^e 60,400	10,338	61,950	^e 9,800	^e 59,800
Dimension metric tons	^e 5,855	^e 252	4,315	1,374	W	W
Combined value of cement, clays [fire (1992)], copper (1992-93), gypsum (crude), helium (Grade-A), lead, lime, molybdenum, perlite (1992-93), sand and gravel (industrial), silver, zinc, and values indicated by symbol W	XX	174,761	XX	216,245	XX	248,000
Total	XX	384,789	XX	399,485	XX	⁴ 440,000

^aEstimated. ^bPreliminary. 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 clays; kind and value included with "Combined value" data.

³Recoverable content of ores, etc.

⁴Data do not add to total shown because of independent rounding.

increased production an estimated 13% compared with the record 22 million tons mined in 1993.

mine shipments, mineral commodity sales, or marketable production as is applicable to the individual mineral commodities.

¹The term value means the total monetary value as represented by either

TABLE 2

COLORADO: 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):			
Riprap and jetty stone	140	\$709	\$5.06
Filter stone	16	69	4.31
Other coarse aggregate	45	195	4.33
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,628	8,747	5.37
Bituminous aggregate, coarse	472	2,993	6.34
Bituminous surface-treatment aggregate	W	W	3.40
Railroad ballast	11	53	4.82
Fine aggregate (-3/8 inch):			
Stone sand, bituminous mix or seal	875	3,040	3.47
Screening, undesignated	592	2,560	4.32
Coarse and fine aggregates:			
Graded road base or subbase	226	816	3.61
Unpaved road surfacing	39	142	3.64
Terrazzo and exposed aggregate	43	294	6.84
Crusher run or fill or waste	14	24	1.71
Other coarse and fine aggregates	386	2,285	5.92
Other construction materials	64	266	4.16
Agricultural:			
Poultry grit and mineral food	(²)	(²)	32.76
Chemical and metallurgical:			
Cement manufacture	1,765	8,267	4.68
Sulfur oxide removal	(²)	(²)	3.92
Special:			
Asphalt fillers or extenders	18	151	8.39
Other fillers or extenders	45	375	8.33
Unspecified:³			
Actual	3,608	28,158	7.80
Estimated	305	1,643	5.39
Total ⁴	10,338	61,950	5.99
Total ^{5 6}	11,396	61,950	5.44

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."

¹Includes granite, limestone, sandstone, and traprock; excludes quartzite, volcanic cinder and scoria, and miscellaneous stone from State total to avoid disclosing company proprietary data.

²Withheld to avoid disclosing company proprietary data; included with "Total."

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.

TABLE 3
COLORADO: 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	'17	'2,637	'\$12,192	'\$4.62	'12	'2,819	'\$15,011	'\$5.32
Granite	'10	'2,645	'12,704	'4.80	8	3,432	16,935	4.93
Traprock	1	W	W	4.72	—	—	—	—
Sandstone	'10	'1,891	'13,342	'7.06	1	3,212	27,035	8.42
Quartzite	1	W	W	7.00	1	W	W	6.29
Volcanic cinder and scoria	1	W	W	5.76	2	W	W	5.44
Miscellaneous stone	'1	W	W	'6.50	11	W	W	3.29
Total ²	XX	7,621	41,022	5.38	XX	10,338	61,950	5.99
Total ^{3 4}	XX	8,401	\$41,022	4.88	XX	11,396	\$61,950	5.44

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

²Includes "Limestone-dolomite," reported with no distinction between the two.

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.

TABLE 4
COLORADO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch) ¹	W	W	(²)	(²)	—	—
Coarse aggregate, graded ³	2	17	—	—	—	—
Fine aggregate (-3/8 inch) ⁴	—	—	(²)	(²)	—	—
Coarse and fine aggregate ⁵	W	W	(²)	(²)	—	—
Other construction materials	12	76	—	—	—	—
Agricultural ⁶	—	—	(²)	(²)	—	—
Chemical and metallurgical ⁷	—	—	1,123	(²)	—	—
Special ⁸	—	—	64	(²)	—	—
Unspecified: ⁹						
Actual	—	—	8	49	—	—
Estimated	5	23	264	1,407	—	—
Total ¹⁰	20	115	1,710	10,196	—	—
Total ^{11 12}	22	115	1,885	10,196	—	—

See footnotes at end of table.

TABLE 4—Continued
COLORADO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1993, BY USE AND DISTRICT

(Thousand metric tons and thousand dollars)

	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Coarse aggregate (+1 1/2 inch) ¹	(?)	(?)	20	114	45	195
Coarse aggregate, graded ³	(?)	(?)	(?)	(?)	—	—
Fine aggregate (-3/8 inch) ⁴	1,163	2,921	(?)	(?)	—	—
Coarse and fine aggregate ⁵	580	2,954	61	175	(?)	(?)
Other construction materials	—	—	12	90	—	—
Agricultural ⁶	—	—	—	—	—	—
Chemical and metallurgical ⁷	(?)	(?)	—	—	(?)	(?)
Special ⁸	—	—	—	—	—	—
Unspecified ⁹						
Actual	2,809	23,773	791	4,336	—	—
Estimated	37	214	—	—	—	—
Total ¹⁰	7,381	45,004	1,142	6,237	85	398
Total ^{11 12}	8,136	45,004	1,259	6,237	94	398

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."

¹Includes filter stone, riprap and jetty stone, and other coarse aggregate.

²Withheld to avoid disclosing company proprietary data; included with "Total."

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

⁴Includes stone sand (bituminous mix or seal) and screening (undesignated).

⁵Includes graded road base or subbase, unpaved road surfacing, terrazzo and exposed aggregate, crusher run (select material or fill), and other coarse and fine aggregates.

⁶Includes poultry grit and mineral food.

⁷Includes cement manufacture, and sulfur oxide removal.

⁸Includes asphalt fillers or extenders, and other fillers or extenders.

⁹Includes production reported without a breakdown by use and estimates for nonrespondents.

¹⁰Data may not add to totals shown because of independent rounding.

¹¹One short ton is equal to 907 kilograms or 2,000 pounds. To convert metric tons to short tons, divide metric tons by 0.907185.

¹²Total shown in thousand short tons and thousand dollars.