



INFORMATION

CIRCULAR 37

INFORMATION

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The Mineral Industry of Maryland

This chapter has been prepared under a Memorandum of Understanding between the Bureau of Mines, U.S. Department of the Interior, and the Maryland Geological Survey for collecting information on all nonfuel minerals.

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In 1980, the value of nonfuel mineral production in the "Old Line" State totaled \$186 million, a \$6.8 million reduction from that reported in 1979. This decrease paralleled the depressed state of the mineral industry throughout the United States, and was attributable to the general recession

that extended from mid-1979. Although the value of mineral production dropped in 1980, during the past decade nonfuel mineral output has added over \$1.3 billion to Maryland's economy and has created thousands of jobs in mining, processing, and manufacturing.

Table 1.—Nonfuel mineral production in Maryland¹

Mineral	1979		1980	
	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays ² ----- thousand short tons	975	\$2,854	733	\$2,267
Lime ----- do.	12	444	12	497
Peat ----- do.	3	W	4	W
Sand and gravel ----- do.	13,988	39,033	10,732	33,625
Stone:				
Crushed ----- do.	21,561	80,550	18,945	77,431
Dimension ----- do.	30	1,150	15	612
Combined value of cement, clays (ball clay), and values indicated by symbol W	XX	68,931	XX	71,703
Total -----	XX	192,962	XX	186,135

W Withheld to avoid disclosing company proprietary data; value included in "Combined value" figure. XX Not applicable.

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

²Excludes ball clay; value included in "Combined value" figure.

Table 2.—Value of nonfuel mineral production in Maryland, by county¹

(Thousands)

County	1978	1979	Minerals produced in 1979 in order of value
Allegany	W	W	Stone.
Anne Arundel	\$4,996	\$4,382	Sand and gravel.
Baltimore ²	W	W	Stone, sand and gravel, clays.
Caroline	W	29	Sand and gravel.
Carroll	W	40,761	Cement, stone, clays.
Cecil	10,996	12,594	Stone, sand and gravel.
Charles	3,910	3,938	Sand and gravel.
Dorchester	W	W	Do.
Frederick	W	W	Cement, stone, clays, lime.
Garrett	W	1,662	Stone, sand and gravel, peat.
Harford	3,540	W	Stone, sand and gravel.
Howard	1,881	1,646	Stone.
Kent	W	W	Clays.
Montgomery	W	W	Stone.
Prince Georges	13,679	18,340	Sand and gravel, clays.
Queen Annes	W	2,486	Stone.
St. Marys	398	531	Sand and gravel.
Washington	W	W	Cement, stone, clays.
Wicomico	W	W	Sand and gravel.
Worcester	1,048	804	Do.
Undistributed	124,182	105,788	
Total ³	164,635	192,962	

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

¹Calvert, Somerset, and Talbot Counties are not listed because no nonfuel mineral production was reported.²Includes Baltimore City.³Data may not add to totals shown because of independent rounding.

Table 3.—Indicators of Maryland business activity

	1979	1980 ^P	Change, percent	
Employment and labor force, annual average:				
Total civilian labor force	thousands	2,092.0	2,133.0	+2.0
Unemployment	do.	124.0	137.0	+10.5
Employment (nonagricultural):				
Mining ¹	do.	(²)	(²)	-
Manufacturing	do.	247.7	237.9	-4.0
Contract construction	do.	107.9	103.3	-4.3
Transportation and public utilities	do.	86.4	86.3	-1
Wholesale and retail trade	do.	401.1	408.6	+1.9
Finance, insurance, real estate	do.	89.1	92.2	+3.5
Services	do.	³ 344.5	³ 359.9	+4.5
Government	do.	404.0	407.0	+7
Total nonagricultural employment ¹	do.	1,680.7	1,695.2	+9
Personal income:				
Total	millions	\$38,718	\$43,338	+11.9
Per capita	do.	\$9,333	\$10,322	+10.6
Construction activity:				
Number of private and public residential units authorized		26,696	19,538	-26.8
Value of nonresidential construction	millions	\$678.9	\$714.2	+5.2
Value of State road contract awards	do.	\$100.6	\$79.2	-21.3
Shipments of portland and masonry cement to and within the State	thousand short tons	1,480	1,405	-5.1
Nonfuel mineral production value:				
Total crude mineral value	millions	\$193.0	\$186.1	-3.6
Value per capita, resident population	do.	\$47	\$44	-6.4
Value per square mile	do.	\$18,244	\$17,598	-3.5

^PPreliminary.¹Includes bituminous coal and gas extraction.²Included in "Services."³Includes "Mining."

Sources: U.S. Department of Commerce, U.S. Department of Labor, Highway and Heavy Construction Magazine, and U.S. Bureau of Mines.

Trends and Developments.—The economic decline that developed during 1979 continued into the first half of 1980, characterized by layoffs, plant closings, and a general slowdown in construction activity. However, the year ended with industry recalling some workers and announcing a number of new projects.

During the first half of 1980, the Nation's automotive industry drastically reduced production, which adversely affected segments of Maryland's mineral manufacturing industry. In May, Bethlehem Steel Corp. shut down one of four open-hearth facilities at the Sparrows Point steel plant, idling 3,000 steelworkers. At midyear, Kaiser Aluminum & Chemical Corp. closed the Frostburg refractories plant, citing a major decline in sales. The facility produced linings for the steel, glass, and cement industries.

Throughout the year, record-high interest rates, coupled with a scarcity of funds for new commercial and residential building, severely restricted the State's construction industry—the major consumer of Maryland's mineral production. Production of clay, sand and gravel, and stone was over 6 million tons below the 1979 level; sales were off more than \$10 million. The slowdown also affected fabricators of glass, wallboard, insulation, and other building products manufactured from mineral raw materials.

During the latter half of 1980, a resurgence in the automotive and other steel-dependent industries resulted in the recall of 300 employees at the Sparrows Point steel facility. Two furnaces at the plant's No. 4 open hearth, banked in June, were restarted. Market research indicated, however, that 1981 will be the earliest that all workers could expect to be recalled.

Other Maryland industry projections indicated improved market conditions and increased demand for a variety of products during the 1980's. To satisfy this demand, the construction or expansion of a number of mineral-related manufacturing facilities was announced.

SCM Corp.'s Glidden Pigments Group, planned to increase output at its Baltimore chloride process titanium dioxide pigment plant by 10,000 tons per year to reach 42,000 tons per year by 1982. Solarex Corp. planned to construct a \$20 million plant in Frederick to produce silicon material for photovoltaic devices. Atlantic Cement Co., Inc., completed plans to construct a \$77 million slag cement plant at Bethlehem Steel's Sparrows Point facility. Completion

is scheduled for mid-1982.

Other developments that will impact on the State's construction mineral producers include a \$450 million renovation and expansion of General Motors Corp.'s Baltimore automotive assembly plant, and a \$100 million expansion of Westinghouse Electric Corp.'s facility at Baltimore-Washington International Airport. Consolidation Coal Co., Island Creek Coal Co., and a group of private investors announced plans to build three coal export terminals on Chesapeake Bay.

Conflicts between mineral producers and local citizen and environmental groups arose during 1980. Residents of Temple Hills in Prince Georges County protested the application by Silver Hill Sand & Gravel Co. to mine a 60-acre tract in Temple Hills. Application for exemption of the tract from residential zoning, filed in June, was pending at yearend. Silver Hill also sought to obtain permits to build a gravel washing plant near Zekiah Swamp in Prince Georges County. Environmental groups and local residents opposed construction, fearing damage to Maryland's largest natural hardwood swamp. The county council denied the application, and Silver Hill planned to appeal the decision to the county circuit court.

In October, Lehigh Portland Cement Co., Woodsboro, requested permission to mine cement raw materials closer to the company's property line. This request was met with opposition by local citizens. The Frederick County Board of Appeals heard testimony on the proposed variance, and the request was under consideration at yearend.

Legislation and Government Programs.—During the year, the Surface Mining Division, Department of Natural Resources (DNR), was created to regulate mineral extraction in the State. Formerly, this was the responsibility of the Watershed Permit Division of the Water Resources Administration, DNR.

The Maryland Geological Survey was active in a number of mineral resource projects. One of the Survey's major programs was the preparation by quadrangle of mineral resource-mined land and environmental geology studies. At yearend, 26 quadrangle-base geologic maps had been completed and 12 published.

During the year, the Survey published a "Directory of Mineral Producers in Maryland" (Information Circular 30) and a report

entitled "Mineral Resources and Mineral Land Inventory of Prince Georges County." The Maryland Geological Survey worked with the U.S. Geological Survey (USGS) to prepare maps of lands for potential mineral resource development in the State's western counties. In cooperation with USGS, the Survey continued work on the geologic and hydrologic characteristics of Maryland's water resources. Also studied were the physical, chemical, and biological characteristics of the surficial sediments of Chesapeake Bay.

The Maryland Department of Transporta-

tion and DNR continued studies on the disposal of material to be dredged from Baltimore Harbor. The U.S. Army Corps of Engineers has been authorized by U.S. Congress to dredge the harbor to a depth of 50 feet. An estimated 71 million cubic yards of spoil would be excavated during the 20-year dredging project. During the year, a proposal was drafted to study use of the dredged material. The draft included a review of construction options regarding brick or aggregate manufacture from consolidated dredged materials.

REVIEW BY NONFUEL MINERAL COMMODITIES

NONMETALS

Industrial minerals, mainly those used by the construction industry, are the primary commodities produced by the State's extractive mineral industry.

Calcite.—Flintkote Stone Products Co. (name changed to Genstar Stone Products Co. in 1981), Hunt Valley, mined a series of calcite veins near its Texas-Maryland quarry. Both surface and underground mining methods were used. After processing, the calcite was sold for use in paper, paints, and plastics.

Cement.—In 1980, the State's cement industry consisted of three companies with operations in Washington, Frederick, and Carroll Counties in north-central Maryland. All three companies—Lehigh Portland Cement Co., Alpha Portland Cement Co., and Marquette Co.—produced portland cement; Marquette also produced masonry cement.

Cement output during 1980 was below the 1979 level. High interest rates and a shortage of capital for new projects severely limited new starts in the construction industry.

At yearend, Atlantic Cement Co., Inc., announced plans to construct a \$77 million slag cement plant at Bethlehem Steel Corp.'s facility at Sparrows Point. Atlantic Cement signed a long-term contract for slag from Bethlehem's "L" blast furnace. Construction is scheduled to be completed by mid-1982.

The Lehigh Portland Cement Co. plant at Union Bridge conducted a 22-day test using shredded paper and plastic refuse as a partial substitute for coal normally used for kiln fuel. The test, which resulted in a 30% savings of coal, was described as successful by the State Environmental Service.

Clays.—Maryland's clay producers mined both common and ball clay from nine mines in six counties. During the past 10 years, the State's output of common clay was valued at over \$20 million; production and value data on ball clay are company proprietary.

All of the State's clay production was from surface operations; after mining, the clay was trucked to nearby facilities for processing. Common clay was produced in Baltimore, Carroll, Frederick, Kent, Prince Georges, and Washington Counties. Approximately 16% of the common clay production was used in cement manufacture, while the remainder was used for fabrication of brick, tile, and clay products. Washington County was the leading producer followed by Frederick and Carroll Counties.

Cyprus Industrial Minerals Co. produced ball clay from a mine in Baltimore County. Major sales were to the rubber and fiberglass industries.

One company in Frederick County mined and expanded phyllite for lightweight aggregate.

Funded by a National Science Foundation grant, the University of Maryland's Department of Civil Engineering continued work on the use of municipal and industrial sludge in ceramic building materials. Research personnel investigated the structural integrity and physical strength of ceramic materials made with sludge.

Gypsum.—Two companies, National Gypsum Co. and United States Gypsum Co., imported gypsum from mines in Nova Scotia and New Brunswick. The crude gypsum, shipped through the Port of Baltimore, was calcined at company facilities in the Baltimore area. Calcined gypsum was used principally for the manufacture of construction

materials: Standard and fire-resistant wall-board, lath, and plaster. Like other construction-related materials, calcined gypsum production fell below that reported for the previous year.

Lime.—The State's sole lime producer was located in Frederick County in north-central Maryland. S. W. Barrick & Sons, Inc., calcined limestone to produce quick and hydrated lime. Sales were principally for agricultural purposes, and most of the output was used by Maryland farmers. A limited amount was sold for use in construction and soil stabilization.

Peat.—Over the past decade, more than 25,000 tons of peat has been produced in the State. During 1980, Garrett County Process-

ing & Packing Co. recovered peat from a bog near the community of Accident, in Garrett County, in the extreme northwestern part of the State. The peat was used in horticultural applications.

Sand and Gravel.—Over the past 10 years, the State's sand and gravel producers mined over 120 million tons of sand and gravel valued at more than \$300 million. Sand and gravel ranked third, behind stone, in value and output during the past decade.

However, during 1980, sales of sand and gravel declined \$5.4 million because of the downturn in construction activity. Production dropped 3.3 million tons below that reported during the previous year.

Table 4.—Maryland: Construction sand and gravel sold or used, by major use category

Use	1979			1980		
	Quantity (thousand short tons)	Value (thou- sands)	Value per ton	Quantity (thousand short tons)	Value (thou- sands)	Value per ton
Concrete aggregate	6,203	\$18,177	\$2.93	6,376	\$20,058	\$3.15
Plaster and gunite sands	W	W	5.00	W	W	5.85
Concrete products	1,311	3,418	2.61	394	1,190	3.02
Asphaltic concrete	3,335	9,443	2.83	1,568	4,816	3.07
Roadbase and coverings	1,631	4,157	2.55	1,286	3,823	2.97
Fill	1,007	1,895	1.88	929	3,066	3.30
Snow and ice control	4	9	2.06	2	5	2.23
Other uses	W	W	3.84	W	W	3.58
Total or average	13,988	39,033	2.79	10,732	33,625	3.13

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

Table 5.—Maryland: Construction sand and gravel sold or used by producers

	1979			1980		
	Quantity (thousand short tons)	Value (thou- sands)	Value per ton	Quantity (thousand short tons)	Value (thou- sands)	Value per ton
Sand	8,024	\$21,326	\$2.66	5,895	\$18,801	\$3.19
Gravel	5,965	17,707	2.97	4,837	14,825	3.06
Total ¹ or average	13,988	39,033	2.79	10,732	33,625	3.13

¹Data may not add to totals shown because of independent rounding.

During 1980, the construction sand and gravel industry was comprised of 46 companies with 51 operations in 12 of Maryland's 23 counties. Prince Georges County led the State in output, followed by Anne Arundel and Cecil Counties. Major sales were for concrete aggregate, asphaltic concrete, and roadbase material.

Harford Sands, Inc., at Joppa in Harford County, was the State's only industrial sand producer. The company marketed a specially formulated sand for water-treatment plants and an abrasive sand used at airports to increase skid resistance on runways. The abrasive is shipped to many parts of the country, including Washington (D.C.) Na-

tional and Dulles International Airports.

Slag.—Historically, Maryland has ranked among the Nation's top 10 slag-producing States. This trend continued through 1980, although slag output decreased below the previous year's level. Iron blast furnace slag, a byproduct of steelmaking at the Sparrows Point facility of Bethlehem Steel Corp., was recovered in both air-cooled and expanded form. Highway construction aggregate was the principal market for the air-cooled variety, while the lighter weight, expanded material was used in the manufacture of lightweight concrete block.

Stone.—Crushed and dimension stone were again the leading mineral commodities in Maryland, in terms of output and value. Since 1971, the State's stone industry has produced over 179 million tons of stone valued at over \$500 million and has accounted for approximately 40% of the extractive mineral value in Maryland.

In 1980, the State's crushed stone produc-

ers mined and crushed limestone, marble, sandstone, granite, serpentinite, and gneiss in 10 of Maryland's 23 counties.

Limestone (including marble) was produced by 12 companies operating 14 surface and 2 underground mines in 6 northern Maryland counties. Output was reported at 12 million tons valued at \$51 million, 63% of the State's total tonnage of crushed stone. Principal sales were for roadbase, concrete aggregate, and cement manufacture. One of the five largest ground marble producers in the United States, Flintkote Stone Products Co., operated in Baltimore, Carroll, Harford, and Frederick Counties. The company produced a number of stone products, including high-quality, wet-ground, calcium carbonate fillers.

One company, Langenfelder & Sons, Inc., dredged oyster shell from Chesapeake Bay. The shells were used principally in poultry grit, fertilizer, and for aggregate and fill.

Table 6.—Maryland: Crushed stone¹ sold or used by producers, by use

(Thousand short tons and thousand dollars)

Use	1979		1980	
	Quantity	Value	Quantity	Value
Concrete aggregate	2,704	9,376	2,589	9,540
Bituminous aggregate	2,833	9,450	1,963	7,064
Macadam aggregate	2,266	7,404	2,127	7,590
Dense-graded roadbase stone	1,439	4,955	1,234	4,572
Surface treatment aggregate	436	1,442	364	1,374
Other construction aggregate and roadstone	7,171	23,800	6,537	23,531
Riprap and jetty stone	310	1,252	280	1,276
Railroad ballast	108	276	126	352
Manufactured fine aggregate (stone sand)	204	726	170	751
Cement manufacture	2,477	3,934	2,250	3,807
Lime manufacture	23	74	W	W
Other uses ²	1,589	17,860	1,305	17,574
Total³	21,561	80,550	18,945	77,431

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

¹Includes limestone, granite, sandstone, shell, traprock, and miscellaneous stone.

²Includes stone used for agricultural limestone, agricultural marl and other soil conditioners, poultry grit and mineral food, flux stone, refractory stone, mine dusting, asphalt filler, whitening or whitening substitute, other fillers or extenders, other uses, and uses indicated by symbol W.

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

Crushed sandstone was produced in Garrett and Allegany Counties in the western part of Maryland. Five mines and crushing plants were operated by five companies to produce a product used principally for concrete aggregate and as a flux in steelmaking. Granitic rock, mainly gneiss, was mined and crushed in northeastern Maryland. Sales were for aggregate applications.

Dimension sandstone, quartzite, and gneiss were quarried by seven companies in four counties. Most sales were for construc-

tion applications. Dimension sandstone and quartzite were produced at five quarries in Baltimore, Garrett, and Howard Counties. Major sales were rough blocks and rubble. Gneiss was quarried by two companies in Montgomery County. Principal sales were for construction applications with minor tonnage sold for flagging.

Talc.—Harford Talc Co., Street, Harford County, founded in 1916, purchased talc from United Sierra Corp. in Colorado as raw material for insulator manufacture. The talc was shipped by rail to the compa-

ny's Street facility and ground, extruded, molded, and fired to fabricate electrical insulators, which were marketed worldwide. The company also produced limited amounts of steatite as an artist's medium.

Vermiculite.—W. R. Grace & Co. expanded vermiculite at its plant in Prince Georges County. The vermiculite was shipped by rail from company mines in South Carolina. Production of the exfoliated product, sold primarily for concrete aggregate and fireproofing material, increased from 1979 because of the depressed construction industry.

METALS

During the 18th and 19th centuries, Maryland was a major producer of iron, copper, and chromite. With changing economic conditions, the State's metal industries began to import ores and concentrates. Currently, significant tonnages of aluminum, copper, iron and steel, and lead are processed from these imports.

Aluminum.—Maryland's aluminum industry consists of one primary producer, Eastalco Aluminum Co., owned by Howmet Corp., located near Buckeystown in Frederick County in the north-central part of the State and two secondary producers, Cambridge Iron & Metal Co., Inc., and Tomke Aluminum Co., both with operations in the Baltimore area.

The Eastalco facility operated two potlines to reduce alumina imported from Australia. The company produced approximately 176,000 tons of aluminum in the form of rolling ingots, melt ingots, and billets. Cambridge Iron & Metal Co., Inc.,

and Tomke Aluminum Co. melted aluminum scrap to produce a number of aluminum products.

Copper.—Kennecott Refining Co.'s Hawkins Point refinery, in Anne Arundel County, is one of four primary copper refineries in the Eastern United States. Copper from smelters in Hayden, Ariz.; Garfield, Utah; McGill, Nev.; and Santa Rita, N. Mex., was shipped by rail to the Baltimore facility for refining. Output is in the form of copper cathode and rod. Shipments are worldwide.

Iron and Steel.—At Sparrows Point, Baltimore, Bethlehem Steel Corp. produced pig iron, raw steel, and semifabricated steel products from ore imported from South America. The company's new "L" blast furnace, which went onstream in late 1979, holds the record for the highest production rate in North America. During the year, the company began work on a new \$170 million coke oven complex at Sparrows Point. The coke battery, consisting of 80 ovens, is scheduled for startup in late 1981.

Lead.—In the Baltimore area, Bethlehem Steel Corp., Western Electric Co., Industrial Metal Melting Co., Crown Cork & Seal Co., and Signode Corp. produced products from soft lead and lead alloys.

Titanium Dioxide.—Glidden Pigments Group, SCM Corp., was expanding capacity of its chloride process titanium dioxide pigment plant at Baltimore. The expansion, due for completion in 1981, will increase capacity of that plant to 42,000 tons per year.

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Table 7.—Principal producers

Commodity and company	Address	Type of activity	County
Cement:			
Portland:			
Alpha Portland Cement Co. ¹	15 South 3d St. Easton, PA 18042	Plant and quarry.	Frederick.
Lehigh Portland Cement Co. ²	718 Hamilton St. Allentown, PA 18101	--- do ---	Carroll.
Portland and masonry:			
Marquette Co. ¹	One Commerce Place Nashville, TN 37238	--- do ---	Washington.
Clays:			
Baltimore Brick Co.	501 St. Paul Pl. Baltimore, MD 21202	Pits	Baltimore and Frederick.
Victor Cushwa & Sons, Inc	Box 228 Williamsport, MD 21795	Pit	Washington.
Cyprus Industrial Minerals Co.	7000 Yosemite St. Box 3299 Englewood, CO 80155	Pit	Baltimore.
Gypsum (calcined):			
National Gypsum Co.	4100 First International Bldg. Dallas, TX 75270	Plant	Do.
United States Gypsum Co.	101 South Wacker Dr. Chicago, IL 60606	--- do ---	Do.
Lime:			
S. W. Barrick & Sons, Inc. ¹	Woodsboro, MD 21798	--- do ---	Frederick.
Peat:			
Garrett County Processing & Packing Corp.	Route 1 Accident, MD 21520	Bog	Garrett.
Sand and gravel:			
Harry T. Campbell Sons Co., a division of Flintkote Stone Products Co. ³	White Marsh Plant Towson, MD 21225	Pits	Baltimore.
Contee Sand & Gravel Co., Inc	Box 460 Laurel, MD 20810	Pit	Prince Georges.
York Building Products Co., Inc	Box 1708 York, PA 17405	Pit	Cecil.
Stone:			
Arundel Corp	501 St. Paul Pl. Baltimore, MD 21202	Quarries	Baltimore and Howard.
Flintkote Stone Products Co. ³	Executive Plaza #4 11350 McCormick Rd. Hunt Valley, MD 21031	--- do ---	Baltimore, Carroll, Frederick, Harford, Montgomery.
Rockville Crushed Stone, Inc	Box 407 Rockville, MD 20850	--- do ---	

¹Also stone.²Also clays and stone.³Name changed to Genstar Stone Products Co., 1981.

