

MARYLAND GEOLOGICAL SURVEY  
THE ROTUNDA  
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I. C. #40



# 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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Maryland's nonfuel mineral production was valued at \$171.5 million in 1982, a \$4 million decrease from that of 1981 and \$21.5 million below the 1979 record of \$193 million. Mineral commodities produced included crushed stone, construction sand and gravel, common clay, dimension stone, and lime. Also produced were cement, ball clay,

and peat. Alumina, copper anode, and iron ore concentrate were shipped into the State for the production of metals. Gypsum and vermiculite shipments were received for further processing. Nationally, Maryland ranked 33d in value of nonfuel mineral production.

Table 1.—Nonfuel mineral production in Maryland<sup>1</sup>

Mineral	1981		1982	
	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays <sup>2</sup> ----- thousand short tons	597	\$1,984	405	\$1,346
Gem stones -----	NA	2	NA	2
Lime ----- thousand short tons	9	441	7	396
Peat ----- do	W	W	—	—
Sand and gravel (construction) ----- do	<sup>e</sup> 9,500	<sup>e</sup> 31,800	9,720	32,386
Stone:				
Crushed ----- do	16,485	74,289	<sup>p</sup> 15,100	<sup>p</sup> 73,500
Dimension ----- do	34	1,002	<sup>p</sup> 32	<sup>p</sup> 1,001
Combined value of cement, clays (ball clay), and value indicated by symbol W -----	XX	65,937	XX	62,826
Total -----	XX	<sup>r</sup> 175,455	XX	171,457

<sup>e</sup>Estimated. <sup>p</sup>Preliminary. <sup>r</sup>Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" figure. XX Not applicable.

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

<sup>2</sup>Excludes ball clay; value included with "Combined value" figure.

Table 2.—Value of nonfuel mineral production in Maryland, by county<sup>1</sup>

(Thousands)

County	1980	1981 <sup>2</sup>	Minerals produced in 1981 in order of value
Allegany	W	W	Stone (crushed).
Anne Arundel	\$4,739	( <sup>3</sup> )	
Baltimore <sup>4</sup>	W	W	Stone (crushed), clays, stone (dimension).
Caroline	31	( <sup>3</sup> )	
Carroll	W	W	Cement, stone (crushed), clays.
Cecil	12,039	W	Stone (crushed).
Charles	4,436	( <sup>3</sup> )	
Dorchester	W	( <sup>3</sup> )	
Frederick	W	W	Cement, stone (crushed), clays, lime.
Garrett	W	W	Stone (crushed), peat.
Harford	W	W	Stone (crushed).
Howard	W	W	Stone (dimension).
Kent	56	\$27	Clays.
Montgomery	W	10,469	Stone (crushed), stone (dimension).
Prince Georges	10,568	196	Clays.
Queen Annes	W	W	Stone (crushed).
St. Marys	W	( <sup>3</sup> )	
Washington	W	W	Cement, stone (crushed), clays.
Wicomico	W	( <sup>3</sup> )	
Worcester	1,963	( <sup>3</sup> )	
Undistributed <sup>5</sup>	152,300	132,963	
Sand and gravel (construction)	XX	<sup>6</sup> 31,800	
Total	<sup>6</sup> 186,135	175,455	

<sup>6</sup>Estimated. W Withheld to avoid disclosing company proprietary data; included with "Undistributed." XX Not applicable.

<sup>2</sup>Calvert, Somerset, and Talbot Counties are not listed because no nonfuel mineral production was reported.

<sup>3</sup>County distribution for construction sand and gravel is not available; total State value shown separately under "Sand and gravel (construction)."

<sup>4</sup>Construction sand and gravel was produced; data not available by county.

<sup>5</sup>Includes Baltimore City.

<sup>6</sup>Includes gem stones that cannot be assigned to specific counties and values indicated by symbol W.

<sup>6</sup>Data do not add to total shown because of independent rounding.

Table 3.—Indicators of Maryland business activity

	1981	1982 <sup>P</sup>	Change, percent
<b>Employment and labor force, annual average:</b>			
Total civilian labor force	2,163.0	2,161.0	-0.1
Unemployment	157.0	183.0	+16.6
<b>Employment (nonagricultural):</b>			
Mining <sup>1</sup>	do	( <sup>2</sup> )	—
Manufacturing	231.7	212.2	-8.4
Contract construction	99.7	87.4	-12.3
Transportation and public utilities	88.3	86.9	-1.6
Wholesale and retail trade	409.3	406.1	-0.8
Finance, insurance, real estate	93.6	95.1	+1.6
Services <sup>3</sup>	377.3	388.7	+3.0
Government	415.9	393.3	-5.4
Total nonagricultural employment <sup>1</sup>	1,715.8	1,669.7	-2.7
<b>Personal income:</b>			
Total	\$48,822	\$52,011	+6.5
Per capita	\$11,452	\$12,194	+6.5
<b>Construction activity:</b>			
Number of private and public residential units authorized	17,132	20,361	+18.8
Value of nonresidential construction	\$790.6	\$855.7	+8.2
Value of State road contract awards	\$90.2	\$219.9	+143.8
Shipments of portland and masonry cement to and within the State	1,262	1,158	-8.2
<b>Nonfuel mineral production value:</b>			
Total crude mineral value	\$175.5	\$171.5	-2.3
Value per capita, resident population	\$42	\$40	-4.8
Value per square mile	\$16,891	\$16,210	-4.0

<sup>P</sup>Preliminary.

<sup>1</sup>Includes bituminous coal and gas extraction.

<sup>2</sup>Included with "Services."

<sup>3</sup>Includes "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.**—Based on production and sales, Maryland's extractive industries throughout 1982 remained well entrenched in the broad and deep trough of the 1981-82 recession, which officially bottomed out in December. However, preliminary figures for all indicators of Maryland's construction activity, with the notable exception of cement shipments, demonstrate a new upward trend. Up until July 1982, the number of building permits issued in Maryland began to exceed those given out during the same months of 1981. This was also true of the Nation as a whole. During the second half of 1982, the number of housing units authorized grew about twice as fast in Maryland as in the United States. Maryland building permits issued in 1982 were 20,361, up 19% from those of 1981 but still at only 38% of the 1972 peak level of 54,114 units. The 8.4% average annual unemployment rate in Maryland compared favorably with the national average of 9.7% in 1982, but Baltimore City at 11.4% did not fare as well.

The State's nonfuel mineral production, which essentially consists of crushed stone, construction sand and gravel, and common clay, is dependent on construction activity.

Although several of Maryland's aggregate producers reported an average or better-than-average year, most again reported declining sales. Fortunately, the continued demand in the Baltimore area for construction aggregate, sand and gravel, cement, riprap, and dimension stone saved several of Maryland's mineral producers from an otherwise more somber year. During the second quarter of 1982, the Arundel Corp. aggregate and concrete operations in Baltimore reflected record levels of revenues and earnings derived from two extraordinarily large supply contracts: Stone, barged from the company's Havre de Grace quarry on the Susquehanna River for the Hart and Miller Island Project; and concrete, produced for the Fort McHenry Tunnel Project.

In addition to reduced sales, the construction aggregate producers continued to experience strong and broad-based opposition to the expansion of existing operations and the development of new minesites because much of the near-market sand and gravel and stone resources are located in populated areas. Several mining plans faced strong citizen opposition during the year.

Plans of Arundel, an excavator of quarry stone near Reisterstown, were opposed by

nearby residents seeking to limit the extent of controlled blasting. The company, which supplies crushed serpentine rock to the county and State for use as road base material, had applied for an extension to its special exception.

The City of Gaithersburg and upper Montgomery County legislators joined residents of the Germantown and Boyds areas to oppose a Boyds master plan amendment that would allow operation of a stone quarry on 500 of the 1,800 acres that Rockville Crushed Stone Inc. owns adjacent to Boyds.

The Maryland Board of Public Works approved the payment of \$1.3 million to Joppa Sand & Gravel Corp. to acquire that company's 140-acre property for the expansion of Gunpowder Falls State Park. Breakdown of the payment is \$515,000 for the property and \$800,000 for relocation, reportedly to Kent County.

A circuit court judge upheld a county council's decision, which had denied the Silver Hills Sand & Gravel Co. request to mine sand and gravel on its 64-acre tract in the Temple Hills-Marlow Heights neighborhood of Upper Marlboro. The proposed minesite is surrounded on three sides by single-family houses and zoned for 1/2-acre residential lots.

In October 1981, Silver Hills requested a special exception to mine a 203-acre tract along Piscataway Road in Upper Marlboro. Residents of the surrounding neighborhood, objecting more to the truck traffic than to the minesite, organized and hired a lawyer to help fight the mine. Silver Hills has two other mining operations in the area. In May 1982, the hearing examiner ruled in favor of the Silver Hills request. The citizen's group appealed the decision to the district council, and the legal battle continued through 1982.

On appeal by the Prince Georges County Council, the court of special appeals reversed the decision by the circuit court whereby a sand and gravel company would construct a wet-process plant in Zekiah Swamp in the Cedarville area. The appeal was urged by local residents and area environmentalists who feared that damage might be done to the ecology of Maryland's largest natural hardwood area. This decision apparently ended the 4-year legal battle.

However, some noteworthy support for the State's extractive industries was evidenced in 1982. The Prince Georges County Council agreed to sell \$3.25 million in indus-

trial revenue bonds to finance construction of a wet-processing plant on an 85-acre site in the heart of the Brandywine community to Brandywine Sand & Gravel Co. The council also agreed to underwrite an additional \$3.25 million in bonds for the company for the purchase of 25 truck tractors and 35 trailers. County council members pointed out that the sand and gravel industry deserves county support, the wash plant would create additional jobs, and the operation would increase county revenues.

Weak demand for steel, copper, and aluminum had a continuing adverse affect on Maryland's metal producers and fabricators. Because of decreased demand and to reduce inventories, production was cut drastically in 1982, especially during the latter half of the year. Most metal-finishing and affiliated raw materials operations also were temporarily idled or sharply curtailed.

Primary and fabricated metals were among the manufacturing industries that bore the brunt of the employment losses in Maryland, as well as the Nation. In 1982, the State's work force in the primary metals sector declined 14.5% from that of 1981; about 4,200 employees were idled. Employment in the fabricated metals sector dropped 11.9% for the same period, with 1,500 workers losing jobs.

Typical of basic industry's response to poor conditions in the worldwide economy was Bethlehem Steel Corp.'s strategy to cut operating losses at its Sparrows Point plant while modernizing to regain profitability. Operating losses, in large part, were cut by reducing the work force. At yearend, 6,500 employees had been laid off and an additional 1,300 workers had been placed on a 4-day, 32-hour workweek. Prior to 1982 developments, Bethlehem had been Maryland's largest industrial employer, with a peak production work force of 17,000. Modernization of the steel plant continued with the completion of the \$165 million "A" coke oven battery. Most of the coke produced by the A battery is to be used in the "L" blast furnace, the largest in working volume in the Nation, which was completed in February 1979 at a cost of more than \$200 million. Another battery similar to the A battery is planned, and Bethlehem also was investigating ways to finance a continuous slab caster for the Sparrows Point plant.

Solarex Corp. dedicated its new solar cell facility near Frederick on October 24. The \$20 million plant produces silicon material for photovoltaic devices. An array of more

than 200,000 crystalline-silicon solar cells on the plant's southern roof converts sunlight directly into electricity, and a bank of special lead batteries stores power. The plant is totally independent from any electric utility company and is a model for future plants in remote areas where power is not readily available.

The \$91 million Atlantic Cement Co. slag cement project that began in March 1981 was completed at midyear. It included slag granulation facilities adjacent to Bethlehem's new giant L blast furnace, a grinding plant, storage facilities, a deepwater dock facility, and a 19,000-ton barge to supplement Atlantic Cement's marine fleet.

The Port of Baltimore in 1982 fared better than most global ports during the worldwide economic slump. The Maryland Port Authority reported cargo volume to be down by 3.6 million tons, a 10% decline from 34.3 million tons in 1981 to 30.7 million tons in 1982. Ore and oil shipments were down because of depressed industrial activity; coal exports were down owing to the recession in Europe. Ore imports declined from 6.5 to 4.2 million tons, a 35.4% drop.

**Legislation and Government Programs.**—In fiscal year 1982, expenditures of the Maryland Geological Survey totaled \$1.8 million. Of this total, 75% was State general funds and special funds, 17% was Federal funds, and 8% was reimbursable funds. Of particular interest to the State's mineral producers and processors was the hydrogeology study of the Baltimore industrial area and two completed studies relative to lands for potential mineral resource development—one in the Baltimore-Washington, D.C., area and the other in western Maryland. Of further value to mining was the Survey's mapping program. Topographic map revisions progressed in Frederick and Baltimore Counties, while geologic mapping was completed in three quadrangles and was underway in two others. Since 1971, 26 quadrangles have been geologically mapped and 12 have been published.

The Maryland General Assembly appropriated \$2.4 million for construction of renovated quarters for the Maryland Geological Survey. A building on the National Register of Historic Places is to be used as the new home of the Survey.

Significant studies conducted at the U.S. Bureau of Mines Avondale Research Center during fiscal year 1982 included the identification and characterization of fibrous mineral particulates, corrosion behavior, rapid

identification of scrap metals, and metal recovery from secondary copper smelter flue dusts. The center's major areas of technical competence include urban refuse recycling, secondary metals, corrosion, flo-

tation, and materials characterization. The test facility is unique in having ion-implantation equipment and two pilot plants for treating raw or incinerated refuse.

## REVIEW BY NONFUEL MINERAL COMMODITIES

### NONMETALS

**Calcite.**—The Genstar Stone Products Co. plant, located north of Baltimore, in Texas, Md., produced calcium carbonate for use as paper coating and whitening substitute for paint, rubber, and plastic. The 93%-pure calcite deposit was mined by surface and underground methods. Mill production in 1982 totaled 144,000 tons, down 18% from that of 1981.

**Cement.**—Alpha Portland Cement Co., Lime Kiln; Lehigh Portland Cement Co., Union Bridge; and Marquette Co., Hagerstown, produced portland cement. Lehigh Portland and Marquette also produced masonry cement. Genstar, Frederick County, operated a grinding plant and produced masonry cement. Sales of finished portland cement and prepared masonry cement fell for the third consecutive year. From 1981 to 1982, portland cement shipments decreased 6% while the average value decreased 4%. Concurrently, masonry cement shipments decreased only 2% while the average value fell 19%.

The \$77 million Atlantic Cement "Newcem" plant at Sparrows Point began operation at midyear. The water-granulated blast furnace slag is conveyed from storage silos to dockside loading facilities for deep-water barge transport to Atlantic Cement's network of tidewater distribution terminals, which span a 16-State market area from New England to Florida. The cementitious material is blended with types I and II portland cement in proportions from 40% to 65% with excellent mortar strengths.

The Alpha Portland plant in Lime Kiln was sold in September to Coplay Cement Co. for \$12 million. The Frederick County facility employs 100 people and has a 1.5-million-ton-per-year capacity. The associated mineral rights on the 1,000-acre site are being leased to Coplay by Alpha Portland.

Marquette, a subsidiary of Lone Star Industries Inc., ended a 5-week production shutdown at midyear. The Washington County plant, located just east of Hagerstown, started production in 1908. It has a rated capacity of 500,000 tons per year.

This former subsidiary of Gulf + Western Industries Inc. was acquired by Lone Star in early 1982. To date, about 50 million tons of limestone has been mined from the site. The other raw materials necessary for production—sand, shale, iron ore, and gypsum—are trucked to the plant. The kiln is heated with pulverized coal. Portland cement and masonry cement, sold under the name of Blue Bond, are shipped in bulk and in packages to the company's major market areas of Baltimore and Washington, D.C.

**Clays.**—Common clay was produced by six companies operating eight pits in Carroll, Frederick, Kent, Prince Georges, and Washington Counties. Production totaled 405,000 tons, down 32% from 1981 levels. Common clay was used in the manufacture of portland cement clinker, common brick, and face brick.

Ball clay was produced in Baltimore County by Cyprus Industrial Minerals Co., Maryland's sole producer. Production decreased by about one-third from 1981 levels. Major end uses of the Cyprus ball clay were in the manufacture of floor and wall tiles, ceramics, and sanitary ware. Ball clay is a plastic, white-firing clay used principally for bonding in ceramic ware. The clays are of sedimentary origin and consist mainly of kaolinite and sericite micas.

The status of the Boehm-Joy clay mining operation in Crownsville continued to be uncertain. The "black" clay was to be used to construct and close out hazardous waste landfills. The plan requires removal of 300,000 cubic yards of clay from the 7.5-acre portion of the 198-acre tract. The initial 1-acre-sized pit is 300 feet from an onsite, 10-year-old industrial waste pit and 50 feet above the Magothy Aquifer, which supplies water to the entire Annapolis water system.

**Gem Stones.**—An estimated \$2,000 in gem stones and mineral specimens were collected by mineralogists and rock hounds in 1982.

**Gypsum.**—National Gypsum Co. and United States Gypsum Co. calcined gypsum at company facilities in Baltimore for use in the manufacture of wallboard. The import-

ed crude gypsum was mined in Nova Scotia and New Brunswick, Canada. Production increased 6% over 1981 levels.

Believed to be the first time in the Nation, byproduct gypsum was mixed with natural gypsum and commercially used in the manufacture of wallboard. The United States Gypsum wallboard plant in Baltimore, the eighth leading plant in the United States, blended substantial amounts of byproduct gypsum with its gypsum rock raw material. The byproduct gypsum was obtained from the SCM Corp. Glidden Pigments Group plant in Baltimore, and although it presented some problems in handling, satisfactory wallboard was produced.

**Iron Slag.**—Although output by Bethlehem at Sparrows Point fell for the third consecutive year, Maryland continued to rank seventh nationally in iron slag production. Expanded slag, comprising 90% of the iron blast furnace slag produced as a byproduct of steelmaking, was sold to Atlantic Cement for the manufacture of cement. The remainder, as air-cooled slag, was used as construction aggregate.

At the new Atlantic Cement 800,000-ton-per-year, water-granulated slag cement plant, slag is received directly from Bethlehem's giant L blast furnace. The molten material is immediately impacted with a high volume of water and quickly cooled. The water-granulated slag is then ground to a fineness similar to that of portland cement. This product, called Atlantic Newcem, can be substituted for portland cement and is blended with portland by the user to meet particular job requirements.

The Arundel Corp., Baltimore, reported an unfavorable impact on the operating

profits of its aggregate operation owing to the reduced availability of slag materials from the Bethlehem Sparrows Point plant.

**Lime.**—S. W. Barrick & Sons Inc., Frederick County, produced about 7,000 tons of agricultural lime in 1982. Limestone was calcined in a continuous operation in some of the few remaining vertical, mixed-feed kilns still in existence. Anthracite trucked from eastern Pennsylvania fuels the kilns, and minus 6-inch plus 1-inch crushed limestone is supplied from a nearby 210-foot-deep quarry. The major part of the firm's lime product is sold in bulk to customers in six States. The remainder is packaged for sale in 50-pound bags, and a small amount is sold for soil stabilization. Barrick & Sons is the State's only producer of lime.

**Peat.**—Garrett County Processing & Packing Corp. has been mining reed-sedge peat for almost 20 years from a 30-acre bog in the western corner of Maryland. The company, which markets peat as a soil conditioner under the trade name of Free State Peat, reported 8 to 10 years of reserves at the current rate of extraction. It is the State's sole producer of peat. Garrett County Processing has worked with the Maryland Nature Conservancy to protect two of the conservancy's bogs.

**Sand and Gravel.**—As a result of the new canvassing procedures implemented by the U.S. Bureau of Mines in 1980, no annual survey of construction sand and gravel producers was conducted for 1981. Based on partial production information for 1981, collected with the 1982 survey, final estimates of construction sand and gravel production in 1981 were generated and are given in table 1.

Table 4.—Maryland: Construction sand and gravel sold or used by producers

	1981 <sup>e</sup>			1982		
	Quantity (thousand short tons)	Value (thousands)	Value per ton	Quantity (thousand short tons)	Value (thousands)	Value per ton
Sand	NA	NA	NA	5,517	\$18,977	\$3.44
Gravel	NA	NA	NA	3,224	11,330	3.51
Sand and gravel (unprocessed)	NA	NA	NA	979	2,079	2.12
Total or average	9,500	\$31,800	\$3.35	9,720	32,386	3.33

<sup>e</sup>Estimated. NA Not available.

Table 5.—Maryland: Construction sand and gravel sold or used in 1982, by major use category

Use	Quantity (thousand short tons)	Value (thou- sands)	Value per ton
Concrete aggregate	4,766	\$17,204	\$3.61
Concrete products	1,018	3,266	3.21
Asphaltic concrete	1,730	5,200	3.01
Road base and coverings	881	2,530	2.87
Fill	841	2,232	2.65
Snow and ice control	2	6	2.41
Other	481	1,948	4.05
Total or average	<sup>1</sup> 9,720	32,386	3.33

<sup>1</sup>Data do not add to total shown because of independent rounding.

In 1982, 35 companies operated 48 pits and 28 processing plants in 13 of Maryland's 23 counties to produce 9.7 million tons of sand and gravel valued at \$32.4 million. In 1982, production and value increased 220,000 tons and \$586,000, respectively, over 1981 figures. The average value per ton was \$3.33.

Eighty-six percent of the material was transported by truck, while 6.5% was shipped by rail or barge, and 7.5% was consumed at the site of the operation. Shipments from Baltimore, Cecil, and Dorchester Counties were by truck and rail, whereas sand and gravel from Worcester County was transported by barge as well as truck. All production from Frederick County was consumed within the county.

Major uses of construction sand and gravel were for concrete aggregate (49%), asphaltic concrete (18%), and various concrete products (10%). Other uses included road base and coverings and fill.

**Stone.**—To reduce reporting burdens and costs, the U.S. Bureau of Mines implemented new canvassing procedures for its surveys of stone producers in 1981. The survey of stone producers will be conducted for odd-numbered years only, and only preliminary estimates for crushed and dimension stone production will be published for even-numbered years. The preliminary estimates will be revised the following year.

**Crushed.**—Based on preliminary data, the production and sales of crushed stone fell for the third consecutive year as economic conditions, particularly high interest rates, continued to depress construction activity. Production, estimated at 15.1 million tons, was down 8.4% from that of 1981, while total value dropped 1.1% to \$73.5 million.

In early 1982, Genstar announced a \$13 million expansion and modernization of its Frederick facilities. The remodeled plant was expected to increase crushed stone

output by more than 80%. A major feature of the project is a new primary crusher to be located within the quarry. Secondary and tertiary crushing facilities were also being upgraded.

Genstar began purchasing oyster shells from C. J. Langenfelder & Sons Inc., which dredges the shells from Chesapeake Bay under Government contract. The shells are crushed and screened at the Genstar White Marsh plant and shipped either as bagged product or in trailers. The product, fed to hens as grit, sold for an average price of \$50 per ton.

**Dimension.**—Based on preliminary data, dimension stone production in Maryland amounted to 32,000 tons, down 6% from that of 1981, while total value remained essentially unchanged at \$1 million.

**Vermiculite (Exfoliated).**—W. R. Grace & Co. at Muirkirk, Prince Georges County, exfoliated South Carolina-mined vermiculite. Sales decreased 31% from those of 1981. The vermiculite was used primarily for high temperature block and loose fill insulation and for concrete aggregates. A small amount was used for horticultural purposes as a soil conditioner, and for plaster aggregates.

## METALS

**Aluminum.**—Eastalco Aluminum Co., owned by Howmet Aluminum Corp. and Alumax Inc., produced primary aluminum for local, national, and worldwide markets from its reduction plant in Frederick. Alumina imported for Kwinama, Australia, under long-term contract was shipped to the special Eastalco dock facilities at Hawkins Point, Port of Baltimore. The alumina and other raw materials for the aluminum-reduction process (cryolite, aluminum fluoride, pitch, and coke) were shipped to the plant by rail. Eastalco, the operating company, produced extrusion billets, rolling

ingots, and remelt T-ingots from two 240-electrolytic-cell potlines. The plant, which operated at 90% of its 176,000-ton-per-year capacity during the first 4 months of 1982, completed the year at 75% of capacity. About 70% of production was used by the owner's fabricating facilities, with the remainder sold on the open market. Facility modernization, at a cost of \$3 million in 1982, included automation in potlines and energy-saving improvements in the cast-houses.

**Copper.**—Kennecott Refining Corp., one of four primary copper refineries in the Eastern United States, operated at less than 50% of its 23,000-ton-per-month capacity in 1982. Copper anode from Utah, Arizona, New Mexico, and Nevada was refined at Curtis Bay for worldwide markets.

**Iron and Steel.**—Bethlehem, the second largest steel producer in the Nation, produced iron, raw steel, and finished and semifinished steel products at Sparrows Point from ore imported from Nova Scotia and Liberia. Because of decreased customer demand and to reduce inventories, Bethlehem's steel production was cut back drastically in 1982, especially during the latter half of the year. The plant operated well below the 47% average utilization of pro-

duction capability for the domestic steel industry. The \$165 million coke oven battery, begun in 1979, was completed in 1982. The partially computerized battery consists of eighty 6-meter-high ovens capable of producing 850,000 tons per year of 3/4-inch or larger coke. The first "push" of coke from the new battery occurred in August.

Armco Inc., at its East Baltimore specialty steel plant, produced stainless steel ingots, billets, bars, rods, and wire products. During 1982, output was cut to 40% of normal capacity, and one-third of the work force, or more than 200 employees, was furloughed. Completed in 1982 as part of a modernization program were a new electric arc furnace, an argon-oxygen decarbonization vessel, and bar-turning and annealing facilities. A new rotary forge machine and horizontal continuous caster were expected to go into production by late 1983.

**Titanium Dioxide.**—The SCM Glidden Pigments Group plant in Baltimore continued to produce titanium dioxide pigments for use in paints, varnishes, lacquers, paper, and plastics. The plant's pigment capacity is 66,000 tons per year by the sulfate process and 42,000 tons per year by the chloride process.

<sup>1</sup>State Liaison Officer, Bureau of Mines, Pittsburgh, Pa.

Table 6.—Principal producers

Commodity and company	Address	Type of activity	County
<b>Aluminum:</b>			
Eastalco Aluminum Co -----	5601 Manor Woods Rd. Frederick, MD 21701	Reduction plant	Frederick.
<b>Cement:</b>			
<b>Masonry:</b>			
Genstar Stone Products Co --	Box 696, South St. Frederick, MD 21701	Plant -----	Do.
<b>Portland:</b>			
Alpha Portland Cement Co. <sup>1</sup> -	4120 Buckeystown Pike Lime Kiln, Box D Frederick, MD 21701	Plant and quarry.	Do.
<b>Portland and masonry:</b>			
Lehigh Portland Cement Co. <sup>1 2</sup>	Box L Union Bridge, MD 21791	----do -----	Carroll.
Marquette Co. <sup>1</sup> -----	Box 650 Hagerstown, MD 21740	----do -----	Washington.
<b>Slag cement:</b>			
Atlantic Cement Co -----	Box 6687 Sparrows Point, MD 21219	----do -----	Baltimore.
<b>Clays:</b>			
<b>Ball clay:</b>			
Cyprus Industrial Minerals Co., Cyprus Mines Corp.	9420 Pulaski Highway Baltimore, MD 21220 Box 188 White Marsh, MD 21162	Pit -----	Do.
<b>Common clay:</b>			
Victor Cushwa & Sons Inc ---	Clearspring Rd. & Route 68N Box 160 Williamsport, MD 21795	Pits -----	Washington.
Lehigh Portland Cement Co --	Box L Union Bridge, MD 21791	----do -----	Carroll and Frederick.
<b>Copper:</b>			
Kennecott Refining Corp -----	Kenbo Rd. Curtis Bay, MD 21226 Box 3407 Baltimore, MD 21226	Refinery -----	Anne Arundel.

See footnotes at end of table.

Table 6.—Principal producers —Continued

Commodity and company	Address	Type of activity	County
Gypsum:			
Byproduct:			
SCM Corp., Glidden Pigments Group.	3901 Glidden Rd. Baltimore, MD 21226	Plant -----	Baltimore.
Calcined:			
National Gypsum Co., Gold Bond Building Products.	2301 South Newkirk St. Baltimore, MD 21224	----do-----	Do.
United States Gypsum Co. ---	5500 Quarantine Rd. Box 3472 Baltimore, MD 21226	----do-----	Do.
Iron and steel:			
Armco Inc -----	3501 East Biddle St. Box 1697 Baltimore, MD 21203	Mill (stainless steel)	Do.
Bethlehem Steel Corp -----	Sparrows Point, MD 21219 -----	Mill -----	Do.
Eastern Stainless Steel Co -----	7700 Rolling Mill Rd. Dundalk, MD 21222 Box 1975 Baltimore, MD 21203	----do-----	Do.
Lime:			
S. W. Barrick & Sons Inc. <sup>1</sup> -----	Woodsboro, MD 21798 -----	Quarry and plant.	Frederick.
Peat:			
Garrett County Processing & Packing Corp.	RFD 1 Accident, MD 21520	Bog -----	Garrett.
Sand and gravel (construction):			
Charles County Sand & Gravel Co. Inc.	Waldorf Industrial Center Box 548 Waldorf, MD 20601	Pits and plants _	Anne Arundel, Charles, St. Marys.
Contee Sand & Gravel Co. Inc. ---	Box 1000 Laurel, MD 20810	----do-----	Anne Arundel, Howard, Prince Georges.
Genstar Stone Products Co. <sup>3</sup> -----	Executive Plaza 4 11350 McCormick Rd. Hunt Valley, MD 21031	----do-----	Anne Arundel and Baltimore.
J. E. Owens, III -----	5893 Upper Pindell Rd. Lothian, MD 20820	Pit (bankrun) _	Anne Arundel.
York Building Products Co. Inc., Mason Dixon Div.	Box 1708 Loucks Mill Rd. York, PA 17405	Pits and plants _	Cecil.
Stone:			
Crushed:			
Arundel Corp -----	110 West Rd. Baltimore, MD 21204	Quarries and plants.	Baltimore and Harford.
Genstar Stone Products Co. ---	Executive Plaza 4 11350 McCormick Rd. Hunt Valley, MD 21031	----do-----	Baltimore, Carroll, Frederick, Harford, Montgomery.
Rockville Crushed Stone Inc. --	Box 407 13900 Piney Meetinghouse Rd. Rockville, MD 20850	Quarry and plant.	
Dimension:			
Stoneyhurst Quarries -----	Box 34463 8101 River Rd. Potomac, MD 20817	----do-----	Do.
Tri-State Stone Co. Inc -----	8200 Seven Locks Rd. Bethesda, MD 20034	----do-----	Do.
The Weaver Stone Co -----	Box 96 Reisterstown, MD 21136	----do-----	Baltimore.
Vermiculite (exfoliated):			
W. R. Grace & Co -----	12340 Conway Rd. Beltsville, MD 20705	Plant -----	Prince Georges.

<sup>1</sup>Also crushed stone.<sup>2</sup>Also clays.<sup>3</sup>Also calcite.

