

The Mineral Industry of Massachusetts

This chapter has been prepared under a Memorandum of Understanding between the Bureau of Mines, U.S. Department of the Interior, and the Massachusetts Department of Environmental Quality, Office of the State Geologist, for collecting information on all nonfuel minerals.

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The value of mineral production in Massachusetts was \$90.1 million in 1978 and \$92.5 million in 1979. Mining in the State dates from around 1643, when iron ore was produced to feed a blast furnace erected at Hammersmith, near Lynn, on the west bank of the Saugas River. Although this venture flourished for only a few years, it served as an early prototype of American heavy industry.

Since then, mineral production in Massachusetts has changed from metals to industrial minerals. In 1978-79, the leading mineral commodities mined in-State were stone and sand and gravel. Other commodities produced included clays, shale, lime, and peat. Gypsum, perlite, and vermiculite mined out-of-State were imported for processing.

Table 1.—Nonfuel mineral production in Massachusetts¹

Mineral	1977		1978		1979	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays----- thousand short tons	149	\$275	155	\$333	156	\$367
Lime----- do.	W	W	199	8,478	198	9,918
Peat----- do.	2	W	2	65	2	56
Sand and gravel----- do.	16,639	34,346	² 17,860	² 37,460	² 16,705	² 37,164
Stone:						
Crushed----- do.	8,030	30,501	8,398	36,360	8,586	39,570
Dimension----- do.	63	4,856	68	6,411	48	4,389
Combined value of other nonmetals and values indicated by symbol W-----	XX	7,290	XX	961	XX	1,082
Total-----	XX	77,268	XX	90,068	XX	92,546

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 industrial sand; value included in "Combined value" figure.

Table 2.—Value of nonfuel mineral production in Massachusetts, by county
(Thousands)

County	1977	1978	Minerals produced in 1978 in order of value
Barnstable	\$1,603	\$1,720	Sand and gravel.
Berkshire	W	W	Stone, lime, sand and gravel.
Bristol	6,730	7,404	Stone, sand and gravel.
Dukes	98	107	Sand and gravel.
Essex	6,965	7,501	Stone, sand and gravel.
Franklin	1,617	W	Sand and gravel, stone.
Hampden	4,700	W	Do.
Hampshire	W	W	Do.
Middlesex	15,541	19,303	Stone, sand and gravel.
Nantucket	100	100	Sand and gravel.
Norfolk	W	W	Stone, sand and gravel, clays.
Plymouth	W	W	Sand and gravel, clays, stone.
Suffolk	W	W	Stone.
Worcester	W	9,119	Sand and gravel, stone, peat.
Undistributed ¹	39,912	44,816	
Total²	77,268	90,068	

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

¹Includes gem stones and values indicated by symbol W.

²Data may not add to totals shown because of independent rounding.

Table 3.—Indicators of Massachusetts business activity

	1977	1978	1979 ^P	1978-79 percent change	
Employment and labor force, annual average:					
Total civilian labor force	thousands	2,776.0	2,835.0	2,891.0	+2.0
Unemployment	do.	225.0	173.0	160.0	-7.5
Employment (nonagricultural):					
Mining	do.	(¹)	(¹)	(¹)	—
Manufacturing	do.	621.0	652.4	670.8	+2.7
Contract construction	do.	66.7	72.8	76.6	+5.2
Transportation and public utilities	do.	114.9	117.3	120.1	+2.4
Wholesale and retail trade	do.	533.7	547.3	567.4	+3.7
Finance, insurance, real estate	do.	143.2	146.7	148.2	+1.0
Services	do.	² 528.6	² 560.8	² 596.2	+6.3
Government	do.	397.0	429.2	420.1	-2.1
Total nonagricultural employment	do.	2,405.1	2,526.5	2,598.9	+2.9
Personal income:					
Total	millions	\$41,608	\$45,765	\$51,019	+11.5
Per capita	do.	\$7,202	\$7,926	\$8,844	+11.6
Construction activity:					
Number of private and public residential units authorized	do.	21,978	³ 21,496	19,957	-7.2
Value of nonresidential construction	millions	\$482.0	\$493.9	\$705.7	+42.9
Value of State road contract awards	do.	\$120.0	\$140.0	NA	—
Shipments of portland and masonry cement to and within the State	thousand short tons	895	1,022	1,047	+2.4
Nonfuel mineral production value:					
Total crude mineral value	millions	\$77.3	\$90.1	\$92.5	+2.7
Value per capita, resident population	do.	\$13	\$16	\$16	—
Value per square mile	do.	\$9,358	\$10,908	\$11,208	+2.6

^PPreliminary. NA Not available.

¹Included with "Services."

²Includes mining.

³Series revised in 1978; data not comparable with those of prior years.

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.—From 1970 to 1979, the value of Massachusetts' mineral production increased more than 60%. Only in 1971 and 1975 did the value fall below that of the previous year. These decreases

were the result of a mild recession that carried over from 1970 and a deep recession in 1974 that continued into 1975.

In spite of a limited mineral resource base, much of Massachusetts' industry was

involved in processing and refining mineral raw materials. Although only a small fraction of the State's 2 million industrial workers was employed in primary mineral extraction, approximately 18% was involved in industries that were either entirely or partially dependent on mineral-derived products. Much of the income of the

State's trucking and rail lines was generated from transporting dimension and crushed stone, lime, sand and gravel, and gypsum. Of the mineral- and fuel-related products passing through the Port of Boston, 48% was metallic or nonmetallic minerals and primary or scrap metals.

REVIEW BY NONFUEL MINERAL COMMODITIES

NONMETALS

Cement.—There are no cement manufacturing plants in the State. In 1978, Massachusetts imported 982,000 tons of cement. In 1979, imports totaled over 1 million tons. The eastern part of the State received cement shipments from Maine, and the rest of the State imported cement from other Northeastern States.

Clays.—The State's clay and shale industry was centered in Norfolk and Plymouth Counties in eastern Massachusetts. Two companies mined common clay for brick manufacture and a third mined anthracite-bearing shales in Plymouth County as a raw material in the manufacture of lightweight aggregate.

Gem Stones.—Gem stones and mineral specimens played a small but significant role in the State's mineral economy. Crystal Systems, in Salem, produced the world's largest synthetic sapphire crystals, which are used in such optical applications as lenses and high-impact windows. Research is ongoing into the mechanical application of synthetic sapphire for wear-resistant surfaces. Mineral collecting was also a popular pastime in Massachusetts.

Gypsum.—Crude gypsum, mined by two subsidiaries in New Brunswick and Nova Scotia, Canada, was imported by United States Gypsum Co. at a calcining facility near Boston. The principal use of gypsum

calced in the State was in the manufacture of wallboard.

Lime.—Pfizer, Inc., and Lee Lime Corp. produced lime from locally mined material in Berkshire County in western Massachusetts. The lime was shipped within Massachusetts and to New York, Connecticut, and other States for use in the manufacture of animal foods, precipitated calcium carbonate, mason's lime, sewage treatment, and other applications.

Peat.—Reed sedge peat was produced by Sterling Peat Co., Worcester County, in north-central Massachusetts. The peat was used predominately for agricultural applications by nurserymen, landscapers, and greenhouse owners.

Perlite (Expanded).—Whittemore Products, Inc., expanded perlite mined in New Mexico at its facility in Suffolk County. Expanded perlite was used in lightweight aggregate and as a horticultural medium.

Sand and Gravel.—Production of construction and industrial sand and gravel was reported from 13 of the 14 counties in the State. During the 1978-79 biennium, the industry was comprised of more than 175 companies producing from over 185 deposits. Leading counties, in terms of output, were Worcester, Middlesex, and Norfolk. Construction sand and gravel was used primarily for aggregate, road base, and fill. Industrial sand was used by the foundry industry for moldings and castings.

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

Use	1977			1978			1979		
	Quantity (thousand short tons)	Value (thousands)	Value per ton	Quantity (thousand short tons)	Value (thousands)	Value per ton	Quantity (thousand short tons)	Value (thousands)	Value per ton
Concrete aggregate	6,654	\$15,754	\$2.37	7,025	\$17,400	\$2.48	6,027	\$16,622	\$2.76
Plaster and gunite sands	NA	NA	NA	80	226	2.82	83	185	2.22
Concrete products	1,046	2,620	2.50	940	2,300	2.45	469	1,183	2.52
Asphaltic concrete	1,414	3,437	2.43	1,518	3,598	2.37	2,098	4,774	2.28
Roadbase and coverings	3,368	5,894	1.75	3,886	6,970	1.79	3,830	7,091	1.85
Fill	3,467	4,444	1.28	3,235	4,400	1.36	3,075	4,548	1.48
Snow and ice control	NA	NA	NA	850	1,863	2.19	713	1,444	2.03
Railroad ballast	W	W	W	2	6	2.76			
Other uses	571	1,246	2.18	319	699	2.19	410	1,319	3.22
Total ¹ or average	16,520	33,395	2.02	17,860	37,460	2.10	16,705	37,164	2.22

NA Not available. W Withheld to avoid disclosing company proprietary data; included in "Other uses."

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

Table 5.—Massachusetts: Sand and gravel sold or used by producers, by use

Use	1977			1978			1979		
	Quantity (thousand short tons)	Value (thousands)	Value per ton	Quantity (thousand short tons)	Value (thousands)	Value per ton	Quantity (thousand short tons)	Value (thousands)	Value per ton
Construction:									
Sand	6,912	\$13,761	\$1.99	7,674	\$15,682	\$2.04	7,138	\$14,717	\$2.06
Gravel	9,609	19,633	2.04	10,181	21,778	2.14	9,567	22,447	2.35
Total ¹ or average	16,520	33,395	2.02	17,860	37,460	2.10	16,705	37,164	2.22
Industrial sand	119	951	7.99	W	W	W	W	W	W
Grand total ¹	16,639	34,346	2.06	W	W	W	W	W	W

W Withheld to avoid disclosing company proprietary data.

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

Stone.—During the biennium, more than 45% of the State's mineral production value came from the sale of crushed and dimension stone. Crushed stone was produced in all counties; dimension stone was quarried in four.

The crushed stone industry produced 8.6 million tons of traprock, granite, and limestone in 1979, an increase of approximately 200,000 tons over that of 1978. Traprock, which was produced from 26 operations in 9 counties in the central part of the State, accounted for approximately 77% of the crushed stone that was produced in the State during each of the 2 years. Three-quarters of the traprock was sold for aggregate and railroad ballast.

Crushed granite was produced in Middlesex, Norfolk, and Plymouth Counties in eastern Massachusetts. In 1979, output exceeded 1.1 million tons, an increase of 200,000 tons over that of 1978. Production in

1979 was from five quarries, one more than in the previous year. About four-fifths of the output was used for aggregate.

Crushed limestone was quarried in Berkshire County in the western part of the State. Output from three quarries active in 1979 was less than the 770,000 tons reported in 1978, a result of the closing of one quarry. Nine-tenths of the stone was used in the production of lime, agricultural limestone, and filler.

Dimension granite was quarried at seven operations in Middlesex, Norfolk, Plymouth, and Berkshire Counties. Output in 1979 was approximately 47,000 tons, a decrease of more than 25% from that of 1978. Four-fifths of the stone quarried in the two years was sold for curbstone, paving block, and rubble.

One company, in Berkshire County, produced dimension marble. Output in 1979 was 1,500 tons, an increase over that of

1978. Quarry-run blocks were trucked to Canada for finishing.

Vermiculite.—W. R. Grace & Co. imported and exfoliated vermiculite from out-of-State at its Easthampton plant in Hampshire County. Major uses were for

loose-fill and block insulation and horticulture.

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

(Thousand short tons and thousand dollars)

Use	1977		1978		1979	
	Quantity	Value	Quantity	Value	Quantity	Value
Agricultural limestone	134	996	150	1,157	W	W
Concrete aggregate	¹ 293	¹ 834	303	916	456	1,687
Bituminous aggregate	3,103	¹ 0,705	2,924	11,292	2,910	11,622
Macadam aggregate	101	360	211	715	203	746
Dense-graded roadbase stone	760	2,194	609	1,991	755	2,603
Surface treatment aggregate	10	30	61	191	65	224
Other construction aggregate and roadstone	1,466	4,060	2,072	7,166	1,953	7,223
Riprap and jetty stone	81	216	131	381	106	304
Railroad ballast	752	1,615	688	2,073	790	2,644
Filter stone	245	818	W	W	W	W
Manufactured fine aggregate (stone sand)	339	878	286	766	277	706
Flux stone	W	W	5	46	6	55
Roofing granules	173	W	206	525	212	755
Other uses ²	573	7,794	753	9,140	854	11,001
Total ³	8,030	30,501	8,398	36,360	8,586	39,570

¹Revised. W Withheld to avoid disclosing company proprietary data; included with "Other uses."

²Includes limestone, granite, traprock, and miscellaneous stone.

³Includes stone used for poultry grit and mineral food, lime manufacture, asphalt filler, other filler, unspecified uses (1977), and uses indicated by symbol W.

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

Table 7.—Principal producers

Commodity and company	Address	Type of activity	County
Clays:			
K-F Brick Co., Inc.	River St. Middleboro, MA 02346	Pit	Plymouth.
Plainville Corp., Masslite Div. ¹	Box 327 Walpole, MA 02081	Pit	Norfolk.
Stiles & Hart Brick Co.	Box 367 Bridgewater, MA 02324	Pit	Plymouth.
Gypsum, calcined:			
United States Gypsum Co. ²	101 South Wacker Dr. Chicago, IL 60606	Plant	Suffolk.
Lime:			
Lee Lime Corp. ³	Marble St. Lee, MA 01238	do	Berkshire.
Pfizer, Inc. ³	260 Columbia St. Adams, MA 01220	do	Do.
Peat:			
Sterling Peat Co.	Sterling Junction, MA 01565	Bog	Worcester.
Perlite, expanded:			
Whittemore Products, Inc.	35 Harrison St. Roslindale, MA 02131	Plant	Suffolk.
Sand and gravel:			
Assabet Sand and Gravel	Box 256 Acton, MA 01720	Pit	Middlesex.
J. J. Cronin Co.	Box 176 North Reading, MA 01864	Pit	Do.
E. L. Dauphinais, Inc.	160 Worcester Rd. North Grafton, MA 01536	Pit	Worcester.
Hyannis Sand and Gravel	Box 96 Hyannis, MA 02601	Pit	Barnstable.
Marshfield Sand and Gravel, Inc.	Clay Pit Rd. Marshfield, MA 02050	Pit	Norfolk.
Merrimack Paving Corp.	Yemma Rd. Groveland, MA 01830	Pit	Essex.
Namasket Construction Co.	Box 296 Middleboro, MA 02341	Pit	Plymouth.

See footnotes at end of table.

Table 7.—Principal producers —Continued

Commodity and company	Address	Type of activity	County
Sand and gravel —Continued			
A. A. Will Sand & Gravel Corp --	Turnpike St. Canton, MA 02021	Pit -----	Norfolk.
Worcester Sand & Gravel Co ---	182 Holden St. Shrewsbury, MA 01545	Pit -----	Worcester.
Industrial:			
Holliston Sand Co., Inc -----	303 Lowland St. Holliston, MA 01746	Pit -----	Middlesex.
Southeastern Sand & Gravel, Inc	Kingston, MA 02364 ---	Pit -----	Plymouth.
Whitehead Bros. Co -----	60 Hanover Rd. Florham Park, NJ 07932	Pit -----	Do.
Stone:			
G. Brox, Inc -----	1471 Methuen St. Dracut, MA 01826	Quarry -----	Middlesex.
Essex Bituminous Concrete, Inc --	55 Russel St. Peabody, MA 01960	---do-----	Essex and Middlesex.
H. E. Fletcher Co -----	West Chelmsford, MA 01863	---do-----	Middlesex and Worcester.
P. J. Keating Co -----	Box 367 Fitchburg, MA 01420	---do-----	Worcester.
John S. Land & Son, Inc -----	Box 125 Westfield, MA 01085	---do-----	Hampden and Hampshire.
Lynn Sand & Stone Co -----	30 Danvers Rd. Swampscott, MA 01907	---do-----	Essex.
Massachusetts Broken Stone Co --	133 Boston Post Rd. Weston, MA 02193	---do-----	Middlesex.
Manchester Stone & Gravel Co ---	Box 402 Manchester, MA 01944	---do-----	Essex.
Old Colony Crushed Stone Co --	Box 230 Quincy, MA 02169	---do-----	Norfolk.
Simeone Stone Corp -----	1185 Turnpike St. Stoughton, MA 02072	---do-----	Do.
Trimount Bituminous Products Co.	1840 Revere Beach Parkway Everett, MA 02149	---do-----	Essex.
Warren Bros. Co., a division of Ashland Oil & Refining Co., Inc.	430 Howard St. Brockton, MA 02402	---do-----	Bristol.
Vermiculite, exfoliated:			
W. R. Grace & Co -----	62 Whittemore Ave. Cambridge, MA 02140	Plant -----	Hampshire.

¹Also sand and gravel.²Also expanded perlite.³Also stone.