

PUMICE AND PUMICITE

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In 1999, pumice and pumicite consumption in the United States was 974,000 metric tons (t), according to the U.S. Geological Survey (USGS). This consumption was about 15% greater than that of 1998 and represents the highest level of pumice consumption since 1979, when 1.12 million metric tons (Mt) were consumed. The increase in consumption was attributable to greater domestic sales and increased imports of pumice and pumicite. Domestic production increased about 10%, and exports remained at about the same level as in 1998 (table 1).

The main use for pumice was as an aggregate in lightweight building blocks and assorted building products. The other major applications for pumice and pumicite included abrasive, absorbent, concrete aggregate and admixture, filter aid, horticultural (including landscaping), and the stonewashing of denim.

Production

Pumice and pumicite sold or used by U.S. producers increased to 643,000 t with a value of \$17.8 million (table 1). Oregon remained the leading source of pumice and pumicite, followed, in descending order, by California, New Mexico, Idaho, Arizona, and Kansas. Domestic production data for pumice and pumicite were developed by the USGS from a voluntary survey of U.S. operations. In 1999, 15 companies with 16 active operations produced and sold or used all the domestic pumice and pumicite in the United States. Because six of the companies did not respond to the 1999 survey, sold and used data for these companies were estimated. The nine companies that responded represented about 85% of the 643,000 t.

Domestic producers were Tufflite Inc., Phoenix, AZ; California Industrial Minerals Co., Friant, CA; California Lightweight Pumice, Inc., San Clemente, CA; Glass Mountain Pumice Inc., Tulelake, CA; U.S. Pumice Co., Chatsworth, CA; Amcor Precast, Inc., Idaho Falls, ID; Hess Pumice Products, Inc., Malad City, ID; Producers Pumice, Meridian, ID; Calvert Corp., Norton, KS; Kansas Minerals Inc., Mankato, KS; Copar Pumice Co. Inc., Espanola, NM; C.R. Minerals, Inc., Santa Fe, NM; Utility Block Co., Albuquerque, NM; Cascade Pumice Co., Bend, OR; and Sierra Cascade LLC, Chemult, OR.

Sierra Cascade is a new pumice operation in Klamath County, OR, which began shipping in July 1999. Sierra Cascade will be supplying pumice for building and decorative block, geotechnical/lightweight fill, landscaping, and other uses (D. Van Pelt, Sierra Cascade LLC, oral commun., 1999).

Consumption

The amount of pumice and pumicite sold or used by U.S. producers rose because of increased demand, mostly from the building block and miscellaneous markets (table 2). Demand declined for horticultural (including landscaping) applications. The amount of pumice sold for building block rose about 5%, from 373,000 tons to 391,000 tons. Sales of pumice and pumicite for miscellaneous markets increased about 3.5 times that of 1998. Sales of domestic stonewashing (or laundry) grade pumice continued to decrease in 1999 following a trend that began in 1997. Sales fell about 11% from those of 1998.

The most important market for pumice remained building block, which consumed 60.8% of the total pumice sold or used in the United States. Other important uses were horticultural and landscaping, 15.6%; concrete aggregate, 5.4%; abrasives, 4.8%; and stone washing, 2.5%. The remaining pumice and pumicite (10.9%) was used as absorbent (including pet litter), diluents, fill, filter aids, and in pottery clays, and other unspecified uses.

Prices

The average prices reported for pumice and pumicite varied greatly by use compared with the average price for all uses in 1999. The overall average price was \$27.69 per metric ton in 1999, an increase of \$6.10, from \$21.59 per ton in 1998. Most of the price change resulted from an increase in the average price reported for the grades of pumice used in abrasives, building block, horticultural, and laundry applications. These markets for pumice and pumicite recorded significant increases and more than offset decreases in the average prices for miscellaneous uses. Average prices per ton for pumice and pumicite by use, in descending order, were abrasive, \$164; stone washing, \$121; horticulture/landscaping, \$29; concrete admixture, \$24; miscellaneous uses, \$18; and building block, \$15.

Foreign Trade

Exports increased to 23,000 t with a value of \$10.1 million. Receiving countries were led by Canada, 32%; Japan, 17%; Germany, 10%; Mexico, 7%; the United Kingdom, 7%; Malaysia, 5%; and Brazil, 4%. The remaining 18% of exports went to 30 other countries throughout the world, in Asia, Central America, Europe, the Middle East, Oceania, and South America.

By volume, most imports of pumice and pumicite were for construction-related uses with small but significant amounts used for abrasives and stonewashing. Greece remained the largest source for pumice imports, supplying more than 84% (table 3). Imports in 1999 increased about 23% to 354,000 t compared with that of 1998. Imports from Greece rose 26%, to 299,000 t, while imports from Italy, Mexico, and Turkey, rose slightly. Besides these countries, 15 other countries exported pumice and pumicite to the United States in 1999.

World Review

The USGS estimates world pumice (and related materials) production at 11.6 Mt in 1999, down 3% from the revised total for 1998 of 12.0 Mt (table 4). Most of the data published were provided by the responsible governmental agencies in each country. Large revisions in data are reported by these agencies usually without supporting explanations. Globally, Italy remained the dominant producer of pumice and pozzolan, with annual production around 4.6 Mt. Other leading countries in the production of pumice and related materials were Chile, Ecuador, Ethiopia, France, Germany, Greece, Spain, Turkey, and the United States. Besides these countries, at least 16 other countries produced pumice.

Pumice is used more extensively outside of the United States which helps to explain the large global production (and sales) of pumice relative to the United States. In Europe, for example, basic home construction uses significantly less gypsum sheetrock; stone and concrete are usually the preferred building materials. Prefabricated, lightweight concrete walls were often produced and shipped to construction locations.

Because of its lightweight, strength, and cementitious properties, pumice performed very well in the European style of construction.

Outlook

Consumption of pumice and pumicite in 2000 is expected to rise modestly compared with 1999, as construction activity is expected to continue at a steady level. Trade should increase in 2000, with imports and exports exceeding 1999 levels, as importers install new facilities for pumice storage and handling in the United States.

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

Lightweight aggregates. Ch. in *United States Mineral Resources: Professional Paper 820*, 1973.

Pumice and pumicite. Ch. in *Mineral Commodity Summaries, annual*.¹

Other

Bates, R.L., 1969, *Geology of the Industrial Rocks and Minerals*, Dover Publications Inc., New York, p. 39-50. *Industrial Minerals Magazine* (London).

¹Prior to January 1996, published by the U.S. Bureau of Mines.

TABLE 1
SALIENT PUMICE AND PUMICITE STATISTICS 1/

(Thousand metric tons and thousand dollars)

	1995	1996	1997	1998	1999
United States, sold and used by producers:					
Pumice and pumicite	529	612	577	583	643
Value 2/	\$13,200	\$14,800	\$16,100	\$12,600	\$17,800
Average value per ton	\$24.99 r/	\$24.19 r/	\$27.90	\$21.59 r/	\$27.69
Exports e/	16	13	12	22	23
Imports for consumption	238	215	265	288 r/	354
Apparent consumption 3/	728	814	830	849 r/	974
World, production, pumice and related volcanic materials	11,500	11,400 r/	11,800 r/	12,000 r/	11,600 e/

e/ Estimated. r/ Revised.

1/ Data are rounded to no more than three significant digits, except average value per ton; may not add to totals shown.

2/ Freight on board mine and/or mill.

3/ Production plus imports, minus exports, plus adjustments for Government and industry stock changes.

TABLE 2
PUMICE AND PUMICITE SOLD AND USED BY PRODUCERS IN THE UNITED STATES, BY USE 1/

Use	1998			1999		
	Quantity (thousand metric tons)	Value (thousands)	Unit value	Quantity (thousand metric tons)	Value (thousands)	Unit value
Abrasives 2/	32	\$4,660	\$145.72	31	\$5,080	\$163.81
Building block, includes decorative	373	2,690	7.21	391	5,820	14.88
Concrete admixture and aggregate	34	814	23.94	35	836	23.89
Horticulture and landscaping	107	1,760	16.45	100	2,860	28.56
Laundries	18	1,880	104.44	16	1,940	121.00
Other 3/	20	779	38.95	70	1,280	18.23
Total	583	12,600	21.59	643	17,800	27.69

1/ Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

2/ Includes cleaning and scouring compounds.

3/ Includes absorbent, diluents, fill, filter aids, pottery, and other unspecified uses.

TABLE 3
U.S. IMPORTS FOR CONSUMPTION OF PUMICE, BY CLASS AND COUNTRY 1/

(Thousand metric tons and thousand dollars)

Country	Crude or unmanufactured		Wholly or partly manufactured	
	Quantity	Value	Quantity	Value
1998:				
Ecuador	2	115	(2/)	28
Greece 3/	237	3,410	--	--
Italy	30	1,930	1	604
Mexico	(2/)	48	(2/)	75
Turkey	16	2,250	(2/)	4
Other 4/	1	181	(2/)	747
Total	286	7,930	2	1,460
1999:				
Greece 3/	299	7,030	(2/)	705
Italy	32	665	(2/)	139
Mexico	2	524	(2/)	51
Turkey	19	3,240	--	--
Other 5/	1	155	(2/)	1,100
Total	353	11,600	1	2,000

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Less than 1/2 unit.

3/ The Journal of Commerce Port Import/Export Reporting Service data.

4/ Includes Canada, China, France, Georgia, Germany, Ireland, Japan, the Republic of Korea, the Netherlands, New Zealand, Spain, Syria, Taiwan, Tokelau, and the United Kingdom.

5/ Includes Austria, China, Ecuador, France, Germany, Indonesia, Japan, the Republic of Korea, the Philippines, Poland, Spain, Syria, Taiwan, Tokelau, and the United Kingdom.

Source: Bureau of the Census.

TABLE 4
PUMICE AND RELATED MATERIALS: WORLD PRODUCTION, BY COUNTRY 1/ 2/

(Metric tons)

Country 3/	1995	1996	1997	1998	1999 e/
Argentina 4/	74,941	81,283	147,235 r/	140,000 r/ e/	120,000
Austria: Trass e/	6,000	6,000	5,000	5,000	5,000
Burkina Faso e/	11,000	11,000	10,000	10,000	10,000
Cameroon: Pozzolan e/	90,000 r/	80,000 r/	100,000	105,000 r/	80,000
Cape Verde: Pozzolan e/	5,000	1,000	1,000	1,000	1,000
Chile: Pozzolan	466,000	500,000	491,000	912,000 r/	600,000
Costa Rica e/	8,000	8,000	8,000	8,000	8,000
Dominica: Pumice and volcanic ash e/	100,000	100,000	100,000	100,000	100,000
Ecuador: Pumice	9,000 e/	231,875	368,269	320,000 r/ e/	330,000
Ethiopia e/	360,000	360,000	325,000	325,000	300,000
France: Pozzolan and lapilli	427,000	410,000	477,000	460,000 r/ e/	460,000
Germany: Pumice (marketable) e/	625,000	600,000	600,000	600,000	600,000
Greece:					
Pumice	856,450	867,450	900,000 e/	900,000 e/	900,000
Pozzolan	691,722	749,790	841,646 r/	850,000 r/ e/	800,000
Guadeloupe: Pumice e/	210,000	210,000	210,000	210,000	210,000
Guatemala: Pumice	339,227 r/	64 r/	6,000 r/ e/	6,350 e/	6,400
Iceland: Pumice and scoria e/	30,000	25,000	25,000	25,000	25,000
Iran e/	200,000	200,000	200,000	150,000 r/	150,000
Italy: e/					
Pumice and pumiceous lapilli	650,000	600,000	600,000	600,000	600,000
Pozzolan	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Macedonia: Volcanic tuff e/	75,000	75,000	75,000	75,000	70,000
Martinique: Pumice e/	130,000	130,000	130,000	130,000	130,000
New Zealand	77,054	90,571	196,687 r/	190,000 r/ e/	190,000
Serbia and Montenegro: Volcanic tuff e/	75,000	75,000	75,000	75,000	70,000
Slovenia: Volcanic tuff e/	40,000	40,000	40,000	40,000	40,000
Spain e/ 5/	600,000	600,000	600,000	600,000	600,000
Turkey	845,000 r/	774,000	681,000 r/	579,000 r/	600,000
United States, sold and used by producers	529,000	612,000	577,000	583,000	643,000 6/
Total	11,500,000	11,400,000 r/	11,800,000 r/	12,000,000 r/	11,600,000

e/ Estimated. r/ Revised.

1/ World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

2/ Table includes data available through May 2, 2000.

3/ Pumice and related materials are also produced in a number of other countries, including Japan, Mexico, and the former U.S.S.R.; available information is inadequate for the formulation of reliable estimates of output levels.

4/ Unspecified volcanic materials produced mainly for use in construction products (includes pumice, perlite, pozzolan, and toba).

5/ Includes Canary Islands.

6/ Reported figure.