

PUMICE AND PUMICITE

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In 2000, pumice and pumicite consumption in the United States was 1.06 million metric tons (Mt). This consumption was about 9% greater than that of 1999 and represents the highest level of pumice consumption since 1979, when 1.12 Mt was consumed. The increase in consumption was attributable to greater domestic sales and increased imports of pumice and pumicite primarily for formed lightweight concrete products. Domestic production increased by about 8%, and exports, while still small relative to total domestic consumption, increased by about 17% (table 1).

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

Production

Pumice and pumicite sold or used by U.S. producers increased to 697,000 metric tons (t) valued at \$16.9 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 U.S. Geological Survey (USGS) from a voluntary survey of U.S. operations. In 2000, 15 companies with 16 active operations produced and sold or used all the domestic pumice and pumicite in the United States. Because four of the companies did not respond to the

2000 survey, sold and used data for these companies were estimated. The 11 companies that responded represented about 81% of the 697,000 t.

Domestic producers, listed alphabetically by State, 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., and Producers Pumice, Idaho Falls, ID; Hess Pumice Products, Inc., Malad City, ID; Calvert Corp., Norton, KS; Kansas Minerals Inc., Mankato, KS; Copar Pumice Co. Inc., Espanola, NM; CR Minerals Corp., Santa Fe, NM; Utility Block Co., Albuquerque, NM; Cascade Pumice Co., Bend, OR; and Sierra Cascade LLC, Chemult, OR.

Consumption

The amount of pumice and pumicite sold or used by U.S. producers rose in 2000 because of increased demand exclusively from the building block and concrete markets (table 2). Demand declined for all other uses except horticultural (including landscaping) applications, which remained at 1999 levels. The amount of pumice sold for building block increased by about 20%, to 470,000 t from 391,000 t. Sales of pumice and pumicite for abrasives, laundries (stonewashing), and miscellaneous markets decreased in 2000 compared with those of 1999. Sales of domestic stonewashing (or laundry) grade pumice continued to decrease following a trend that began in 1997. Sales fell to 6,000 t in

Pumice and Pumicite in the 20th Century

The production of pumice and pumicite in the United States, which started in 1897 with the shipment of 143 metric tons from mines in Nebraska and South Dakota and had increased to more than 544 tons in 1898, had practically ceased by 1900. Because of the distance of these deposits from the railroad and from large markets, domestic producers were not able to compete with pumice imported from Italy. Italian pumice was brought in as ballast in ships and therefore was inexpensively shipped. Italian pumice sold in New York for 4.4 to 6.25 cents per kilogram. About 80% of the domestic demand for pumice was supplied from Lapari, a small island north of Sicily. The Bureau of Statistics of the Department of Treasury kept no record of the amount of pumice imported but the data the Bureau of Statistics kept on the value of pumice imported listed the annual value of imports between \$43,000 and \$65,000 for the period between 1893 and 1899. Pumice was

crushed and bolted for drying and used in the manufacture of various polishing powders and scouring stones.

By 2000, 385,000 tons of pumice and pumicite valued at about \$14 million was imported, mostly from Greece. The main use for pumice in 2000 was as a lightweight aggregate in variously shaped and sized concrete building and decorative blocks. Pumicite was mostly used in filtration and in abrasives. Abrasive uses consumed only a small percentage of the pumice and pumicite. Pumice mining in the United States was concentrated in California, Idaho, New Mexico, and Oregon; 16 mines in the Western United States produced and sold or used nearly 700,000 tons. Domestic producers continued to suffer a transportation disadvantage when trying to ship to the Eastern United States, making it possible for imports to supply many of the markets from the Great Lakes region to the Gulf Coast.

2000 from 16,000 t in 1999, which represents a decrease of about 63%.

The most important market for pumice remained building block, which consumed 67.4% of the total pumice sold or used in the United States. Other important uses were horticulture and landscaping (14.3%), concrete aggregate (6.6%), and abrasives (3.7%). The remaining pumice and pumicite (8%) was used as absorbent (including pet litter), diluents, fill, filter aids, in laundries, in pottery clays, and for 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 2000. The overall average price was \$24.27 per metric ton in 2000, a decrease of \$3.42 from \$27.69 per ton in 1999. The price change was primarily the result of a decrease in the average price reported for the grades of pumice used in building block. This decrease in price more than offset increases in the average prices for abrasives, concrete aggregate, and miscellaneous uses. Average prices per ton for pumice and pumicite by use, in descending order, were \$215 for abrasive, \$110 for stone washing, \$38 for concrete admixture and aggregate, \$29 for horticulture/landscaping, \$20 for miscellaneous uses, and \$11 for building block.

Foreign Trade

Exports of pumice increased to 27,000 t with a value of \$15.3 million. Importing countries were led by Canada (29%), Japan (18%), Germany (9%), Malaysia (8%), Mexico (7%), Brazil (5%), and the United Kingdom (5%). The remaining 19% of exports went to 32 other countries 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 smaller amounts used for abrasives and stonewashing. Greece remained the largest source of pumice imports, supplying more than 79% (table 3). In 2000, imports increased by about 8% to 385,000 t compared with that of 1999. Imports from Greece increased by 6% to 305,000 t, while imports from Italy nearly doubled to about 60,000 t compared with those of 1999. Imports from Mexico and Turkey were about the same as in 1999. In addition to these countries, 12 other countries exported pumice and pumicite to the United States in 2000.

World Review

The USGS estimated world pumice (and related materials) production at 12 Mt in 2000, about the same as in 1999 (table 4). Most of the data published were provided by official government agencies in each country. Large revisions of data are reported by these agencies usually without supporting explanations. Globally, Italy remained the dominant producer of pumice and pozzolan, with production estimated to be 4.6 million metric tons per year. Other leading countries in the production of pumice and related materials were Chile, Ecuador, Ethiopia, France, Germany, Greece, Spain, Turkey, and the United States. In addition, 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 being usually the preferred building materials. Prefabricated lightweight concrete walls are often produced and shipped to construction locations. Because of its lightweight, strength, and cementitious properties, pumice performs very well in the European style of construction.

Outlook

Consumption of pumice and pumicite in 2001 should stay at about 2000 levels, because construction activity is expected to slow down with the cooling economy. Imports and exports are expected to increase slightly from 2000 levels in 2001.

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.

Other

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

TABLE 1
SALIENT PUMICE AND PUMICITE STATISTICS 1/

(Thousand metric tons and thousand dollars, unless otherwise specified)

	1996	1997	1998	1999	2000
United States, sold and used by producers:					
Pumice and pumicite	612	577	583	643	697
Value 2/	\$14,800	\$16,100	\$12,600	\$17,800	\$16,900
Average value	dollars per metric ton \$24.19	\$27.90	\$21.59	\$27.69	\$24.27
Exports e/	13	12	22	23	27
Imports for consumption	215	265	288	354	385
Apparent consumption 3/	814	830	849	974	1,060
World, production of pumice and related volcanic materials	11,400	11,800	12,000	12,000 r/	12,000 e/

e/ Estimated. r/ Revised.

1/ Data are rounded to no more than three significant digits, except average value.

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	1999			2000		
	Quantity (thousand metric tons)	Value (thousands)	Average unit value	Quantity (thousand metric tons)	Value (thousands)	Average unit value
Abrasives 2/	31	\$5,080	\$163.81	26	\$5,590	\$215.08
Building block, includes decorative	391	5,820	14.88	470	5,080	10.81
Concrete admixture and aggregate	35	836	23.89	46	1,730	37.65
Horticulture and landscaping	100	2,860	28.56	100	2,860	28.57
Laundries	16	1,940	121.00	6	661	110.17
Other 3/	70	1,280	18.23	50	992	19.84
Total	643	17,800	27.69	697	16,900	24.27

1/ Data are rounded to no more than three significant digits, except "Average 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
1999:				
Greece 2/	299	7,030	(3/)	705
Italy	32	665	(3/)	139
Mexico	2	524	(3/)	51
Turkey	19	3,240	--	--
Other 4/	1	155	(3/)	1,100
Total	353	11,600	1	2,000
2000:				
Greece 2/	305	7,910	(3/)	225
Italy	60	651	(3/)	178
Mexico	1	186	(3/)	28
Turkey	19	3,070	--	--
Other 5/	(3/)	91	(3/)	1,380
Total	384	11,900	1	1,810

See footnotes at end of table.

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

-- Zero.

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

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

3/ Less than 1/2 unit.

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

5/ Includes Austria, China, the Czech Republic, Ecuador, Germany, Japan, the Republic of Korea, the Philippines, Poland, South Africa, Taiwan, and the United Kingdom.

Source: U.S. Census Bureau.

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

(Metric tons)

Country 3/	1996	1997	1998	1999	2000 e/
Argentina 4/	81,283	147,235	140,000 e/	120,000 e/	120,000
Austria, trass e/	6,000	5,000	5,000	5,000	5,000
Burkina Faso e/	11,000	10,000	10,000	10,000	10,000
Cameroon, pozzolan e/	80,000	100,000	105,000	80,000	90,000
Cape Verde, pozzolan e/	1,000	1,000	1,000	1,000	1,000
Chile, pozzolan	500,000	491,000	912,000	600,000 e/	650,000
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	231,875	368,269	320,000 e/	330,000 e/	350,000
Ethiopia e/	360,000	325,000	325,000	300,000	300,000
France, pozzolan and lapilli	410,000	477,000	460,000 e/	460,000 e/	450,000
Germany, pumice (marketable) e/	600,000	600,000	600,000	600,000	600,000
Greece:					
Pumice e/	867,450 5/	900,000	900,000	900,000	850,000
Pozzolan	749,790	841,646	850,000 e/	800,000 e/	750,000
Guadeloupe, pumice e/	210,000	210,000	210,000	210,000	210,000
Guatemala, pumice e/	64 5/	6,000	6,350	6,400	6,300
Iceland, pumice and scoria e/	25,000	25,000	25,000	25,000	25,000
Iran e/	200,000	200,000	150,000	150,000	150,000
Italy: e/					
Pumice and pumiceous lapilli	600,000	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	70,000	60,000
Martinique, pumice e/	130,000	130,000	130,000	130,000	130,000
New Zealand	90,571	196,687	190,000 e/	500,000 r/ e/	500,000
Serbia and Montenegro, volcanic tuff e/	75,000	75,000	75,000	70,000	70,000
Slovenia, volcanic tuff e/	40,000	40,000	40,000	40,000	40,000
Spain e/ 6/	600,000	600,000	600,000	600,000	600,000
Turkey	774,000	681,000	579,000	600,000 e/	600,000
United States, sold and used by producers	612,000	577,000	583,000	643,000	697,000 5/
Total	11,400,000	11,800,000	12,000,000	12,000,000 r/	12,000,000

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 April 27, 2001.

3/ Pumice and related materials are also produced in a number of other countries, including Japan, Mexico, and the former Soviet Union; 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/ Reported figure.

6/ Includes Canary Islands.