

PUMICE AND PUMICITE

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In 2003, pumice and pumicite apparent consumption in the United States was 1.21 million metric tons (Mt), a decrease of about 5.8% compared with that of 2002. Domestic production decreased by about 9%, while imports increased by about 2%. Exports of 26,000 tons (t) represented a decrease of about 13% compared with exports during 2002 (table 1).

The main use for pumice continued to be as an aggregate in lightweight building blocks and assorted building products. Other major applications for pumice and pumicite included abrasives, absorbents, concrete aggregate and admixture, filter aids, horticulture (including landscaping), and the stonewashing of denim. Imports were used primarily as a lightweight aggregate, but a small percentage of pumice imports was used in abrasive applications.

Production

Pumice and pumicite sold or used by U.S. producers decreased to 870,000 t valued at \$21.9 million. Arizona was the leading source of pumice and pumicite followed, in descending order, by Oregon, New Mexico, California, Idaho, 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 2003, 15 companies with 17 active operations produced and sold or used all the domestic pumice and pumicite in the United States. Because seven of the companies did not respond to the 2003 survey, sold and used data for these companies were estimated. The eight companies that responded represented about 65% of the 870,000 t.

Domestic producers, listed alphabetically by State, were Oldcastle, Inc. with its subsidiaries Superlite Block, Inc., Flagstaff, AZ and Amcor Precast, Inc., Idaho Falls, ID; Tufflite Inc., Phoenix, AZ; California Lightweight Pumice, Inc., San Clemente, CA; Glass Mountain Pumice Inc., Tulelake, CA; TXI, Inc. through its subsidiary Pacific Custom Materials, Inc, Olancho, CA; U.S. Pumice Co., Chatsworth, CA; Hess Pumice Products, Inc., Malad City, ID; Producers Pumice, Idaho Falls, 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 quantity of pumice and pumicite sold or used by U.S. producers fell in 2003 because of decreased demand from the abrasives, building block, and horticultural and landscaping markets (table 2). The amount of pumice sold for building block decreased by about 10% to 654,000 t from 730,000 t. Pumice used for horticultural and landscaping uses was down by nearly

23% to 112,000 t in 2003 from a total of 145,000 t in 2002. The only major market that had increased sales was for concrete admixture and aggregate, which nearly doubled to 42,000 t consumed in 2003, from 24,000 tons in 2002. A large amount of the pumice sold or used in 2003 (34,000 t) was consumed by several low-volume markets or for unreported uses.

The most important market for pumice remained building blocks, which consumed about 75.2% of the total domestically produced pumice sold or used in the United States. Other important uses, in descending order, were for horticulture and landscaping (12.9%), concrete admixture and aggregate (4.8%), and abrasives (3.2%). The remaining pumice and pumicite (3.9%) was used as absorbent (including pet litter), diluent, engineered fill, filter aids, in geotechnical uses, in laundries (stone-washing), 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 2003. The overall average price was \$25.20 per metric ton in 2003, an increase of \$4.51 from \$20.69 per ton in 2002. The price change was the result of a significant increase in the average price reported for the grades of pumice used in abrasives and smaller increases in the prices for building block, horticulture, and landscaping. Average prices for pumice and pumicite by use, in descending order, were \$312 per ton for abrasive, \$39 per ton for miscellaneous uses, \$27 per ton for concrete admixture and aggregate, \$25 per ton for horticulture and landscaping, and \$12 per ton for building block.

Foreign Trade

Exports of pumice decreased to about 26,000 t with a value of \$11 million. Importing countries, in descending order, were led by Canada (32%), Mexico (19%), Japan (8%), Malaysia (6%), Germany (5%), Suriname (5%), the United Kingdom (5%), Panama (4%), Hong Kong (3%), and Thailand (3%). The remaining 10% of exports went to 22 other countries in Asia, Central America, Europe, the Middle East, Oceania, and South America.

Imports in 2003 increased by about 2% to 367,000 t compared with 2002. By volume, most imports of pumice and pumicite were for lightweight aggregate in construction-related uses with smaller amounts used in a range of abrasives and for the stonewashing of denim. Greece remained the largest source of pumice imports, supplying more than 80% (table 3). Imports from Greece rose by 30% to 296,000 t, while imports from Italy decreased by 54% to 53,000 t compared with those of 2002. Imports from Greece and the majority of imports from Italy were thought to have been shipped to the United States by a single

company. In addition to these countries, 20 other countries exported pumice and pumicite to the United States in 2003.

World Review

The USGS estimated world pozzolan and pumice (and related materials) production to be 14.3 Mt in 2003, about the same as in 2002 (table 4). Most of the data published were provided by official government agencies in each country. Large revisions of data are sometimes reported by these agencies, usually without supporting explanations. 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 pozzolan, pumice, and related materials were Algeria, Cameroon, Chile, France, Germany, Greece, Guatemala, Iran, Spain, Turkey, and the United States. In addition, at least 22 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. In Europe, for example, basic home construction uses significantly less gypsum sheetrock because stone and concrete are the preferred building materials. Prefabricated light weight concrete walls often are produced and shipped to construction locations. Because of their light weight, strength, and cementitious properties, pumice and pozzolan perform very well in European style construction.

Outlook

U.S. consumption of pumice and pumicite in 2004 is expected to remain at about 2003 levels as construction activity, the dominant U.S. use for pumice, is expected to be about the same as in 2003. Imports and exports are also expected to be unchanged in 2004.

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, NY, Dover Publications Inc., 459 p.

Harben, P.W., 2002, *The industrial minerals handybook*: Surrey, United Kingdom, Industrial Minerals Information, 409 p. *Industrial Minerals*, monthly.

TABLE 1
SALIENT PUMICE AND PUMICITE STATISTICS¹

(Thousand metric tons and thousand dollars unless otherwise specified)

	1999	2000	2001	2002	2003
<u>United States, sold and used by producers:</u>					
<u>Sold and used by producers:</u>					
Quantity	998 ^r	1,050	919 ^r	956	870
Value ²	19,800	18,900	19,700	19,800	21,900
Average value dollars per metric ton	19.76	17.96	21.41	20.69	25.20
Exports ³	23	27	27	30	26
Imports for consumption	354	385	379	360	367
Apparent consumption ⁴	1,330	1,410	1,270	1,290	1,210
<u>World, production, pumice and related volcanic materials</u>					
	13,700 ^r	13,700 ^r	14,100 ^r	14,400 ^r	14,300 ^e

^eEstimated. ^rRevised.

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

²Free on board mine and/or mill.

³Source: U.S. Census Bureau.

⁴Production 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 USE¹

Use	2002			2003		
	Quantity (thousand metric tons)	Value (thousands)	Average unit value	Quantity (thousand metric tons)	Value (thousands)	Average unit value
Abrasives ²	29	\$5,880	\$202.59	28	\$8,750	\$312.36
Building block, includes decorative	730	8,170	11.18	654	7,940	12.14
Concrete admixture and aggregate	24	908	37.83	42	1,130	26.88
Horticulture and landscaping	145	3,500	24.17	112	2,770	24.73
Other ³	27 ^r	1,320 ^r	49.03 ^r	34	1,340	39.38
Total or average	956	19,800	20.69	870	21,900	25.20

^rRevised.

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

²Includes cleaning and scouring compounds.

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

TABLE 3
U.S. IMPORTS FOR CONSUMPTION OF PUMICE,
BY CLASS AND COUNTRY¹

(Thousand metric tons and thousand dollars)

Country	Crude or unmanufactured		Wholly or partly manufactured	
	Quantity	Value	Quantity	Value
2002:				
Greece ²	228	8,340	(3)	838
Italy ²	115	7,880	(3)	485
Turkey	16	6,400	(3)	35
Other ⁴	(3)	222 ^r	(3)	1,840
Total	359	22,800	1	3,200
2003:				
Greece ²	296	12,000	(3)	639
Italy ²	53	17,600	(3)	811
Turkey ²	17	3,020	(3)	173
Other ⁵	(3)	184	(3)	1,840
Total	366	32,800	1	3,460

^rRevised.

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

²Quantity of crude or unmanufactured derived from the Journal of Commerce Port Import/Export Reporting Service data.

³Less than 1/2 unit.

⁴Includes Austria, Canada, China, Ecuador, France, Germany, Ghana, Hong Kong, Japan, the Republic of Korea, Mexico, the Netherlands, the Philippines, Poland, South Africa, Sweden, Taiwan, and the United Kingdom.

⁵Includes Austria, Canada, China, Ecuador, France, Germany, Hong Kong, Iceland, India, Indonesia, Japan, the Republic of Korea, Mexico, New Zealand, Poland, South Africa, Taiwan, Thailand, 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	1999	2000	2001	2002	2003 ^c
Algeria, pozzolan	394,000	400,000 ^e	421,238	400,000 ^e	400,000
Argentina, pumice	17,662	16,000 ^e	14,306	12,160	12,000
Austria, trass ^e	5,000	5,000	5,000	5,000	5,000
Burkina Faso ^e	10,000	10,000	10,000	10,000	10,000
Cameroon, pozzolan	631,740 ^r	604,960 ^r	600,000 ^{r,e}	600,000 ^{r,e}	600,000
Cape Verde, pozzolan ^e	1,000	1,000	1,000	1,000	1,000
Chile, pumice and pozzolan	958,000	830,000	785,000	826,000 ^r	830,000
Costa Rica ^e	8,000	8,000	8,000	8,000	8,000
Croatia, volcanic tuff	55,000	38,000	42,000 ^{r,e}	40,000 ^{r,e}	40,000
Dominica, pumice and volcanic ash ^e	100,000	100,000	100,000	100,000	100,000
Ecuador:					
Pumice	275,274	344,850	373,023 ^r	65,495 ^r	66,000
Pozzolan	70,000 ^e	27,687	22,149	22,200 ^e	23,000
Eritrea, pumice	153	41	195 ^r	212 ^r	220
Ethiopia ⁴	135,400	156,466	169,000 ^e	170,000 ^e	170,000
France, pozzolan and lapilli ^e	460,000	450,000	450,000	450,000	450,000
Germany, pumice, marketable ^e	500,000	500,000	500,000	500,000	500,000
Greece: ^e					
Pumice	900,000	850,000	850,000	850,000	850,000
Pozzolan	800,000	750,000	750,000	750,000	750,000
Guadeloupe, pumice ^e	210,000	210,000	210,000	210,000	210,000
Guatemala, pumice	233,425	261,947	262,500 ^r	263,000 ^{r,e}	263,000
Honduras, pozzolan	--	186,948	189,999	190,000 ^e	190,000
Iceland: ^e					
Pumice	25,000	25,000	25,000	25,000	25,000
Scoria	500	500	500	500	500
Iran	150,000 ^e	150,000 ^e	843,912 ^r	1,181,543 ^r	1,200,000
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	150,000 ^r	150,000 ^r	50,000 ^r	50,000 ^r	50,000
Martinique, pumice ^e	130,000	130,000	130,000	130,000	130,000
New Zealand	124,300	68,000	68,000 ^e	203,700 ^r	204,000
Saudi Arabia, pozzolan ^e	140,000	150,000	150,000	150,000	160,000
Serbia and Montenegro, volcanic tuff ^e	50,000 ^r	120,000 ^r	100,000 ^r	100,000 ^r	100,000
Slovenia, volcanic tuff ^e	40,000	40,000	40,000	40,000	40,000
Spain, including Canary Islands ^e	600,000	600,000	600,000	600,000	600,000
Syria, volcanic tuff	510	507	550 ^e	550 ^e	550
Tanzania, pozzolanic materials	2,274	57,014	41,468	43,268 ^r	43,300
Turkey	950,189	787,081	754,052 ^r	820,347 ^r	800,000
Uganda, pozzolanic materials	20,213	35,603	22,782	12,388 ^r	12,400
United States, pumice, sold and used by producers	998,000	1,050,000	919,000	956,000	870,000 ⁵
Grand total	13,700,000 ^r	13,700,000 ^r	14,100,000 ^r	14,400,000 ^r	14,300,000
Of which:					
Pumice	3,290,000	3,390,000	3,280,000 ^r	3,010,000 ^r	2,930,000
Pozzolan	6,060,000 ^r	6,210,000 ^r	6,200,000 ^r	6,170,000 ^r	6,180,000
Trass and scoria	5,500	5,500	5,500	5,500	5,500
Volcanic tuff	296,000 ^r	349,000 ^r	233,000 ^r	231,000 ^r	231,000
Unspecified	4,100,000	3,760,000	4,390,000 ^r	4,970,000 ^r	4,970,000

^eEstimated. ^rRevised. -- Zero.

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

²Table includes data available through April 29, 2004.

³Pumice and related materials also are produced in a number of other countries, including Japan, Mexico, and countries of the Commonwealth of Independent States; available information is inadequate for the formulation of reliable estimates of output levels.

⁴Data are for year ending July 7 of the year stated.

⁵Reported figure.