



2019 Minerals Yearbook

PERLITE [ADVANCE RELEASE]

PERLITE

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In 2019, domestic processed crude perlite sold or used decreased by 6% to 416,000 metric tons (t) from 444,000 t in 2018. The average unit value of processed crude perlite sold or used was \$64 per metric ton, which was a decrease of 11% from \$72 per metric ton in 2018 (table 1). Expanded perlite production increased slightly to 484,000 t from 476,000 t in 2018, and the amount of expanded perlite sold or used also increased slightly to 456,000 t from 452,000 t in 2018 (tables 1, 2). Although the quantities of processed crude perlite and expanded perlite sold or used have fluctuated during the past 10 years, trends over the past 20 years indicate decreases in quantity and increases in average unit values, especially in unit values for expanded perlite (fig. 1). In 2019, exports were estimated to have increased by 19% to 19,000 t valued at \$2.51 million. Imports for consumption of processed crude perlite were estimated to have decreased by 10% to 183,000 t valued at \$21.3 million (table 1). World production from 17 countries increased to 3.64 million metric tons (Mt) in 2019, compared with the revised production of 3.13 Mt in 2018 (tables 1, 4). Percentages throughout this chapter were calculated using unrounded data.

Perlite is an amorphous siliceous volcanic glass with a relatively high water content. When perlite ore is rapidly heated to about 900 degrees Celsius (°C) (expansion temperatures vary depending on the chemical composition and water content of the ore), the contained water converts to steam and the ore expands up to 20 times its original volume. Expanded perlite appears lighter in color (white) than the crude ore (gray to black) and the resulting ultralightweight material has many properties suited for multiple industrial applications.

Production

Domestic production data for perlite were compiled by the U.S. Geological Survey (USGS) through two voluntary annual surveys—one for domestic mine operations (mined and processed crude perlite) and one for expanding plants. Processed crude perlite was produced by six companies operating eight mines (table 3). Of the eight mines, one was inactive and the remaining seven (active) mines responded to the USGS survey. According to data collected by the USGS, the 416,000 t of processed crude perlite sold or used in 2019 was valued at \$26.7 million, a decrease in quantity of 6% and a decrease in value of 16% from that in 2018. The 456,000 t of expanded perlite sold or used by domestic producers was valued at \$169 million, a slight increase in quantity and an 8% increase in value compared with that in 2018. The average unit value of expanded perlite increased by 7% in 2019 (tables 1, 2), consistent with the 20-year (1999–2019) trend of an overall increase in the average unit value of expanded perlite (fig. 1).

Domestic perlite mine production was from five western States, owing to the ore's occurrence within areas of

geologically recent volcanic activity. Crude perlite was mined and processed in Arizona (Imerys, S.A.), Idaho (Hess Perlite), Nevada (U.S. Silica Holdings, Inc. and Wilkin Mining and Trucking, Inc.), New Mexico (Dicalite Management Group, Inc. and Imerys, S.A.), and Oregon (Cornerstone Industrial Minerals Corp.).

Sunrise Resources plc continued to develop its pozzolan-perlite project in Esmeralda County, NV. In 2019, the company announced a delay in the completion of mine permitting; however, the delay was not expected to affect the production planning timeline. Despite the delay, mine permitting was expected to be completed in 2020 (Sunrise Resources plc, 2019).

Processed crude perlite was shipped to locations closer to the point of use and expanded at 53 plants in 28 States (table 3). Of the 53 plants surveyed, 2 were inactive and 31 plant operators responded to the USGS survey, representing 58% of the plants and 37% of the production. Production information for nonresponding companies was estimated using previously reported data, with adjustments based on currently reported production trends. The expanding plants used domestic and (or) imported processed crude perlite.

Consumption

Expanded perlite's low density and porous structure, as well as its durability, fire resistance, inertness, low acoustical and thermal conductivity, and water retention capacity make it useful for a wide range of applications. In 2019, construction-related uses, such as concrete aggregate, formed products, and masonry- and cavity-fill insulation, remained the leading markets for expanded perlite, accounting for 46% of total sales and use. Fillers and horticultural uses for perlite increased to 74,700 t and 71,900 t respectively, each accounting for 16% of the total sales and use. Expanded perlite consumption data for high-temperature insulation and plaster aggregate were withheld to avoid disclosing company proprietary information (table 2).

Prices

The average unit value of processed crude perlite sold or used by U.S. operations in 2019 was \$64 per metric ton, an 11% decrease compared with that in 2018. The average unit value of expanded perlite in 2019 increased by 7% to \$370 per metric ton (table 1).

Expanded perlite unit values ranged from \$241 per metric ton for formed products to \$643 per metric ton for low-temperature insulation (table 2). The wide range is a function of the end use and quality of the perlite required for various products.

Foreign Trade

Trade data for perlite are not collected as a separate category by the U.S. Census Bureau but are included within

the group “vermiculite, perlite, and chlorites, unexpanded” under Harmonized Tariff Schedule of the United States code 2530.10.0000. Domestic exports and imports for consumption of perlite were estimated based on information published by the U.S. Census Bureau and adjusted by the USGS (table 1). In 2019, exports of processed crude perlite by the United States were estimated to be 19,000 t, an increase of 19% from 16,000 t in 2018, with most exports going to Canada (97%). This likely was horticultural-grade perlite to be mixed with peat and other ingredients to produce potting soils. The unit value of exported perlite was estimated to be \$132 per metric ton, a slight increase from \$130 per metric ton in 2018.

Total United States imports for consumption of processed crude perlite were estimated to be 183,000 t, a decrease of 10% from 204,000 t in 2018, with most imports in 2019 coming from Greece (93%). In 2019, the unit value of imported perlite was estimated to be \$116 per metric ton, a slight decrease from \$118 per metric ton a year earlier. After arriving at U.S. ports, perlite was shipped to expanding plants mostly in the eastern United States. Imerys was thought to be a major importer of perlite from Greece because it owned S&B Industrial Minerals S.A. (Greece), a global leader in perlite production.

World Review

In 2019, total world production of crude perlite was 3.64 Mt, a 16% increase from the revised world total of 3.13 Mt in 2018 (tables 1, 4). The leading producing countries were, in descending order of production, China, Greece, Turkey, and the United States. Greece and Turkey remained the leading exporters of perlite. China was the leading producer of perlite, most of which was thought to be consumed internally. Turkey’s Bergama Mining Construction Machinery Perlite Industry & Trade Inc. was adding two new production plants, although the timeframe for completion was unknown (Fastmarkets IM, 2019).

Outlook

With an increased demand for perlite by the construction industry, total consumption of perlite in the United States is expected to increase in 2020. Horticultural use of perlite may increase in part owing to the legalization of cannabis in some States and localities within the United States. Global use of perlite also is expected to increase owing to high demand for building and construction in countries such as China, Japan, and India.

Perlite expanding plants, particularly in the eastern part of the United States, are expected to continue to purchase imported perlite because it is economically competitive with domestically produced perlite that must be shipped from western States for consumption. In 2019, 32% of the perlite consumed in the United States was imported (table 1).

References Cited

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- Sunrise Resources plc, 2019, CS Project-Update: Macclesfield, United Kingdom, Sunrise Resources plc news release, December 4. (Accessed February 1, 2021, at <https://www.sunriseresourcesplc.com/downloads/sunrise-resources-plc-rns-cs-project-update-4-december-2019.pdf>.)

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

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Other

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- Industrial Minerals—Geology and World Deposits. Metal Bulletin plc, 1990.
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- Perlite. Ch. in *Mineral Facts and Problems*, U.S. Bureau of Mines Bulletin 675, 1985.

TABLE 1
SALIENT PERLITE STATISTICS¹

(Thousand metric tons and thousand dollars unless otherwise specified)

	2015	2016	2017	2018	2019
United States:					
Mine production ²	501	521	570	494	526
Processed crude:					
Sold:					
Quantity	380	424	468	434	384
Value	22,700	27,300	34,100	30,900	24,600
Average value ³ dollars per metric ton	60	64	73	71	64
Used:					
Quantity	65	13	11	10	32
Value	4,230	1,140	1,040	943	2,120
Average value ³ dollars per metric ton	65	89 ^r	92 ^r	90 ^r	67
Total, sold or used:					
Quantity	444	437	479	444	416
Value	26,900	28,400	35,100	31,900	26,700
Average value ³ dollars per metric ton	61	65	73	72	64
Imports for consumption: ^{e, 4}					
Quantity	154	199	171	204	183
Value ⁵	18,100	21,500	22,100	24,200	21,300
Average value ³ dollars per metric ton	117	108	129	118	116
Exports: ^{e, 4}					
Quantity	18	16	18	16	19
Value ⁶	2,220 ^r	2,010	2,180	2,050	2,510
Average value ³ dollars per metric ton	123 ^r	127 ^r	124 ^r	130 ^r	132
Expanded:					
Production, quantity	503	537	545	476	484
Sold or used:					
Quantity	503	528	545	452	456
Value	168,000	173,000	182,000	157,000	169,000
Average value ³ dollars per metric ton	333	327	334	346	370
World production	3,270 ^r	4,550 ^r	3,820 ^r	3,130 ^r	3,640

^eEstimated. ^rRevised.

¹Table includes data available through November 19, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.

²Crude ore mined and stockpiled for processing.

³Average value is based on unrounded data and is rounded to the nearest dollar.

⁴Source: U.S. Census Bureau adjusted by U.S. Geological Survey. Data are for "vermiculite, perlite and chlorites, unexpanded," Harmonized Tariff Schedule of the United States (HTS) code 2530.10.0000.

⁵Customs value.

⁶Free alongside ship (f.a.s.) value.

TABLE 2
EXPANDED PERLITE SOLD OR USED BY PRODUCERS IN THE UNITED STATES, BY USE¹

Use	2018			2019		
	Quantity (metric tons)	Value (thousands)	Average value ² (dollars per metric ton)	Quantity (metric tons)	Value (thousands)	Average value ² (dollars per metric ton)
Concrete aggregate	1,590	\$415	\$260	2,950	\$1,060	\$359
Fillers	71,600	32,100	449	74,700	33,200	444
Filter aid	57,000	22,400	393	56,800	30,200	532
Formed products ³	212,000	51,100	241	208,000	50,100	241
High-temperature insulation	W	W	W	W	W	W
Horticultural aggregate	66,700	35,000	525	71,900	38,500	535
Low-temperature insulation	2,060	1,240	601	3,040	1,960	643
Masonry- and cavity-fill insulation	1,110	565	508	690	310	449
Plaster aggregate	W	W	W	W	W	W
Unspecified and other ⁴	39,400	13,700	348	38,000	13,300	348
Total or average	452,000	157,000	346	456,000	169,000	370

W Withheld to avoid disclosing company proprietary data; included with "Unspecified and other."

¹Table includes data available through November 19, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.

²Average value is based on unrounded data and is rounded to the nearest dollar.

³Includes acoustic ceiling panels, pipe insulation, roof insulation board, and unspecified formed products.

⁴Data include miscellaneous uses and data indicated with the symbol "W."

TABLE 3
MAJOR PERLITE MINES AND EXPANDING PLANTS IN THE UNITED STATES IN 2019

Company	State	County or parish
Mines:		
Cornerstone Industrial Minerals Corp.	Oregon	Lake
Dicalite Management Group, Inc.	New Mexico	Socorro
Do.	do.	Taos
Hess Perlite Idaho USA	Idaho	Oneida
Imerys, S.A.	Arizona	Pinal
Do.	New Mexico	Taos
U.S. Silica Holdings, Inc.	Nevada	Churchill
Wilkin Mining & Trucking, Inc.	do.	Lincoln
Expanding plants:¹		
A&B Group, Inc.	Louisiana	Calcasieu
Ambient Minerals, Inc.	Arkansas	Saline
American Garden Perlite, LLC	Florida	Polk
Armstrong World Industries, Inc.	do.	Baker
Do.	Georgia	Bibb
Do.	Pennsylvania	Lancaster
Aurora Innovations	Oregon	Lake
Aztec Perlite Co., Inc.	California	San Diego
Carolina Perlite Co.	North Carolina	Rowan
CertainTeed Corp.	Michigan	Baraga
Dicalite Management Group, Inc.	Indiana	Montgomery
Do.	Maine	Knox
Do.	Nevada	Churchill
Do.	New Jersey	Camden
Do.	Oklahoma	Cleveland
Do.	Tennessee	Davidson
Hess Perlite Idaho USA	Idaho	Oneida
Imerys, S.A.	California	San Diego
Do.	Florida	Gadsden
Do.	Michigan	Kalamazoo
Do.	North Carolina	Franklin
Do.	Texas	Harris
Do.	Wyoming	Sweetwater
IT Minerals, LLC	Louisiana	Orleans
James Hardie Building Products, Inc.	California	San Bernardino
Do.	Florida	Hillsborough
Do.	Illinois	LaSalle
Johns Manville	Georgia	Glynn
Do.	Illinois	Will
Knauf Performance Materials GmbH	Indiana	Martin
Do.	Minnesota	Carlton
Do.	Mississippi	Washington
Do.	Ohio	Ottawa
Do.	Wisconsin	Walworth
McDermott International, Inc.	Illinois	Kendall
Midwest Perlite, Inc.	Wisconsin	Outagamie
Nestle Purina PetCare Co.	Missouri	St. Louis
NorCal Perlite, Inc.	California	Contra Costa
Pennsylvania Perlite Corp.	Pennsylvania	Northampton
Do.	do.	York
Persolite Products, Inc.	Colorado	Fremont
P.V.P. Industries, Inc.	Ohio	Trumbull
Silbrico Corp.	Illinois	Cook
Specialty Vermiculite Corp.	Arizona	Maricopa
Sun Gro Horticulture Canada, Ltd.	Arkansas	Jefferson
Do.	Michigan	Branch
Supreme Perlite Co.	Oregon	Multnomah

See footnotes at end of table.

TABLE 3—Continued
 MAJOR PERLITE MINES AND EXPANDING PLANTS IN THE UNITED STATES IN 2019

Company	State	County or parish
Expanding plants: ¹ —Continued		
Therm-O-Rock East, Inc.	Pennsylvania	Washington
Therm-O-Rock West, Inc.	Arizona	Maricopa
US Silica Holdings, Inc.	Nebraska	Washington
Do.	Nevada	Pershing
Whittemore Co., Inc.	Massachusetts	Essex
Wilkin Mining & Trucking, Inc.	Nevada	Lincoln
Do., do. Ditto.		

¹List may not include all locations where expanded perlite is thought to be used.

TABLE 4
 PERLITE: WORLD PRODUCTION, BY COUNTRY OR LOCALITY¹

(Metric tons)

Country or locality ²	2015	2016	2017	2018	2019
Argentina	23,282	17,905	19,924	18,794 ^r	19,000 ^e
Armenia	57,657	44,820	78 ^r	8 ^r	--
Australia ^c	1,000	800	500	500	500
Bulgaria ^c	5,000	5,000	5,000	5,300 ^r	5,300
China	723,800	1,930,000	1,219,000	935,600	1,472,100
Greece, crude	890,670	921,410	700,000	790,412 ^r	719,000
Hungary ^{3,4}	64,700 ^r	75,400 ^r	71,400 ^r	71,000 ^r	71,000 ^e
Iran	63,030	17,083	20,000 ^e	72,000 ^{r,e}	72,000 ^e
Mexico ³	13,000 ^r	28,431 ^r	15,899 ^r	26,400 ^r	20,000 ^e
New Zealand ^c	25,000	25,000	17,000	17,000 ^r	17,000
Philippines	18,575	21,645	11,545 ^r	9,696 ^r	6,608
Slovakia	25,000	19,000	47,510 ^r	36,000 ^r	40,000 ^e
South Africa ^c	1,000	1,000	1,000	1,000	1,000
Thailand	17,200	15,690	5,800	5,600 ^r	15,000
Turkey ³	843,242	909,254 ^r	1,116,629 ^r	649,163 ^r	650,000 ^e
United States ⁵	501,000	521,000	570,000	494,000	526,000
Zimbabwe ^c	1,000	1,000	1,000	1,000	1,000
Total	3,270,000 ^r	4,550,000 ^r	3,820,000 ^r	3,130,000 ^r	3,640,000

^eEstimated. ^rRevised. -- Zero.

¹Table includes data available through November 2, 2020. All data are reported unless otherwise noted. Totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²In addition to the countries and (or) localities listed, Algeria, Cyprus, Georgia, Morocco, and Russia may have produced perlite, but available information was inadequate to make reliable estimates of output.

³Crude ore.

⁴Hungary reports perlite production, in cubic meters, as follows: 2015—55,824; 2016—65,056; 2017—61,605; 2018—61,260; and 2019—61,260 (estimated). One cubic meter of perlite equals 1.159 metric tons.

⁵Crude ore mined and stockpiled for processing.

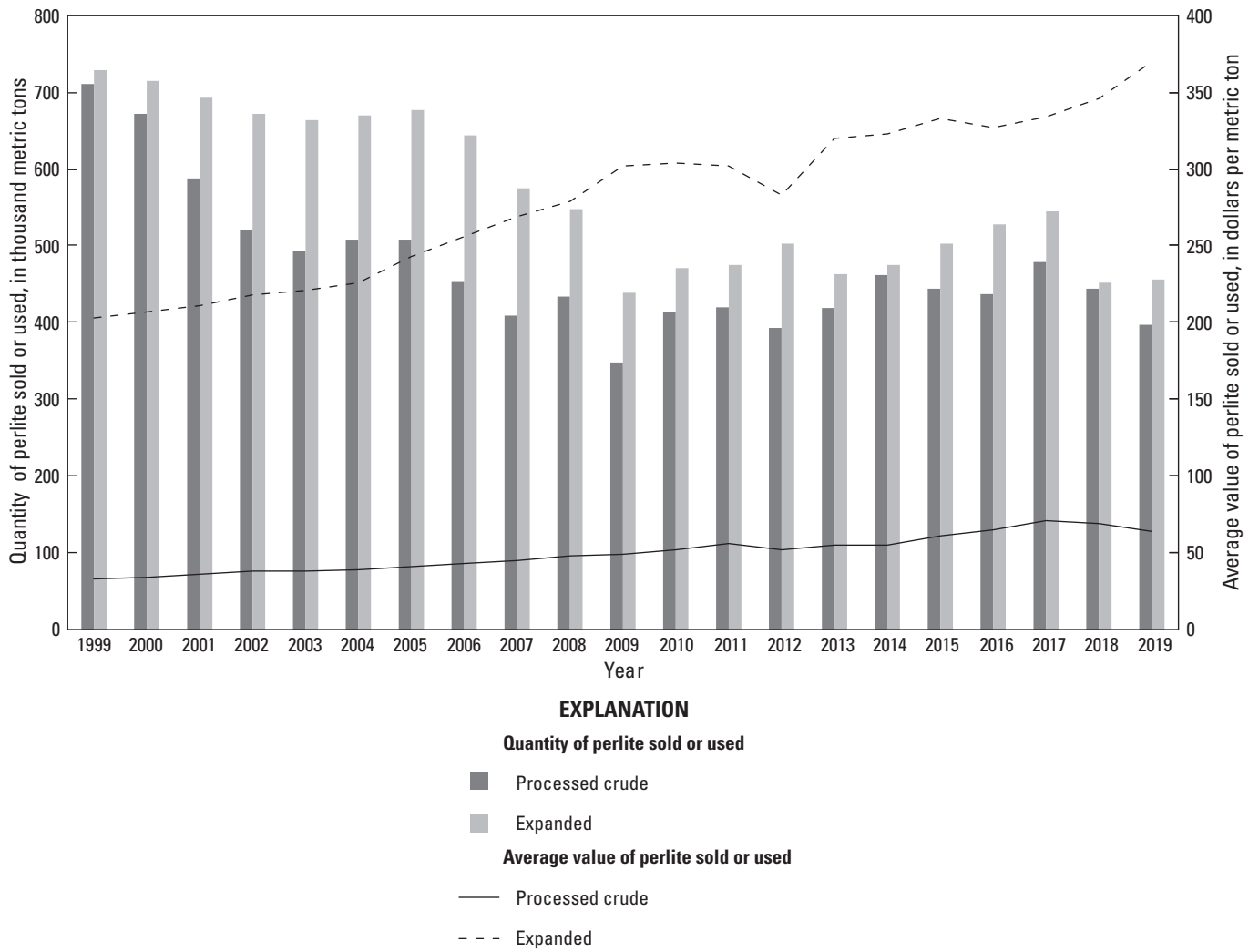


Figure 1. Quantity and average unit value of processed crude (sold or used) perlite and expanded perlite (sold or used) in the United States from 1999 through 2019.