



2016 Minerals Yearbook

PERLITE [ADVANCE RELEASE]

PERLITE

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Domestic survey data and tables were prepared by Darlene V. Thompson, statistical assistant.

In 2016, the amount of domestic processed crude perlite sold and used decreased slightly to 437,000 metric tons (t) in 2016 from 444,000 t in 2015 (table 1). The average unit value of processed crude perlite sold and used increased by 7% compared with that of 2015. In 2016, expanded perlite production was 509,000 t. The 20-year average tonnages for crude perlite mined and expanded perlite production were 586,000 t and 597,000 t, respectively. Although sales and use of expanded perlite were relatively stable between 2009 and 2016, sales and use remained about 26% lower than in 2005 (fig. 1).

Exports of processed crude perlite were estimated to have been about 21,000 t in 2016. During 2016, imports of processed crude perlite were an estimated 188,000 t. World production of processed crude perlite, from 17 countries, was 4.4 million metric tons (Mt) in 2016, a slight increase from the revised figure in 2015 (table 4). Percentages in this chapter were calculated using unrounded data.

Production

Domestic production data for perlite were compiled by the U.S. Geological Survey (USGS) from two voluntary annual surveys—one for domestic mine operations (mined and processed crude perlite) and one for expanding plants. Of the nine mines surveyed, two were inactive and seven reported production, a 100% response rate. Processed crude perlite (table 3) was produced by six companies with eight mines. According to data collected by the USGS, the 437,000 t of U.S.-processed crude perlite sold and used in 2016 was valued at \$28.4 million, a slight decrease in quantity but a 6% increase in value compared with 2015 values. The 499,000 t of expanded perlite sold or used by domestic producers was valued at \$176 million, a slight decrease in quantity and a 5% increase in value compared with the revised values of 2015 (table 1).

The processed crude perlite reported in table 1 was mined in Arizona, Idaho, Nevada, New Mexico, and Oregon. The mines in Arizona, New Mexico, and Oregon accounted for most of the tonnage mined. Ore producers were, in alphabetical order by State, Imerys S.A. (France) in Arizona; Hess Perlite in Idaho; EP Minerals, LLC and Wilkin Mining & Trucking, Inc. in Nevada; Dicaperl Minerals Corp. and Imerys S.A. in New Mexico; and Cornerstone Industrial Minerals Corp. in Oregon (table 3). In late 2016, Sunrise Resources plc (United Kingdom) announced plans to develop a pozzolan project in Nevada at two mineral deposits with positive initial testing for perlite. Further testing was scheduled for 2017 (Sunrise Resources plc, 2016).

Perlite was expanded at 59 plants in 27 States. Four plants were not surveyed. Of the 55 surveyed plants, 36 plant operators responded to the USGS survey, representing about 48% of the total expanded perlite sold or used. The expanding plants used domestic and imported processed crude perlite. American Garden Perlite, LLC (Lake Wales, FL) was founded in 2015 and began

expansion operations at a new expansion plant in Lake Wales, FL, during late 2016. American Garden Perlite produced horticultural-grade perlite with ore received from Cornerstone Industrial Minerals' mine in Lakeview, OR (American Garden Perlite, LLC, undated). Production information for nonresponding companies was estimated using previously reported data, with adjustments based on currently reported production trends.

Consumption

In 2016, domestic consumption of expanded perlite was about 499,000 t. Expanded perlite consumed for construction-related uses, which accounted for about 53% of the market for expanded material, was about 265,000 t, a slight decrease compared with that of 2015. Construction uses of expanded perlite consisted of concrete aggregate, formed products, masonry- and cavity-fill insulation, and plaster aggregate. Expanded perlite consumption increased for concrete aggregate, fillers, horticultural aggregate, low-temperature insulation, masonry- and cavity-fill insulation, plaster aggregate, and unspecified and other uses (table 2, fig. 2). According to data from the U.S. Census Bureau (undated), housing starts increased by 6% in 2016 from those in 2015. It is likely that the increase in construction fueled the increase in construction-related perlite consumption.

The perlite industry has seen a 39% increase in horticultural use since 2012 and a 5% increase in 2016 compared with horticultural aggregate production in 2015, likely owing to an increase in the use of perlite for hydroponics systems and soil mixtures. Some marijuana producers used perlite exclusively for growing plants. The increased use of perlite in these now legal operations may have contributed to the increase in perlite consumption after the economic downturn in 2006 (fig. 2). Since 2012, 21 States and Washington, DC, began or expanded marijuana programs. In total, 29 States had programs that legalized marijuana in some form (Moore, 2013). This was nearly triple the number of programs in place before 2012, with recreational legislation being passed in States that already had medical programs. As a result of the increased legalization of marijuana, peripheral industries have seen increased production and sales.

Imerys was awarded the 2016 Industrial Minerals Association-Europe Recognition Award under the category "Innovation." Imerys was recognized for the development of ImerCare P-Scrub, an environmentally friendly scrub alternative to plastic microbeads used in cosmetic applications (Premium Beauty News, 2016). This use could be an expanding market for perlite in the future. On December 18, 2015, the U.S. Congress amended the Federal Food, Drug, and Cosmetic Act by passing the Microbead-Free Waters Act of 2015. The law restricts the manufacture of rinse-off cosmetics that contain plastic microbeads and prohibits the introduction or delivery of such products into interstate commerce. These new regulations will begin to take effect between July 2017 and July 2019.

Prices

The average annual value of processed crude perlite sold to expanders in 2016 was \$64 per metric ton, 7% more than that in 2015. Perlite consumed by expanding plants operated by mining companies was valued at \$88 per metric ton, a 35% increase compared with that of 2015. The average annual value of expanded perlite in 2016 was \$354 per metric ton, 6% more than the revised figure of 2015 (table 1, fig. 1).

Expanded perlite unit values ranged from \$847 per metric ton for low-temperature insulation to \$236 per metric ton for formed products (table 2). This broad range is a function of the end use and quality of the perlite needed for varying products.

Foreign Trade

Because the U.S. Census Bureau reported trade in perlite and vermiculite in a combined category, Harmonized Tariff Schedule of the United States code 2530.10.0000 (vermiculite, perlite, and chlorites, unexpanded), foreign trade data were estimated on the basis of shipping information provided by the U.S. Census Bureau.

United States exports of processed crude and expanded perlite in 2016 were estimated to be 21,000 t, about 75% (15,000 t) of which went to Canada. Most of the perlite exported to Canada was horticultural-grade perlite and was commonly mixed with peat and other ingredients to produce potting soils. Mexico and the United Kingdom received 14% and 3%, respectively, of total United States perlite exports. Perlite was exported to approximately 41 other countries in 2016, but the average quantity exported to most of those countries was less than 300 t.

United States imports of processed crude perlite, almost exclusively from Greece, were estimated to have increased by 31% to 188,000 t compared with those of 2015. The average customs unit value of perlite imported from Greece in 2016 was estimated to be \$96 per metric ton, a decrease of about 8% from that of 2015. Most imported perlite arrived through the ports of Brunswick, GA; Mobile, AL; Philadelphia, PA; and Wilmington, DE. After arriving at one of these ports, the perlite was shipped to expanding plants in States east of the Mississippi River. Imerys, which finalized its purchase of S&B Industrial Minerals S.A. (Greece) in early 2015, was thought to be the primary supplier of processed crude perlite imports to the United States.

World Review

Total world production of crude perlite in 2016 was 4.4 Mt, a slight increase from the revised value of 2015 (table 4). The world's leading producers of crude perlite in 2016 were, in descending order of production, China, Turkey, Greece, and the United States, accounting for 41%, 22%, 20%, and 12%, respectively, of world production. Greece and Turkey remained the leading exporters of perlite. Although China was the leading producer, most crude perlite was believed to be consumed internally.

Outlook

Total consumption of processed and expanded perlite in the United States in 2017 is expected to increase slightly from that in 2016. In 2016, EP Minerals announced price increases in its product lines, including perlite products (EP Minerals, LLC, 2016). As residential and commercial construction increases, perlite consumption is likely to increase. In 2016, single-family housing starts increased by 9% compared with 2015, and total starts increased by 6% (U.S. Census Bureau, undated). With housing inventories declining, it is likely that new construction will continue to increase (Lee, 2018). Perlite imports in 2017 are expected to increase from the levels in 2016 to meet increased demand.

Perlite expanding plants, mostly in the eastern United States, continued to purchase imported perlite, and imports offer strong competition to domestic perlite producers. Imported perlite has accounted for about one-quarter to one-third of the consumption of processed crude perlite in the United States during recent years, and that trend is expected to continue contingent upon the availability and cost of ocean freight.

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GENERAL SOURCES OF INFORMATION

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TABLE 1
 SALIENT PERLITE STATISTICS¹
 (Thousand metric tons and thousand dollars unless otherwise specified)

	2012	2013	2014	2015	2016
United States:					
Mine production ²	471	471	462	489 ^r	513
Processed crude:					
Sold:					
Quantity	319	340	388	380 ^r	424
Value	17,000	19,300	21,500	22,700 ^r	27,300
Average value	53	57	55	60	64
dollars per metric ton					
Used:					
Quantity	74	79	75	65	13
Value	3,340	3,800	3,960	4,230	1,140
Average value	45	48	53	65	88
dollars per metric ton					
Total, sold and used:					
Quantity	393	419	462	444 ^r	437
Value	20,400	23,100	25,500	26,900 ^r	28,400
Average value	52	55	55	61	65
dollars per metric ton					
Imports for consumption: ³					
Quantity	141	156	144	143	188
Value	15,100	16,700	15,700	14,800	18,000
Average value	107	107	109	104	96
dollars per metric ton					
Exports: ³					
Quantity	32	52	36	30	21
Value	5,500	8,170	6,530	4,260	3,290
Average value	171	156	179	140	154
dollars per metric ton					
Expanded:					
Production, quantity	462	467 ^r	481	503 ^r	509
Sold or used:					
Quantity	503	463	475	503 ^r	499
Value	142,000	148,000	156,000 ^r	168,000 ^r	176,000
Average value	283	320	323	333 ^r	354
dollars per metric ton					
World production	4,540 ^r	4,430 ^r	4,110 ^r	4,310 ^r	4,400

^rRevised.

¹Table includes data available through July 18, 2018. Data are rounded to no more than three significant digits; may not add to totals shown.

²Crude ore mined and stockpiled for processing.

³Source: U.S. Census Bureau; data adjusted by the U.S. Geological Survey. Data are for Harmonized Tariff Schedule of the United States code 2530.10.000 (vermiculite, perlite and chlorites, unexpanded).

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

Use	2015			2016		
	Quantity (metric tons)	Value (thousands)	Average value ^{r, 2} (dollars per metric ton)	Quantity (metric tons)	Value (thousands)	Average value ² (dollars per metric ton)
Concrete aggregate	1,310 ^r	\$365 ^r	254	1,780	\$817	458
Fillers	73,600 ^r	34,700 ^r	428	73,600	32,700	444
Filter aid	46,000	19,700	389	42,900	17,460	407
Formed products ^{3, 4}	246,000 ^r	49,800 ^r	202	241,000	56,100	236
High-temperature insulation	8,270	2,200	241	W	W	W
Horticultural aggregate	85,400 ^r	41,200 ^r	438	89,400	45,700	510
Low-temperature insulation	1,870	1,280	622	2,750	2,330	847
Masonry- and cavity-fill insulation	1,680 ^r	829 ^r	449	2,380	1,310	552
Plaster aggregate	18,800 ^r	8,860 ^r	428	20,200	9,710	480
Unspecified and other ^{5, 6}	19,700	8,550	433	25,300	10,000	395
Total or average	503,000 ^r	168,000 ^r	333	499,000	176,000	354

^rRevised. W Withheld to avoid disclosing company proprietary data.

¹Table includes data available through July 18, 2018. 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.

⁴Weighted averages.

⁵Estimated and reported data which includes absorbents, laundries, paint texturizers, and other miscellaneous uses unspecified.

⁶Unspecified and other uses were combined to avoid disclosing company proprietary data.

TABLE 3
ACTIVE PERLITE MINES AND EXPANDING PLANTS IN THE UNITED STATES IN 2016

Company	State	County or Parish	Mine	Expanding plant
A&B Group, Inc.	Louisiana	Calcasieu		X
Ambient Minerals, Inc.	Arkansas	Saline		X
American Garden Perlite, LLC	Florida	Polk		X
Armstrong World Industries, Inc.	Florida	Baker		X
Do.	Georgia	Bibb		X
Do.	Oregon	Tillamook		X
Do.	Pennsylvania	Lancaster		X
Aurora Innovations	Oregon	Lake		X
Aztec Perlite Co.	California	San Diego		X
Carolina Perlite Co.	North Carolina	Rowan		X
Chicago Bridge & Iron Co. N.V.	Illinois	Kendall		X
Cornerstone Industrial Minerals Corp.	Oregon	Lake	X	
Dicaperl Minerals Corp.	Indiana	Montgomery		X
Do.	Maine	Knox		X
Do.	New Jersey	Camden		X
Do.	New Mexico	Socorro	X	
Do.	do.	Taos	X	
Do.	Nevada	Churchill		X
Do.	Oklahoma	Oklahoma		X
Do.	Tennessee	Davidson		X
EP Minerals, LLC	Nevada	Churchill	X	
Do.	do.	Pershing		X
Georgia-Pacific LLC	Missouri	Crawford		X
Do.	Oregon	Clackamas		X
Hess Perlite	Idaho	Oneida	X	X
Imerys S.A.	Arizona	Pinal	X	
Do.	California	San Diego		X
Do.	Florida	Gadsden		X
Do.	Michigan	Kalamazoo		X
Do.	New Mexico	Taos	X	
Do.	North Carolina	Burke		X
Do.	do.	Franklin		X
Do.	Texas	Harris		X
Do.	Wyoming	Sweetwater		X
IT Minerals LLC	Louisiana	Orleans		X
Johns Manville Corp.	Georgia	Glynn		X
Do.	Illinois	Will		X
Midwest Perlite Inc.	Wisconsin	Outagamie		X
Nestle Purina PetCare Co.	Missouri	St. Louis		X
NorCal Perlite Inc.	California	Contra Costa		X
Pennsylvania Perlite Corp.	Pennsylvania	Lehigh		X
Do.	do.	York		X
Persolite Products Inc.	Colorado	Fremont		X
PVP Industries, Inc.	Ohio	Trumbull		X
Saint-Gobain Corp.	Michigan	Baraga		X
Do.	Mississippi	Lauderdale		X
Schundler Co.	New Jersey	Middlesex		X
Silbrico Corp.	Illinois	Cook		X
Specialty Vermiculite Corp.	Arizona	Maricopa		X
Do.	Florida	Broward		X
Sun Gro Horticulture Canada Ltd.	Arkansas	Jefferson		X
Do.	Michigan	Branch		X
Do.	North Carolina	Pasquotank		X
Do.	Texas	Kaufman		X
Supreme Perlite Co.	Oregon	Multnomah		X
Therm-O-Rock East, Inc.	Pennsylvania	Washington		X
Therm-O-Rock West, Inc.	Arizona	Maricopa		X

See footnotes at end of table.

TABLE 3—Continued
ACTIVE PERLITE MINES AND EXPANDING PLANTS IN THE UNITED STATES IN 2016

Company	State	County or Parish	Mine	Expanding plant
USG Corp.	Indiana	Martin		X
Do.	Minnesota	Carlton		X
Do.	Mississippi	Washington		X
Do.	Nevada	Washoe		X
Do.	Ohio	Ottawa		X
Do.	Texas	Nolan		X
Whittemore Co., Inc.	Massachusetts	Essex		X
Wilkin Mining & Trucking, Inc.	Nevada	Lincoln	X	X
Do., do. Ditto.				

TABLE 4
PERLITE: WORLD PRODUCTION, BY COUNTRY OR LOCALITY¹

(Metric tons)

Country or locality ²	2012	2013	2014	2015	2016 ^p
Argentina	24,663	19,793	20,000 ^e	20,000	20,000 ^e
Armenia	181	53	14	20	20 ^e
Australia	NA	NA	5,000 ^r	7,000 ^r	8,000 ^e
Bulgaria	4,000	5,000 ^e	5,000 ^e	5,000 ^e	5,000 ^e
China	2,100,000 ^e	1,800,000 ^e	1,800,000	1,800,000	1,800,000 ^e
Greece ³	876,000 ^e	890,000 ^e	985,000 ^r	860,000 ^r	890,000 ^e
Hungary ^{3,4}	40,130	35,960	37,960	40,000 ^e	42,220
Iran	30,000	55,100	55,000 ^e	60,000	60,000 ^e
Mexico ³	29,950	27,200	26,000	26,000 ^e	28,000 ^e
New Zealand	3,598 ^r	NA	22,000 ^e	25,000	25,000 ^e
Philippines	9,221	14,249	17,194	19,000	19,000 ^e
Slovakia	24,000	16,000	17,000	18,000	18,000 ^e
South Africa	NA	1,078	1,100	1,000	1,000 ^e
Thailand	41,400	14,293	54,100	17,200	18,000 ^e
Turkey ³	887,600	1,075,949	897,125	925,000	950,000 ^e
United States ⁵	471,000	471,000	462,000	489,000 ^r	513,000
Zimbabwe	1,000	1,000	1,000	1,000	1,000 ^e
Total	4,540,000 ^r	4,430,000 ^r	4,410,000 ^r	4,310,000 ^r	4,400,000

^eEstimated. ^pPreliminary. ^rRevised. NA Not available.

¹Table includes data available through May 18, 2017. 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. Unless otherwise stated, figures represent processed ore output.

²In addition to the countries and (or) localities listed, Algeria, Cyprus, Georgia, Morocco, and Russia were thought to have produced perlite, but output was not reported, and available information was inadequate to make reliable estimates of output levels.

³Crude ore.

⁴Hungary reports perlite production, in cubic meters, as follows: 2012—34,624; 2013—31,024; 2014—32,750; 2015—34,500 (estimated); and 2016—36,427. One cubic meter of perlite equals 1.159 metric tons.

⁵Processed ore of perlite sold and used by producers.

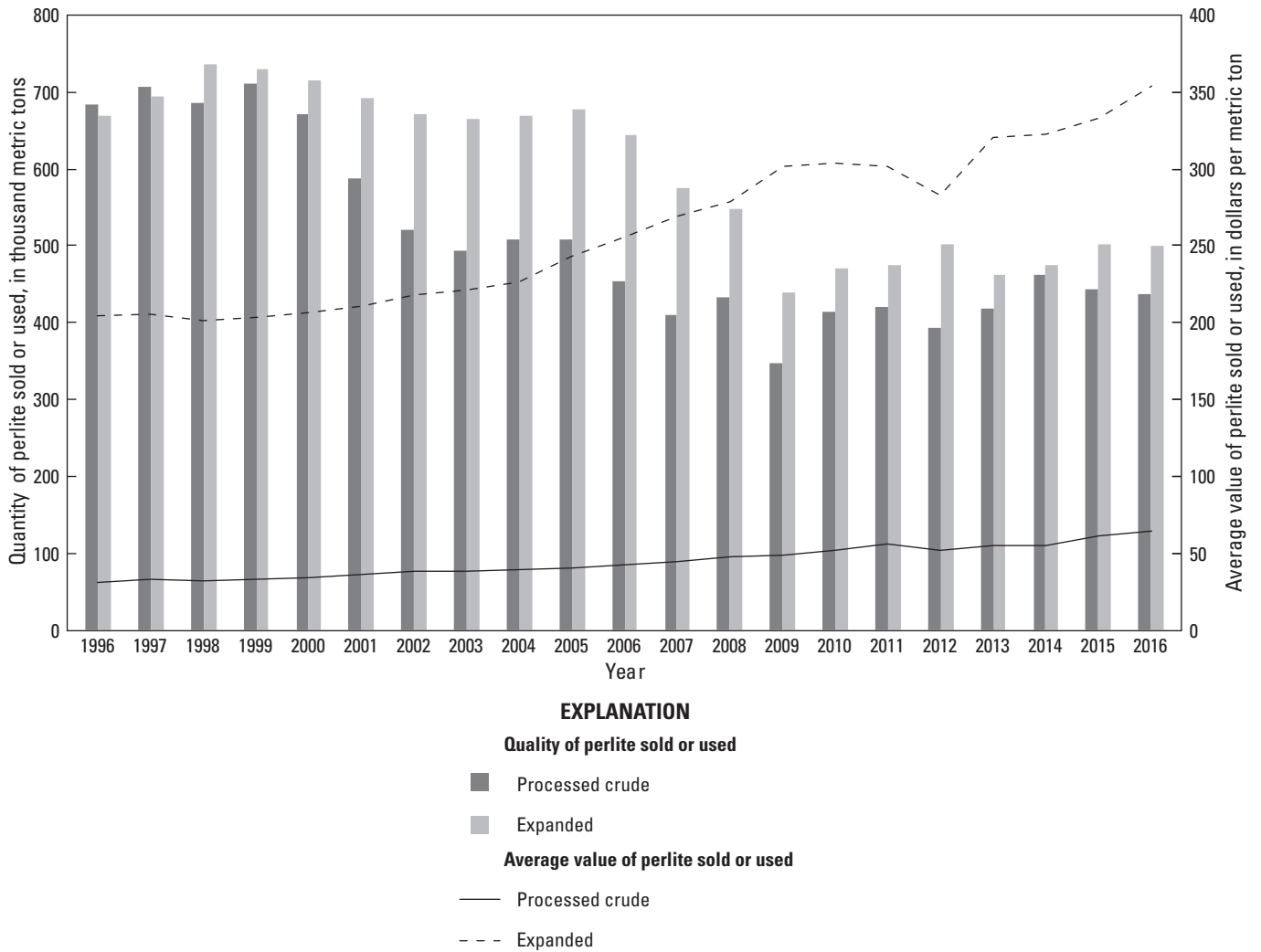


Figure 1. Quantity and average value of processed crude perlite sold or used and expanded perlite sold or used in the United States from 1996 through 2016.

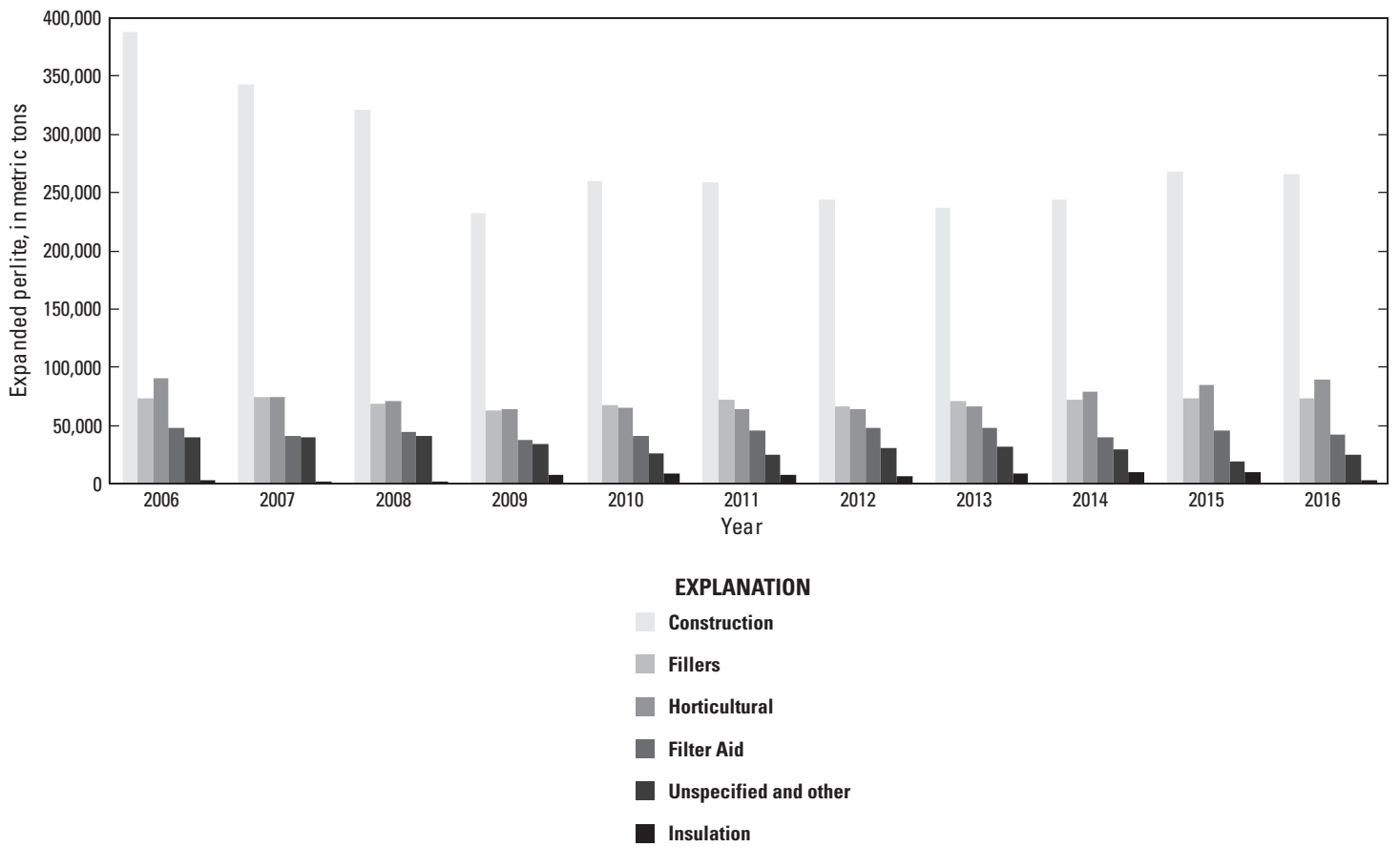


Figure 2. Estimated use of expanded perlite from 2006 through 2016.