



2016 Minerals Yearbook

**SAND AND GRAVEL, CONSTRUCTION [ADVANCE
RELEASE]**

SAND AND GRAVEL, CONSTRUCTION

By Jason Christopher Willett

Domestic survey data and tables were prepared by Michelle B. Blackwell, Joanna Goclawska, Kristi J. Simmons, and Darlene V. Thompson, statistical assistants, and the author.

A total of 888 million metric tons (Mt) of construction sand and gravel was produced for consumption in the United States in 2016, a slight increase from the total production of 2015 but 34% less than the record high of 1.34 billion metric tons in 2006 (fig. 1). In 2016, the total value of construction sand and gravel produced in the United States was \$7.5 billion, an increase of 2% compared with that of 2015 (table 1). The average unit value for construction sand and gravel increased slightly compared with the average unit value for 2015. Employment increased slightly in 2016 from that of 2015 at operations identified as producing construction sand and gravel by the Mine Safety and Health Administration (MSHA).

Foreign trade in construction sand and gravel remained relatively small compared to U.S. consumption. In 2016, U.S. exports decreased by 54% to 32,400 metric tons (t) compared with 70,300 t in 2015, and the value decreased to \$13.9 million (tables 1, 8). U.S. imports of construction sand and gravel decreased by 10% to 3.5 Mt, and the value decreased by 26% to \$45.5 million compared with 2015 totals (tables 1, 9). Domestic apparent consumption of construction sand and gravel, which is defined as production for consumption (sold or used) plus imports minus exports, increased slightly compared with that of 2015.

Construction sand and gravel is a traditional basic building material and is one of the earliest materials used by humans for dwellings and later for outdoor areas such as paths, roadways, and other constructs. Despite the relatively low, but increasing, unit value of its basic products, the construction sand and gravel industry is a major contributor to and an indicator of the economic well-being of the Nation. Sand and gravel is very accessible and is widely used throughout the United States and the world. As sand and gravel has become less available owing to resource constraints or economic conditions in some locales, builders began to crush bedrock to produce a manufactured sand and gravel often referred to as crushed stone. Construction aggregates are defined as the combination of construction sand and gravel and crushed stone. Both mineral commodities are usually included in any review of the national or State aggregates industry. Information on the crushed stone industry can be found in a separate chapter on crushed stone in the U.S. Geological Survey Minerals Yearbook, volume I, Metals and Minerals.

Production

Domestic production data for construction sand and gravel were derived by the U.S. Geological Survey (USGS) from voluntary surveys of U.S. producers. In 2016, a total of 3,795 companies produced or sold construction sand and gravel from 6,174 operations with 9,338 pits, 433 dredging operations, and 342 sales and (or) distribution sites (table 7). Of the 6,174 active operations, 2,389 operations reported their production or sales to the USGS, and their total production

was 401 Mt (45% of the U.S. total). Of the 2,389 reporting operations, 804 operations did not report a breakdown by end use. Their total production was 178 Mt (20% of the U.S. total) and is included in table 5 under “Unspecified, reported” uses.

Production from the nonresponding quarries was estimated by using employment data provided by MSHA. The estimated output of the 3,785 nonrespondent operations was 486 Mt (55% of the U.S. total) and is included in table 5 under “Unspecified, estimated” uses.

A total of 342 operations reported that they were active sales yards, of which 168 were classified as sales or distribution yards only; a sales yard is defined as a fixed location that receives sand and gravel from a distant source and sells it at the yard. Additionally, 174 operations reported that they were either an open pit or a dredging operation combined with a sales yard that supplemented local production with material from a remote location. In 2016, the total quantity of construction sand and gravel sold from sales yards was 47.4 Mt. Information regarding the number of active operations, active pits, types of processing plants, and number of sales yards by State is provided in table 7.

Construction sand and gravel was produced in every State. The 10 leading producing States were, in descending order of tonnage, California, Texas, Minnesota, Michigan, Arizona, Washington, Colorado, Ohio, Utah, and New York. The combined production of the 10 leading States increased by 2% compared with that of 2015 and accounted for 53% of the national total. The combined production of California and Texas accounted for 20% of the national total (table 3).

A review of production by size of operation at the national level in 2016 indicated that 192 Mt of construction sand and gravel (22% of the total construction sand and gravel) was produced by 133 operations reporting production of more than 1 million metric tons per year; 205 Mt was produced by 329 operations reporting production between 500,000 and 999,999 metric tons per year (t/yr), and 381 Mt was produced by 1,867 operations reporting production between 100,000 and 499,999 t/yr. Operations that produced less than 500,000 t/yr accounted for 55% of total construction sand and gravel produced in the United States in 2016 (table 4A). By geographic region in 2016, the Midwest had 2,313 active operations, followed by the West with 1,856, the Northeast with 1,079, and the South with 926 (table 4B).

The leading U.S. producing companies in 2016 were, in descending order of tonnage, Oldcastle Materials, Inc.; Vulcan Materials Co.; Lehigh Hanson, Inc.; LafargeHolcim Ltd.; CEMEX S.A.B. de C.V.; MDU Resources Group, Inc.; Martin Marietta Aggregates; Granite Construction, Inc.; Mitsubishi Cement Corp.; and Summit Materials, LLC (table 10). In 2016, the combined production of the top 10 companies decreased slightly to 208 Mt (23% of the national total). The combined production of the top 100 companies was 426 Mt (48% of the national total).

Consumption

Construction sand and gravel production reported to the USGS is material that was either sold to other companies or consumers or was used by producers. Stockpiled production is not included in the reported quantities. The “sold or used” tonnage, therefore, represents the amount of production including some imports released for domestic consumption or export in a given year. Because some of the construction sand and gravel producers did not report a breakdown by end use, their total production was included in the “Unspecified, reported” use category. The estimated production of nonrespondents was included in the “Unspecified, estimated” use category (table 5).

In 2016, U.S. apparent consumption of construction sand and gravel, which is defined as U.S. production for consumption (sold or used) plus imports minus exports, was 892 Mt, a slight increase compared with the apparent consumption in 2015. Of the 888 Mt of construction sand and gravel produced for consumption, 75% was reported or estimated without a breakdown by end use (table 5). Of the remaining construction sand and gravel produced for consumption, 44% was used as concrete aggregate; 24% was used for road base and coverings; 12%, for asphaltic concrete aggregate and other bituminous mixtures; 12%, for construction fill; 4%, for other miscellaneous uses; and the remaining 4% was used for concrete products, filtration, golf course maintenance, plaster and gunite sands, railroad ballast, road stabilization, roofing granules, and snow and ice control.

The reported percentage consumption patterns for construction sand and gravel exclude the unspecified uses. In any marketing or use-pattern analysis based on quantity distribution, the total quantities included in “Unspecified uses” may be distributed among the reported use categories by applying the above percentages.

The value of the total construction put in place in 2016 increased by 7% compared with that of 2015, to \$1.19 trillion. The value of total private construction increased by 9% to \$899 billion. The value of total public construction was essentially unchanged at \$292 billion (U.S. Census Bureau, 2018).

Transportation

No means of transportation was reported by the producers for 697 Mt of the 888 Mt of construction sand and gravel produced for consumption in 2016. Of the remaining 191 Mt of construction sand and gravel, 81% was reported as being transported by truck from the pit or the processing plant to the first point of sale or use, 5% by waterway, and 2% by rail. About 21.6 Mt of the specified production was reported as not having been transported and, therefore, is assumed to have been used onsite.

Prices

Prices in this chapter are the annual average free-on-board plant prices, usually at the first point of sale or captive use, as reported by construction-sand-and-gravel-producing companies. This value does not include transportation from the plant or yard

to the consumer. It does, however, include all costs of mining, processing, in-plant transportation, overhead, and profit. In 2016, 975 operations responding to the annual survey reported the dollar value of their production for the current and previous year. The average unit value for operations reporting production and value was \$9.01 per metric ton in 2016, which was an increase of 4% compared with the reported average unit value of \$8.70 per metric ton in 2015. Leading U.S. producers increased prices by 4% to 11% in 2016 compared with prices in 2015. For those operations that reported production only, the unit values for specific end uses were estimated based on reported values for those specific uses in the same State. The reported State average unit value was used in the estimation for operations reporting total production only and for operations that did not respond to the survey.

Foreign Trade

The widespread distribution of domestic sand and gravel deposits and the high cost of transportation limit foreign trade to mostly local transactions across international boundaries. U.S. imports and exports were equivalent to less than 1% of domestic consumption.

Exports.—Exports of sand and gravel decreased by 54% to 32,400 t compared with 70,300 t in 2015, and the value decreased by 36% to \$13.9 million (table 1). Canada, which was the leading destination, received 9% of the total sand exports and 53% of total gravel exports. The Bahamas, the second-ranked destination, received 13% of the total sand exports and 11% of total gravel exports (table 8). The average unit value of sand and gravel exports in 2016 was \$429 per ton, an increase of 39% from \$308 per ton in 2015. All of these values may have been relatively high because some higher grade sand and gravel, such as industrial sand and gravel (especially hydraulic fracturing sand used in natural gas and oil drilling), may have been misclassified as construction sand and gravel.

Imports.—Imports of construction sand and gravel decreased by 10% to 3.5 Mt, and the value decreased by 26% to \$45.5 million (table 1). Canada was the leading source of construction sand and gravel imports, with 93% of the total quantity (table 9). Of the remaining imports, Mexico and Norway supplied 86%. The average unit value of sand and gravel imports in 2016 was \$13.06 per ton, down from \$15.77 per ton in 2015.

Outlook

The aggregates industry is a cyclical business, reacting to the levels of activity in public infrastructure projects, commercial and residential construction markets, and other types of construction. The residential construction slowdown in the United States that began in 2006 was well documented and led to decreased consumption of construction sand and gravel. After 4 years of decline, residential construction appeared to level off in late 2010. Construction sand and gravel production remained almost flat since 2010 until increasing by 6% in 2015 compared with that of 2014, and production has remained almost flat in 2016 (fig. 1).

Reference Cited

U.S. Census Bureau, 2018, Annual value of construction put in place 2008–2017: U.S. Census Bureau, January 30. (Accessed July 7, 2018, via http://www.census.gov/construction/c30/historical_data.html.)

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

Crushed Stone and Sand and Gravel. Mineral Industry Surveys, quarterly.

Historical Statistics for Mineral and Material Commodities in the United States. Data Series 140.

Natural Aggregate—Building America's Future. Circular 1110, 1990.

Natural Aggregates—Foundation of America's Future. Fact Sheet FS 144–97, 1997.

Natural Aggregates of the Conterminous United States. Bulletin 1594, 1988.

Sand and Gravel. Ch. in United States Mineral Resources, Professional Paper 820, 1973.

Sand and Gravel, Construction. Ch. in Mineral Commodity Summaries, annual.

Stone, Crushed. Ch. in Mineral Commodity Summaries, annual.

Stone, Crushed. Ch. in Minerals Yearbook, annual.

Other

Aggregates Handbook. National Stone Association, 1991.

Aggregates Manager.

Aggregates—Sand, Gravel, & Crushed Rock Aggregates for Construction Purposes. The Geological Society [United Kingdom], 1985.

Canadian Aggregates.

Dolar-Mantuani, Ludmila, 1983, Handbook of Concrete Aggregates: Park Ridge, NJ, Noyes Publications, 345 p.

Harben, P.W., and Bates, R.L., 1984, Geology of the Nonmetallics: London, United Kingdom, Metal Bulletin Inc., 392 p.

Industrial Minerals.

National Stone, Sand and Gravel Association.

Pit & Quarry.

Rock Products.

Sand and Gravel. Ch. in Industrial Minerals and Rocks (7th ed.), Society for Mining, Metallurgy, and Exploration, Inc., 2006.

Sand and Gravel. Ch. in Mineral Facts and Problems, U.S.

Bureau of Mines Bulletin 675, 1985.

Stone, Sand & Gravel Review.

TABLE 1
SALIENT U.S. CONSTRUCTION SAND AND GRAVEL STATISTICS¹

(Thousand metric tons and thousand dollars)

	2012	2013	2014	2015	2016
Sold or used by producers:²					
Quantity	815,000 ^r	823,000 ^r	830,000 ^r	881,000 ^r	888,000
Value	6,240,000 ^r	6,390,000 ^r	6,670,000	7,290,000 ^r	7,460,000
Exports:					
Quantity	484	58	87	70	32
Value	26,200	15,800	21,800	21,700	13,900
Imports for consumption:					
Quantity	3,890	3,940	3,930	3,890	3,490
Value	36,900	42,500	46,100	61,400	45,500
Average number of employees ³	37,100	36,400	34,600	34,800	35,300

^rRevised.

¹Table includes data available through September 7, 2018. Data are rounded to no more than three significant digits.

²Does not include American Samoa, Guam, Puerto Rico, and the U.S. Virgin Islands.

³Including office staff. Source: Mine Safety and Health Administration.

TABLE 2
CONSTRUCTION SAND AND GRAVEL SOLD OR USED BY PRODUCERS
IN THE UNITED STATES, BY GEOGRAPHIC DIVISION^{1,2}

Region and division	2015 ³		2016	
	Quantity (thousand metric tons)	Value (thousands)	Quantity (thousand metric tons)	Value (thousands)
Northeast:				
New England	36,400	\$318,000	38,600	\$339,000
Middle Atlantic	51,700	493,000	51,600	510,000
Midwest:				
East North Central	139,000	999,000	139,000	970,000
West North Central	125,000	744,000	118,000	712,000
South:				
South Atlantic	57,500	514,000	60,400	556,000
East South Central	35,200	245,000	37,800	260,000
West South Central	118,000	1,130,000	121,000	1,170,000
West:				
Mountain	167,000	1,310,000	170,000	1,350,000
Pacific	150,000	1,540,000	152,000	1,600,000
Total	881,000	7,290,000	888,000	7,460,000

¹Table includes data available through September 7, 2018. Data are rounded to no more than three significant digits; may not add to totals shown.

²Does not include American Samoa, Guam, Puerto Rico, and the U.S. Virgin Islands.

³Estimated quantities have been recalculated.

TABLE 3
CONSTRUCTION SAND AND GRAVEL SOLD OR USED BY PRODUCERS IN
THE UNITED STATES, BY STATE¹

State	2015 ²			2016		
	Quantity (thousand metric tons)	Value (thousands)	Unit value	Quantity (thousand metric tons)	Value (thousands)	Unit value
Alabama	9,630	\$67,400	\$7.00	11,500	\$77,200	\$6.73
Alaska	9,020	79,000	8.76	8,670	74,300	8.57
Arizona	39,500	363,000	9.19	40,300	370,000	9.16
Arkansas	7,510	66,000	8.79	7,510	66,800	8.89
California	95,400	1,070,000	11.22	95,400	1,120,000	11.75
Colorado	33,600	260,000	7.74	34,900	283,000	8.09
Connecticut	5,120	48,600	9.51	5,330	51,800	9.71
Delaware	2,370	19,800	8.35	2,810	23,500	8.38
Florida	17,200	175,000	10.22	19,100	204,000	10.69
Georgia	6,110	42,400	6.95	6,360	43,800	6.90
Hawaii	459	10,300	22.53	357	7,720	21.63
Idaho	14,100	83,000	5.87	14,900	86,100	5.79
Illinois	22,000	152,000	6.88	20,600	139,000	6.77
Indiana	17,300	132,000	7.67	17,500	133,000	7.60
Iowa	14,900	118,000	7.93	14,900	117,000	7.91
Kansas	9,080	55,500	6.12	10,100	59,800	5.92
Kentucky	9,040	45,500	5.03	8,540	40,300	4.72
Louisiana	16,300	185,000	11.35	17,200	198,000	11.51
Maine	7,810	61,400	7.87	9,040	74,400	8.23
Maryland	7,380	92,600	12.55	7,380	92,800	12.59
Massachusetts	10,100	92,200	9.11	9,830	89,600	9.11
Michigan	39,100	237,000	6.05	41,300	249,000	6.03
Minnesota	49,300	239,000	4.85	46,700	227,000	4.86
Mississippi	9,950	78,900	7.93	10,300	85,000	8.23
Missouri	9,890	67,700	6.84	10,300	73,500	7.15
Montana	12,100	92,300	7.62	11,400	91,600	8.00
Nebraska	12,700	91,000	7.16	12,700	94,200	7.44
Nevada	15,400	89,700	5.83	17,500	109,000	6.22
New Hampshire	6,230	52,200	8.37	6,910	57,500	8.32
New Jersey	11,800	94,600	8.04	12,500	103,000	8.27
New Mexico	8,720	78,600	9.02	9,510	85,200	8.96
New York	30,600	297,000	9.72	30,500	315,000	10.33
North Carolina	7,940	52,200	6.57	8,120	52,900	6.51
North Dakota	18,400	118,000	6.44	13,000	90,500	6.95
Ohio	32,900	271,000	8.24	32,600	266,000	8.17
Oklahoma	10,800	88,300	8.17	10,200	84,200	8.29
Oregon	12,200	108,000	8.87	12,400	111,000	8.96
Pennsylvania	9,310	101,000	10.83	8,710	92,500	10.61
Rhode Island	2,130	27,000	12.72	2,140	26,900	12.54
South Carolina	8,350	44,300	5.31	8,650	49,600	5.73
South Dakota	11,200	55,000	4.89	10,200	50,000	4.89
Tennessee	6,620	52,900	7.99	7,450	57,500	7.72
Texas	82,900	787,000	9.48	85,800	818,000	9.54
Utah	28,800	214,000	7.42	31,600	235,000	7.46
Vermont	4,970	36,100	7.25	5,390	39,300	7.29
Virginia	7,660	82,500	10.77	7,420	84,100	11.33
Washington	33,400	274,000	8.20	35,400	284,000	8.02
West Virginia	583	4,950	8.49	556	4,720	8.49
Wisconsin	28,000	208,000	7.43	27,100	183,000	6.76
Wyoming	15,000	134,000	8.93	9,860	91,700	9.29
Total or average	881,000	7,290,000	8.28	888,000	7,460,000	8.40

¹Table includes data available through September 7, 2018. Data are rounded to no more than three significant digits, except unit values; may not add to totals shown.

²Estimated quantities have been recalculated.

TABLE 4A
CONSTRUCTION SAND AND GRAVEL PRODUCTION IN THE UNITED STATES, BY SIZE OF OPERATION¹

Size range (metric tons)	2015 ²				2016			
	Number of operations	Percent of total	Quantity (thousand metric tons)	Percent of total	Number of operations	Percent of total	Quantity (thousand metric tons)	Percent of total
Less than 25,000	2,053	32.2	18,100	2.1	1,978	32.0	17,500	2.0
25,000 to 49,999	966	15.1	31,900	3.6	872	14.1	28,600	3.2
50,000 to 99,999	1,038	16.3	68,200	7.7	995	16.1	64,500	7.3
100,000 to 199,999	993	15.6	130,000	14.7	984	15.9	128,000	14.4
200,000 to 299,999	446	7.0	99,300	11.3	437	7.1	97,800	11.0
300,000 to 399,999	285	4.5	88,800	10.1	268	4.3	83,700	9.4
400,000 to 499,999	170	2.7	68,700	7.8	178	2.9	71,500	8.0
500,000 to 599,999	115	1.8	57,600	6.5	111	1.8	55,400	6.2
600,000 to 699,999	66	1.0	38,700	4.4	90	1.5	52,400	5.9
700,000 to 799,999	54	0.8	36,500	4.1	41	0.7	27,700	3.1
800,000 to 899,999	48	0.8	37,200	4.2	59	1.0	45,200	5.1
900,000 to 999,999	30	0.5	26,200	3.0	28	0.5	24,200	2.7
1,000,000 to 1,499,999	69	1.1	76,300	8.7	79	1.3	85,500	9.6
1,500,000 and more	52	0.8	104,000	11.8	54	0.8	106,000	12.0
Total	6,385	100	881,000	100	6,174	100	888,000	100

¹Table includes data available through September 7, 2018. Production data are rounded to no more than three significant digits except "Number of operations"; may not add to totals shown.

²Estimated quantities have been recalculated.

TABLE 4B
CONSTRUCTION SAND AND GRAVEL PRODUCTION IN THE UNITED STATES IN 2016, BY REGION
AND SIZE OF OPERATION¹

Size range (metric tons)	Northeast				Midwest			
	Number of operations	Percent of total	Quantity (thousand metric tons)	Percent of total	Number of operations	Percent of total	Quantity (thousand metric tons)	Percent of total
Less than 25,000	471	43.7	4,300	4.8	742	32.1	6,520	2.5
25,000 to 49,999	166	15.4	5,450	6.0	354	15.3	11,500	4.5
50,000 to 99,999	154	14.3	9,940	11.0	444	19.2	28,800	11.2
100,000 to 199,999	158	14.6	20,700	22.9	375	16.2	47,900	18.7
200,000 to 299,999	54	5.0	12,100	13.4	158	6.8	34,900	13.6
300,000 to 399,999	31	2.9	9,740	10.8	86	3.7	26,800	10.4
400,000 to 499,999	19	1.8	7,550	8.4	46	2.0	18,400	7.2
500,000 to 599,999	6	0.6	2,960	3.3	39	1.7	19,400	7.5
600,000 to 699,999	3	0.3	1,700	1.9	21	0.9	12,300	4.8
700,000 to 799,999	3	0.3	2,000	2.2	10	0.4	6,840	2.7
800,000 to 899,999	4	0.4	3,090	3.4	16	0.7	12,200	4.8
900,000 to 999,999	2	0.2	1,690	1.9	2	0.1	1,760	0.7
1,000,000 to 1,499,999	7	0.6	7,270	8.1	11	0.5	12,700	4.9
1,500,000 and more	1	0.1	1,820	2.0	9	0.4	16,800	6.5
Total	1,079	100	90,300	100	2,313	100	257,000	100

Size range (metric tons)	South				West			
	Number of operations	Percent of total	Quantity (thousand metric tons)	Percent of total	Number of operations	Percent of total	Quantity (thousand metric tons)	Percent of total
Less than 25,000	171	18.5	1,480	0.7	594	32.0	5,180	1.6
25,000 to 49,999	85	9.2	2,790	1.3	267	14.4	8,890	2.8
50,000 to 99,999	125	13.5	8,270	3.8	272	14.7	17,500	5.4
100,000 to 199,999	174	18.8	22,800	10.4	277	14.9	36,600	11.3
200,000 to 299,999	101	10.9	22,800	10.4	124	6.7	27,900	8.7
300,000 to 399,999	69	7.5	21,600	9.9	82	4.4	25,600	7.9
400,000 to 499,999	68	7.3	27,300	12.5	45	2.4	18,200	5.6
500,000 to 599,999	28	3.0	13,800	6.3	38	2.0	19,200	6.0
600,000 to 699,999	21	2.3	12,100	5.5	45	2.4	26,300	8.2
700,000 to 799,999	11	1.2	7,400	3.4	17	0.9	11,500	3.6
800,000 to 899,999	20	2.2	15,300	7.0	19	1.0	14,600	4.5
900,000 to 999,999	11	1.2	9,320	4.3	13	0.7	11,400	3.5
1,000,000 to 1,499,999	29	3.1	30,100	13.7	32	1.7	35,500	11.0
1,500,000 and more	13	1.4	23,700	10.9	31	1.7	64,000	19.8
Total	926	100	219,000	100	1,856	100	322,000	100

¹Table includes data available through September 7, 2018. Production data are rounded to no more than three significant digits except "Number of operations"; may not add to totals shown.

TABLE 5
CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN THE UNITED STATES, BY USE¹

Use	2015 ²			2016		
	Quantity (thousand metric tons)	Value (thousands)	Unit value	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregates (including concrete sand)	128,000	\$1,170,000	\$9.16	98,900	\$916,000	\$9.26
Plaster and gunitite sands	2,560	31,500	12.29	1,880	22,200	11.81
Concrete products (blocks, bricks, pipe, decorative, and so forth)	2,520	25,300	10.06	2,000	19,300	9.66
Asphaltic concrete aggregates and other bituminous mixtures	30,300	299,000	9.88	27,600	290,000	10.50
Road base and coverings	63,500	438,000	6.90	53,400	394,000	7.38
Road stabilization, cement	537	5,090	9.48	1,220	10,900	8.96
Road stabilization, lime	565	4,530	8.01	588	5,290	9.00
Fill	35,600	233,000	6.54	27,100	191,000	7.05
Snow and ice control	3,160	28,000	8.86	1,820	15,100	8.30
Railroad ballast	255	4,360	17.09	132	2,180	16.55
Roofing granules	W	W	W	W	W	W
Filtration	209	2,190	10.47	92	922	10.02
Golf course maintenance sand	171	3,030	17.74	86	927	10.78
Other miscellaneous uses and specified uses not listed	16,900	190,000	11.24	8,810	92,800	10.53
Unspecified: ³						
Reported	174,000	1,440,000	8.29	178,000	1,490,000	8.36
Estimated	423,000	3,420,000	8.08	486,000	4,010,000	8.25
Total or average	881,000	7,290,000	8.28	888,000	7,460,000	8.40

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses and specified uses not listed."

¹Table includes data available through September 7, 2018. Data are rounded to no more than three significant digits, except unit values; may not add to totals shown.

²Estimated quantities have been recalculated.

³Reported and estimated production without a breakdown by end use.

TABLE 6
CONSTRUCTION SAND AND GRAVEL SOLD OR USED BY PRODUCERS IN 2016, BY STATE AND USE¹

(Thousand metric tons and thousand dollars)

State	Concrete aggregates (including concrete sand)		Plaster and gunitite sands		Concrete products (blocks, bricks, pipe decorative, and so forth)		Asphaltic concrete aggregates and other bituminous mixtures		Road base and coverings ²	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Alabama	3,550	24,300	W	W	W	W	338	2,600	W	W
Alaska	2,920	30,500	--	--	W	W	123	1,650	592	6,310
Arizona	4,070	42,900	26	353	W	W	1,650	24,400	3,660	28,200
Arkansas	1,080	9,750	--	--	--	--	W	W	191	1,050
California	17,000	215,000	613	9,110	456	6,500	7,630	109,000	5,390	52,900
Colorado	1,110	10,700	15	258	15	125	341	2,040	3,270	29,500
Connecticut	383	3,640	W	W	W	W	32	353	136	1,850
Delaware	618	5,760	--	--	W	W	W	W	W	W
Florida	2,410	33,000	W	W	W	W	W	W	128	1,050
Georgia	2,370	15,800	W	W	W	W	W	W	W	W
Hawaii	W	W	--	--	W	W	--	--	W	W
Idaho	793	7,240	W	W	1	102	53	537	3,260	17,200
Illinois	4,360	29,000	3	18	W	W	696	7,170	330	2,970
Indiana	2,290	18,200	W	W	W	W	425	4,660	292	2,970
Iowa	1,420	12,700	W	W	W	W	65	430	669	4,490
Kansas	1,650	9,970	30	291	--	--	123	643	946	5,230
Kentucky	3,510	14,000	--	--	--	--	W	W	--	--
Louisiana	1,690	15,900	--	--	--	--	W	W	614	15,400
Maine	323	1,340	W	W	2	20	99	1,390	458	3,670
Maryland	559	5,490	6	50	W	W	W	W	W	W
Massachusetts	956	10,500	--	--	W	W	81	721	235	2,740
Michigan	2,210	14,000	W	W	W	W	1,680	11,500	3,690	24,900
Minnesota	3,440	14,100	11	164	W	W	4,110	25,200	8,110	32,600
Mississippi	559	3,340	--	--	--	--	W	W	162	1,250
Missouri	2,590	17,600	W	W	W	W	--	--	70	930
Montana	331	4,390	--	--	W	W	561	7,400	1,900	15,500
Nebraska	1,320	8,020	42	146	W	W	709	7,700	1,300	12,700
Nevada	1,040	10,700	W	W	--	--	753	8,300	2,410	17,000
New Hampshire	47	544	43	673	--	--	W	W	520	4,720
New Jersey	1,780	15,400	218	1,570	437	2,540	W	W	W	W
New Mexico	695	7,900	25	251	W	W	447	5,310	370	3,090
New York	3,170	41,200	W	W	W	W	724	9,300	2,030	15,300
North Carolina	1,450	8,500	103	1,220	W	W	145	805	W	W
North Dakota	W	W	--	--	--	--	W	W	1,590	10,100
Ohio	5,540	49,400	36	516	W	W	1,330	10,400	1,610	15,800
Oklahoma	1,840	15,200	W	W	W	W	477	3,170	199	1,850
Oregon	692	6,730	W	W	--	--	105	1,010	1,190	11,400
Pennsylvania	176	1,840	W	W	--	--	101	778	222	2,330
Rhode Island	171	2,740	--	--	W	W	W	W	277	3,030
South Carolina	526	3,770	W	W	228	898	W	W	106	481
South Dakota	260	1,860	W	W	--	--	W	W	2,120	8,700
Tennessee	1,780	13,800	--	--	W	W	440	4,450	W	W
Texas	9,200	94,500	123	1,520	--	--	235	2,550	977	6,730
Utah	452	5,220	4	96	--	--	W	W	2,910	21,000
Vermont	--	--	--	--	--	--	--	--	93	524
Virginia	818	13,700	--	--	W	W	419	5,430	20	312
Washington	2,770	23,300	W	W	3	150	W	W	663	7,020
West Virginia	--	--	--	--	--	--	--	--	--	--
Wisconsin	2,590	15,300	62	377	W	W	563	10,400	1,140	5,420
Wyoming	247	3,030	--	--	W	W	W	W	868	7,750
Total	98,700	912,000	1,360	16,600	1,140	10,300	24,400	270,000	54,700	406,000
Total withheld	153	4,070	521	5,610	857	8,980	3,170	20,400	451	4,050
Grand total	98,900	916,000	1,880	22,200	2,000	19,300	27,600	290,000	55,200	410,000

See footnotes at end of table.

TABLE 6—Continued
CONSTRUCTION SAND AND GRAVEL SOLD OR USED BY PRODUCERS IN 2016, BY STATE AND USE¹

(Thousand metric tons and thousand dollars)

State	Fill		Snow and ice control		Railroad ballast		Other uses ³		Total	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Alabama	572	1,790	W	W	--	--	6,970	48,100	11,500	77,200
Alaska	103	449	W	W	--	--	4,910	35,200	8,670	74,300
Arizona	517	4,500	W	W	7	7	30,200	268,000	40,300	370,000
Arkansas	89	462	W	W	--	--	6,120	55,200	7,510	66,800
California	4,130	52,400	W	W	W	W	60,100	674,000	95,400	1,120,000
Colorado	216	955	12	323	3	25	30,000	239,000	34,900	283,000
Connecticut	94	513	56	849	--	--	4,580	44,300	5,330	51,800
Delaware	837	4,120	--	--	--	--	1,240	12,500	2,810	23,500
Florida	2,240	23,500	--	--	--	--	14,200	146,000	19,100	204,000
Georgia	111	606	--	--	--	--	3,710	26,500	6,360	43,800
Hawaii	--	--	--	--	--	--	268	4,380	357	7,720
Idaho	236	784	16	71	W	W	10,500	60,000	14,900	86,100
Illinois	495	3,020	W	W	--	--	14,700	97,300	20,600	139,000
Indiana	991	5,950	262	2,430	--	--	13,200	98,300	17,500	133,000
Iowa	378	1,940	33	317	--	--	12,300	97,500	14,900	117,000
Kansas	483	1,510	22	113	--	--	6,850	42,000	10,100	59,800
Kentucky	W	W	--	--	--	--	4,810	24,500	8,540	40,300
Louisiana	353	2,230	W	W	W	W	14,400	162,000	17,200	198,000
Maine	292	1,150	58	535	W	W	7,800	66,200	9,040	74,400
Maryland	173	2,590	--	--	--	--	6,570	84,000	7,380	92,800
Massachusetts	365	2,260	W	W	--	--	8,090	72,300	9,830	89,600
Michigan	2,080	8,450	60	242	26	265	31,500	189,000	41,300	249,000
Minnesota	777	3,470	41	205	W	W	30,100	149,000	46,700	227,000
Mississippi	166	1,190	--	--	--	--	9,440	79,200	10,300	85,000
Missouri	9	69	W	W	--	--	7,550	54,300	10,300	73,500
Montana	32	260	22	188	W	W	8,600	63,800	11,400	91,600
Nebraska	251	963	W	W	--	--	8,970	64,300	12,700	94,200
Nevada	950	5,290	W	W	--	--	12,200	65,500	17,500	109,000
New Hampshire	199	891	W	W	--	--	5,850	48,900	6,910	57,500
New Jersey	134	1,060	18	197	--	--	8,900	80,600	12,500	103,000
New Mexico	405	5,260	W	W	--	--	7,490	62,400	9,510	85,200
New York	524	2,860	561	3,430	--	--	23,300	240,000	30,500	315,000
North Carolina	562	3,060	W	W	--	--	5,850	39,100	8,120	52,900
North Dakota	390	2,170	W	W	W	W	10,800	74,800	13,000	90,500
Ohio	1,430	12,800	32	155	W	W	22,600	177,000	32,600	266,000
Oklahoma	438	1,700	W	W	--	--	7,180	62,100	10,200	84,200
Oregon	19	104	W	W	7	98	10,400	91,900	12,400	111,000
Pennsylvania	W	W	73	549	--	--	8,070	86,600	8,710	92,500
Rhode Island	88	389	48	402	--	--	1,400	17,800	2,140	26,900
South Carolina	1,290	2,830	W	W	--	--	6,340	40,600	8,650	49,600
South Dakota	145	413	W	W	--	--	7,490	38,200	10,200	50,000
Tennessee	W	W	--	--	--	--	4,750	34,200	7,450	57,500
Texas	931	6,040	W	W	W	W	74,300	707,000	85,800	818,000
Utah	1,110	4,660	W	W	--	--	27,000	204,000	31,600	235,000
Vermont	22	101	35	175	--	--	5,240	38,500	5,390	39,300
Virginia	1,220	9,270	W	W	--	--	4,930	55,300	7,420	84,100
Washington	460	1,650	26	91	19	201	30,500	243,000	35,400	284,000
West Virginia	--	--	--	--	--	--	556	4,720	556	4,720
Wisconsin	515	2,240	148	842	W	W	22,100	149,000	27,100	183,000
Wyoming	54	316	W	W	--	--	8,670	80,300	9,860	91,700
Total	26,900	188,000	1,520	11,100	62	595	674,000	5,600,000	XX	XX
Total withheld	242	2,930	298	3,990	70	1,590	--	--	XX	XX
Grand total	27,100	191,000	1,820	15,100	132	2,180	674,000	5,600,000	888,000	7,460,000

W Withheld to avoid disclosing company proprietary data; included in "Total withheld." XX Not applicable. -- Zero.

¹Table includes data available through September 7, 2018. Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes road and other stabilization (cement and lime).

³Includes reported and estimated production without a breakdown by end use.

TABLE 7
CONSTRUCTION SAND AND GRAVEL OPERATIONS IN THE UNITED STATES IN 2016, BY STATE¹

State	Active operations	Active pits	Dredging operations	Processing plants				Sales yards
				Stationary	Portable	Stationary and portable	None or unspecified	
Alabama	53	57	10	23	9	3	8	--
Alaska	81	173	2	31	28	5	15	9
Arizona	161	254	1	63	63	12	22	15
Arkansas	42	48	2	26	11	--	3	2
California	290	331	6	170	83	16	15	17
Colorado	248	381	1	78	110	9	50	10
Connecticut	53	59	2	20	23	5	3	6
Delaware	11	10	4	5	1	--	1	1
Florida	54	56	17	12	17	1	7	3
Georgia	36	35	9	20	5	1	1	1
Hawaii	9	9	--	4	5	--	--	1
Idaho	158	426	2	52	71	5	28	8
Illinois	101	98	24	47	12	3	15	5
Indiana	118	120	10	68	25	7	8	10
Iowa	151	181	18	35	67	8	23	5
Kansas	115	144	28	27	39	4	17	3
Kentucky	19	21	5	6	5	2	1	3
Louisiana	109	102	30	43	12	1	23	12
Maine	204	207	2	62	57	11	72	11
Maryland	38	38	4	20	2	2	10	8
Massachusetts	95	104	7	47	26	2	13	9
Michigan	345	409	14	126	125	12	68	16
Minnesota	450	788	9	157	142	22	120	12
Mississippi	56	59	7	24	22	--	3	5
Missouri	67	77	21	29	7	1	9	1
Montana	172	284	1	63	77	8	23	2
Nebraska	143	171	47	48	31	1	16	3
Nevada	87	663	--	27	43	4	13	8
New Hampshire	105	110	--	64	30	4	7	11
New Jersey	49	45	10	24	6	2	7	8
New Mexico	92	457	2	47	33	7	3	9
New York	379	417	19	147	141	24	48	13
North Carolina	71	70	11	32	13	3	12	6
North Dakota	142	193	--	67	53	2	20	10
Ohio	200	204	30	110	37	8	15	12
Oklahoma	60	63	19	24	10	5	2	3
Oregon	90	151	--	38	42	4	6	10
Pennsylvania	79	82	2	42	21	8	6	6
Rhode Island	21	20	1	6	8	4	2	2
South Carolina	37	49	5	16	11	2	3	2
South Dakota	149	214	3	54	61	7	24	4
Tennessee	33	35	4	14	13	1	1	4
Texas	245	254	12	137	69	6	21	13
Utah	165	271	3	72	74	12	4	2
Vermont	94	105	--	43	36	3	12	4
Virginia	59	60	5	27	11	4	12	9
Washington	183	210	9	87	52	16	19	5
West Virginia	3	3	2	--	1	--	--	--
Wisconsin	332	382	11	147	110	17	47	19
Wyoming	120	638	2	37	61	5	15	4
Total	6,174	9,338	433	2,568	2,011	289	873	342

-- Zero.

¹Table includes data available through September 7, 2018.

TABLE 8
U.S. EXPORTS OF CONSTRUCTION SAND AND GRAVEL IN 2016, BY DESTINATION¹

(metric tons and dollars)

Destination	Sand ²		Gravel ³	
	Quantity	Value, f.a.s. ⁴	Quantity	Value, f.a.s. ⁴
North America:				
Bahamas, The	2,780	422,000	1,180	776,000
Canada	1,880	404,000	5,720	3,280,000
Dominican Republic	675	271,000	96	24,500
Mexico	1,130	460,000	124	145,000
Trinidad and Tobago	1,640	236,000	75	22,200
Other	3,130	1,380,000	663	648,000
Total	11,200	3,170,000	7,850	4,900,000
South America	3,760	2,310,000	45	34,500
Europe	4,190	1,710,000	227	188,000
Asia	2,390	790,000	2,510	584,000
Oceania	28	13,800	74	121,000
Africa	30	27,200	49	34,100
Grand total	21,600	8,020,000	10,800	5,860,000

¹Table includes data available through September 7, 2018. Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes Harmonized Tariff Schedule of the United States (HTS) code 2505.90.0000.

³Includes HTS code 2517.10.0015.

⁴Free alongside ship. Value of material at U.S. port of export; based on transaction price, including all charges incurred in placing material alongside ship.

Source: U.S. Census Bureau.

TABLE 9
U.S. IMPORTS FOR CONSUMPTION OF CONSTRUCTION SAND
AND GRAVEL, BY COUNTRY OR LOCALITY^{1,2}

Country or locality	2015			2016		
	Quantity (thousand) metric tons	Value, c.i.f. ³ (thousands)	Unit value	Quantity (thousand) metric tons	Value, c.i.f. ³ (thousands)	Unit value
Bahamas, The	6	\$32	\$5.51	6	\$30	\$5.33
Canada	3,530	37,800	10.69	3,240	32,300	9.95
China	159	11,900	74.47	8	2,230	272.96
Mexico	118	3,230	27.43	179	3,570	19.91
New Zealand	10	2,490	238.48	9	2,150	234.46
Norway	47	3,210	68.38	29	2,400	81.75
Peru	5	1,140	220.38	6	1,270	217.20
Other	14 ^r	1,660 ^r	114.89 ^r	7	1,610	247.07
Total	3,890	61,400	15.77	3,490	45,500	13.06

^rRevised.

¹Table includes data available through September 7, 2018. Data are rounded to no more than three significant digits, except unit values; may not add to totals shown.

²Includes Harmonized Tariff Schedule of the United States (HTS) codes 2505.90.0000 and 2517.10.0015

³Cost, insurance, and freight. Value of material at U.S. port of entry; based on purchase price and includes all charges (except U.S. imports duties) in bringing material from foreign country to alongside carrier.

Source: U.S. Census Bureau.

TABLE 10
THE TOP 100 PRODUCERS OF CONSTRUCTION SAND AND GRAVEL IN THE UNITED STATES IN 2016^{1,2}

2016 rank	2015 rank ^f	Company	2016 rank	2015 rank ^f	Company
1	1	Oldcastle Materials, Inc.	51	47	All American Asphalt Co.
2	2	Vulcan Materials Co.	52	48	Chaney Enterprises L.P.
3	3	Lehigh Hanson, Inc.	53	71	FNF Mining Inc.
4	4	LafargeHolcim Ltd	54	51	Rieth-Riley Construction Co., Inc.
5	5	CEMEX S.A.B. de C.V.	55	52	Central Specialties, Inc.
6	6	MDU Resources Group, Inc.	56	68	Construction Partners, Inc.
7	7	Martin Marietta Aggregates	57	62	A & S Construction Co.
8	8	Granite Construction, Inc.	58	53	Varra Cos., Inc.
9	10	Mitsubishi Cement Corp.	59	70	TM Crushing, LLC
10	9	Summit Materials, LLC	60	—	Wood Resources, LLC
11	14	CalPortland Co.	61	49	Nebco, Inc.
12	13	Teichert, Inc.	62	50	The Heritage Group
13	17	Clyde Cos., Inc.	63	54	Northern Improvement Co.
14	12	Bureau of Land Management	64	69	Wright Materials, Inc.
15	16	Trinity Industries, Inc.	65	61	Dolese Bros. Co.
16	15	Wm. D. Scepaniak Construction	66	72	Corliss Resources, Inc.
17	20	L. G. Everist, Inc.	67	—	Genoak Materials, Inc.
18	18	Ash Grove Cement Co.	68	79	Wissota Sand & Gravel
19	19	Colas Inc.	69	—	Clemente Group
20	21	Gila River Indian Community	70	82	Irving Materials, Inc.
21	11	Fisher Industries	71	67	Clayton Sand Co.
22	22	Edw. C. Levy Co.	72	80	Aggregate Resources, Inc.
23	23	Nugent Sand Co.	73	88	Hilltop Basic Resources, Inc.
24	25	Fordyce Ltd.	74	78	A. Lindberg & Sons Inc.
25	27	Chandler Aggregates, Inc.	75	—	Stewart Materials
26	26	Miles Sand & Gravel Co.	76	87	Grand Rapids Gravel Co.
27	24	Mathy Construction Co.	77	92	Peak Sand & Gravel, Inc.
28	30	U.S. Concrete, Inc.	78	—	Robar Enterprises, Inc.
29	31	Dan Gernatt Gravel Products, Inc.	79	98	Tiller Corp.
30	28	Salt River Pima-Maricopa Indian Community	80	89	Gateway Dredging & Contracting, LLC
31	29	Holliday Rock Co.	81	86	Eucon Corp.
32	34	E.R. Jahna Industries, Inc.	82	83	Pioneer Sand Co.
33	33	Pine Bluff Materials LLC	83	99	Coram Materials Corp.
34	37	Las Vegas Paving Corp.	84	73	S&S Aggregates Co.
35	43	Southwest Rock Products, LLC	85	77	Sibson Gravel LLC
36	85	The Olen Corp.	86	76	Bluegrass Materials Co.
37	36	Polaris Materials Corp.	87	100	Brown & Watson, Inc.
38	40	Watson Gravel, Inc.	88	96	Capital Sand Co., Inc.
39	38	Thelen Sand & Gravel, Inc.	89	81	Rasmussen Group, Inc.
40	45	Burnco Rock Products Ltd.	90	—	VantaCore Partners LP
41	46	York Building Products Co.	91	—	GS Materials, Inc.
42	44	Quikrete Co.	92	—	North Texas Sand Farm, Inc.
43	41	R.E. Janes Gravel Co.	93	56	Croell Redi-Mix
44	60	Memphis Stone & Gravel Co.	94	—	J. Lee Milligan, Inc.
45	35	Strata Corp.	95	39	FST Sand & Gravel, Inc.
46	66	LS Sand & Gravel Ltd.	96	55	Sundre Sand & Gravel, Inc.
47	42	Multisources Ltd.	97	—	O&G Industries, Inc.
48	58	Johnson Sand & Gravel Inc.	98	—	Continental Materials Corp.
49	64	Capitol Aggregates, Ltd.	99	97	The Jurgensen Cos.
50	63	Eagle Materials Inc.	100	—	Halliday Sand & Gravel Co.

^fRevised. — Not in the top 100 producers of construction sand and gravel in the United States in 2015.

¹Table includes data available through September 7, 2018. Companies listed in descending order of tonnage produced.

²Rankings for the previous year have been recalculated.

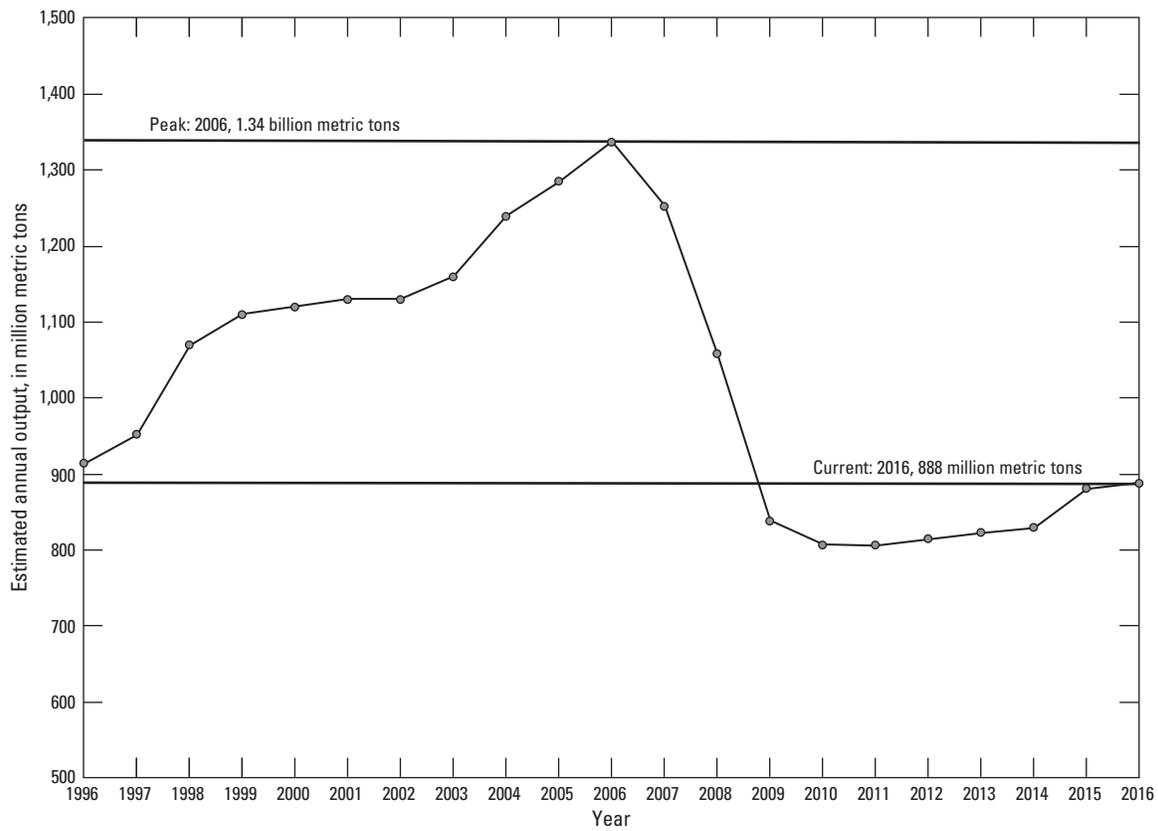


Figure 1. Annual output of construction sand and gravel produced for consumption in the United States from 1996 through 2016.