



# 2017 Minerals Yearbook

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**STATISTICAL SUMMARY [ADVANCE RELEASE]**

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# STATISTICAL SUMMARY

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This annual report summarizes data on nonfuel mineral production<sup>1</sup> for the United States including the Commonwealth of Puerto Rico. This report also summarizes annual data for U.S. exports, U.S. imports, and world production for selected nonfuel mineral commodities.

Although nonfuel mineral production quantity may be measured at any stage of extraction and processing, the stage of measurement used most commonly in this report is “mine output.” This term refers to minerals or ores in the form in which they are first extracted from the ground and customarily may include the output from auxiliary processing at or near the mines. Mine output as measured as material sold or used by producers in a given year is what is primarily shown in the tables, because values can be assigned. Where sold or used data are not available, mine output is used as the production measurement and value is estimated based on the average price of the mineral commodity for that year.

For copper, gold, lead, palladium, platinum, silver, and zinc, the production quantities listed are recorded on a mine basis (as the recoverable content of ore sold or treated). The values assigned to the quantities, however, are based on the average selling price of refined metal, not the value of the mined material.

The total value of all nonfuel mineral commodities production in the United States in 2017 increased by 11.2% to \$79.5 billion compared with a revised value of \$71.5 billion for 2016; metals increased by 12.6% to \$26.7 billion, and industrial minerals increased by 10.5% to \$52.7 billion (table 1).

In 2017, the top 10 nonfuel mineral commodities, in descending order of value of nonfuel mineral production, were crushed stone, portland cement, gold, copper, construction sand and gravel, industrial sand and gravel, iron ore, salt, zinc, and lime. The production of these mineral commodities accounted for 84% of the U.S. total production value (table 1).

In 2017, the top 10 States, in descending order of value of nonfuel mineral production, were Nevada, Arizona, Texas, California, Minnesota, Alaska, Florida, Missouri, Utah, and Michigan. The mineral production of these States accounted for 55% of the U.S. total production value (table 3).

The total value of exports of nonfuel mineral commodities from the United States in 2017 increased by 7.8% to \$83.5 billion compared with a revised value of \$77.5 billion for 2016. The total value of imports of nonfuel mineral commodities to the United States in 2017 increased by 6.4% to \$105 billion compared with a revised value of \$98.8 billion for 2016.

In 2017, exports of nonfuel mineral commodities valued at more than \$1 billion, in descending order of value were gold, diamond, aluminum, copper, iron and steel scrap, titanium, silver, nickel, platinum-group metals, silicon, phosphate rock, zinc, and soda ash. Exports of these nonfuel mineral commodities accounted for 90.0% of the U.S. total export value (table 7).

In 2017, imports of nonfuel mineral commodities valued at more than \$1 billion, in descending order of value, were gemstones, aluminum, gold, copper, platinum-group metals, nitrogen, silver, iron and steel scrap, nickel, dimension stone, titanium, potash, tin, lead, chromium, and manganese. Imports of these nonfuel mineral commodities accounted for 88.6% of the U.S. total import value (table 8).

The nonfuel mineral commodities for which the quantity of U.S. production accounted for greater than 10% of world total production in 2017 were, in decreasing order of percentage, beryl, clay (fuller’s earth), industrial sand and gravel, diatomite, vermiculite, kyanite (including related mineral compounds), soda ash, clay (bentonite), rhenium, clay (kaolin), salt, molybdenum, gypsum, perlite (processed ore), sulfur, mica, garnet, and phosphate rock (table 9).

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<sup>1</sup>The terms “nonfuel mineral production” and related “values” encompass variations in meaning, depending upon the mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 2017 U.S. Geological Survey (USGS) mineral production data published in this chapter are as of December 2020. For some mineral commodities, such as construction sand and gravel, crushed stone, and portland cement, estimates are updated periodically. To obtain the most current information, please check the most recent publications posted on the mineral commodity pages of the USGS National Minerals Information Center (NMIC) at <https://www.usgs.gov/centers/national-minerals-information-center>. Contact information for USGS mineral commodity specialists is also found on those pages. Alternatively, specialists’ names and telephone numbers may be obtained by calling the Main Switchboard for the USGS National Center at 1-703-648-4000 or by calling USGS Science Information Services at 1-888-ASK-USGS (1-888-275-8747). Minerals Yearbook chapters for countries and U.S. States are also available on the NMIC website at <https://www.usgs.gov/centers/national-minerals-information-center>.

TABLE 1  
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES<sup>1, 2, 3</sup>

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

Commodity	2015		2016		2017		
	Quantity	Value	Quantity	Value	Quantity	Value	
<b>Metals:</b>							
Beryllium <sup>4</sup>	metric tons	205	W	155	W	150	W
Cobalt <sup>e, 5</sup>	do.	760	W	690	W	640	W
Copper <sup>6</sup>		1,380	7,810,000	1,430	7,090,000	1,260	7,920,000
Gold <sup>6</sup>	kilograms	214,000	8,000,000	228,000 <sup>r</sup>	9,190,000 <sup>r</sup>	237,000	9,600,000
Iron ore <sup>7</sup>		46,100	3,750,000	41,800	3,050,000	47,900	3,760,000
Lead <sup>6</sup>	metric tons	360,000	724,000	336,000	699,000	302,000	761,000
Molybdenum mineral concentrates <sup>8</sup>	do.	47,400	700,000	36,200	481,000	40,700	756,000
Nickel <sup>9</sup>	do.	27,200	W	24,100	W	22,100	W
Palladium <sup>6</sup>	kilograms	12,500	280,000	13,100	259,000	13,600 <sup>e</sup>	382,000 <sup>e</sup>
Platinum <sup>6</sup>	do.	3,670	125,000	3,890	124,000	3,980 <sup>e</sup>	122,000 <sup>e</sup>
Rare earths <sup>e, 10</sup>	metric tons	5,900	W	--	--	--	--
Rhenium <sup>e, 11</sup>	kilograms	7,900	NA	8,440	NA	8,200	NA
Silver <sup>6</sup>	do.	1,090,000	551,000	1,150,000	627,000 <sup>r</sup>	1,030,000	566,000
Titanium mineral concentrates, ilmenite	metric tons	300,000 <sup>12</sup>	W	100,000 <sup>12</sup>	W	100,000 <sup>12</sup>	W
Zinc <sup>6</sup>	do.	797,000	1,680,000	778,000	1,740,000	748,000	2,300,000
Zirconium mineral concentrates	do.	80,000 <sup>12</sup>	W	(13)	W	80,000 <sup>12</sup>	W
Combined values of cadmium (byproduct of zinc production), magnesium metal, titanium mineral concentrates [rutile (2016–17)], and values indicated by symbol W		XX	802,000	XX	486,000	XX	576,000
Total, metals		XX	24,400,000	XX	23,700,000 <sup>r</sup>	XX	26,700,000
<b>Industrial minerals, excluding fuels:<sup>14</sup></b>							
Barite		433 <sup>r</sup>	51,200 <sup>r, e</sup>	232 <sup>r</sup>	22,000 <sup>r, e</sup>	334	32,100 <sup>e</sup>
Cement: <sup>7</sup>							
Masonry		2,311 <sup>15</sup>	350,000 <sup>e</sup>	2,514 <sup>15</sup>	396,000 <sup>e</sup>	2,392 <sup>15</sup>	386,000 <sup>e</sup>
Portland		82,093 <sup>15</sup>	8,640,000 <sup>e</sup>	82,181 <sup>15</sup>	9,040,000 <sup>e</sup>	83,963 <sup>15</sup>	9,700,000 <sup>e</sup>
Clay:							
Ball clay <sup>e</sup>		1,220 <sup>r</sup>	61,000 <sup>r</sup>	1,270 <sup>r</sup>	49,500 <sup>r</sup>	1,270	63,000
Bentonite		4,080 <sup>r</sup>	401,000 <sup>r</sup>	4,000 <sup>r</sup>	396,000 <sup>r</sup>	4,430	437,000
Common clay and shale		12,000 <sup>r</sup>	171,000 <sup>r</sup>	13,000 <sup>r</sup>	183,000 <sup>r</sup>	13,300	205,000
Fire clay		398 <sup>r</sup>	5,080 <sup>r</sup>	534 <sup>r</sup>	7,180 <sup>r</sup>	575	7,330
Fuller's earth, montmorillonite		1,960	169,000	1,860	166,000	1,840	171,000
Kaolin <sup>e</sup>		5,810	877,000	5,290 <sup>r</sup>	832,000 <sup>r</sup>	5,560	866,000
Diatomite		832	242,000	686	195,000	768	278,000
Feldspar <sup>e, 7</sup>		520 <sup>16</sup>	37,300	470 <sup>16</sup>	33,100	440 <sup>16</sup>	27,800
Garnet, industrial <sup>7, 17</sup>	metric tons	77,200 <sup>r</sup>	15,700 <sup>r</sup>	81,300 <sup>r</sup>	16,300 <sup>r</sup>	107,000	20,100
Gemstones, natural <sup>e, 7</sup>		NA	8,540	NA	11,700	NA	9,230
Gypsum, crude <sup>7</sup>		18,800 <sup>r</sup>	146,000 <sup>r</sup>	19,800 <sup>r</sup>	158,000 <sup>r</sup>	20,700 <sup>e</sup>	155,000 <sup>e</sup>
Helium:							
Crude	million cubic meters	25.0	85,900	22.9	82,600	NA	NA
Grade-A	do.	90.7	654,000	89.9 <sup>r</sup>	648,000 <sup>r</sup>	100.6	725,000
Kyanite <sup>18</sup>	metric tons	109,000	38,000 <sup>e</sup>	79,700	28,200 <sup>e</sup>	91,300	32,000 <sup>e</sup>
Lime <sup>19</sup>		18,300	2,290,000	17,300 <sup>r</sup>	2,170,000 <sup>r</sup>	17,600	2,300,000
Mica, crude	metric tons	32,600	4,640	28,000 <sup>r</sup>	4,250 <sup>r</sup>	40,000	6,590
Peat	do.	460,000	13,000	443,000	14,200	515,000	14,200
Perlite, crude	do.	444,000	26,900	437,000	28,400	479,000	35,100
Phosphate rock, marketable <sup>7</sup>		27,400	1,980,000	27,100	2,090,000	27,900	2,060,000
Potash <sup>16</sup>		1,500	550,000	1,400	410,000	1,300	380,000
Pumice and pumicite	metric tons	310,000	10,100	374,000	14,300	383,000	14,800
Salt		42,800	2,360,000	39,900 <sup>r</sup>	2,190,000	38,200	2,330,000
Sand and gravel:							
Construction		880,000 <sup>r</sup>	7,290,000	887,000 <sup>r</sup>	7,460,000	880,000	7,770,000
Industrial		102,000	4,840,000	79,400 <sup>r</sup>	2,810,000 <sup>r</sup>	102,000	5,340,000

See footnotes at end of table.

TABLE 1—Continued  
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES<sup>1,2,3</sup>

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

Commodity	2015		2016		2017	
	Quantity	Value	Quantity	Value	Quantity	Value
Industrial minerals, excluding fuels: <sup>14</sup> —Continued						
Silica stone, special <sup>7,20</sup> metric tons	205	49	300 <sup>e</sup>	72 <sup>e</sup>	318	76
Silica, tripoli <sup>7</sup> do.	70,500	19,400	56,600	17,300	77,300	19,000
Soda ash <sup>7</sup>	11,600	1,800,000	11,800	1,770,000	12,000	1,750,000
Stone:						
Crushed	1,340,000	14,100,000 <sup>r</sup>	1,360,000	15,100,000	1,370,000	15,700,000
Dimension	2,630	461,000	2,780 <sup>r</sup>	445,000	2,810	446,000
Talc, crude <sup>7</sup> metric tons	615,000	18,100	578,000 <sup>r</sup>	17,200 <sup>r</sup>	610,000	21,900
Vermiculite, concentrates <sup>e</sup>	100 <sup>r,21</sup>	W	100 <sup>21</sup>	W	100 <sup>21</sup>	W
Zeolites <sup>7</sup> metric tons	75,100	W	75,200 <sup>r</sup>	W	82,400	W
Combined values of andalusite, bauxite, boron minerals, bromine, clay (attapulgit), iodine (crude), iron oxide pigments (crude), lithium carbonate, magnesite, magnesium compounds, olivine (2016–17), pyrophyllite (crude), staurolite, wollastonite, and values indicated by symbol W	XX	937,000 <sup>r</sup>	XX	977,000 <sup>r</sup>	XX	1,400,000
Total, industrial minerals	XX	48,600,000	XX	47,700,000 <sup>r</sup>	XX	52,700,000
Grand total	XX	73,000,000	XX	71,500,000 <sup>r</sup>	XX	79,500,000

<sup>e</sup>Estimated. <sup>r</sup>Revised. do. Ditto. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with “Combined values.” XX Not applicable. -- Zero.

<sup>1</sup>Table includes data from the mineral commodity chapters published in the U.S. Geological Survey 2017 Minerals Yearbook as they were completed through January 2022.

<sup>2</sup>Production as measured by mine output, mine shipments, sales, or marketable production (including consumption by producers). Mine output measured as sold or used by producers is primarily shown in the tables, because values can be assigned. Where sold or used data are not available, actual mine output is used as the production measurement and value is estimated average price of the mineral commodity for that year.

<sup>3</sup>Data are rounded to no more than three significant digits unless otherwise specified; may not add to totals shown.

<sup>4</sup>Beryllium content of mine shipments of beryllium-containing ores. Calculated based on 4% metal content. Data are rounded to the nearest 5 metric tons.

<sup>5</sup>Cobalt content of concentrates.

<sup>6</sup>Recoverable content of ores and concentrates. The values assigned to the quantities, however, are based on the average selling price of refined metal, not the value of the mined material.

<sup>7</sup>Production, mine or plant output.

<sup>8</sup>Recoverable content of molybdenum mineral concentrates. Value is based on the metal oxide content.

<sup>9</sup>Recoverable content of nickel sulfide concentrates.

<sup>10</sup>Rare-earth-oxide (REO) basis.

<sup>11</sup>Rhenium content; based on 80% recovery of estimated rhenium contained in molybdenum mineral concentrates.

<sup>12</sup>Data rounded to no more than one significant digit to avoid disclosing company proprietary data.

<sup>13</sup>Withheld to avoid disclosing company proprietary data.

<sup>14</sup>Sold or used, unless otherwise specified.

<sup>15</sup>Data are not rounded. Refer to the Minerals Yearbook cement chapter.

<sup>16</sup>Data are rounded to no more than two significant digits.

<sup>17</sup>Crude garnet production. Refer to the Minerals Yearbook garnet chapter for refined garnet production.

<sup>18</sup>Production based on publicly available data; refer to the Minerals Yearbook kyanite chapter.

<sup>19</sup>Includes Puerto Rico.

<sup>20</sup>Grindstones, pulpstones, and sharpening stones; does not include mill liners and grinding pebbles.

<sup>21</sup>Rounded to one significant digit to avoid disclosing company proprietary data.

TABLE 2  
NONFUEL MINERALS PRODUCED IN THE UNITED STATES, BY COMMODITY AND STATES IN 2017<sup>1</sup>

(Principal States based on quantity unless otherwise specified)

Commodity <sup>2</sup>	Principal States <sup>3</sup>	Other States <sup>3</sup>
Andalusite	NC	
Barite	GA and NV	
Bauxite	AL, AR, GA	
Beryllium	UT	
Boron minerals	CA	
Bromine	AR	
Cadmium	TN	
Cement:		
Masonry	AL, CA, FL, IN, TX	All other States, except CT, DE, ID, LA, MA, MN, NC, ND, NH, NJ, RI, VT, WI.
Portland	AL, CA, FL, MO, TX	All other States, except AK, CT, DE, HI, ID, LA, MA, MN, MS, NC, ND, NH, NJ, RI, VT, WI.
Clay:		
Ball clay	IN, MS, TN, TX	
Bentonite	AL, MS, MT, UT, WY	AZ, CA, NV, OR, TX.
Common clay and (or) shale	AL, NC, NY, OH, TX	All other States, except AK, AZ, DE, FL, HI, ID, MN, NH, NJ, NV, RI, TN, VT, WI.
Fire clay	CO, MO, NC, OH, TX	
Fuller's earth:		
Attapulgitite	FL, GA, NV	
Montmorillonite	CA, GA, MO, MS, VA	IL, KS, TN, TX.
Kaolin	AL, AR, CA, GA, SC	FL and NV.
Cobalt	MI	
Copper	AZ, MT, NM, NV, UT	MI and MO.
Diatomite	CA, NV, OR, WA	
Feldspar	CA, ID, NC, OK, VA	SD.
Garnet, industrial	ID, MT, NY	
Gemstones, natural <sup>4</sup>	AZ, CA, MT, NV, OR	All other States.
Gold	AK, CA, CO, NV, UT	AZ, ID, MI, MT, NM, SC, SD, WA.
Gypsum, crude	IA, KS, NV, OK, TX	AR, AZ, CA, CO, IN, LA, MI, NM, SD, UT, WY.
Helium, Grade-A	AZ, CO, KS, OK, WY	UT.
Iodine, crude	OK	
Iron ore	MI and MN	
Iron oxide pigments, crude	AL, GA, UT	
Kyanite	VA	
Lead	AK, ID, MO, WA	
Lime	AL, KY, MO, OH, TX	All other States, except AK, CT, DE, HI, IL, KS, MD, ME, MS, NC, NH, NJ, NM, NY, RI, SC, VT.
Lithium carbonate	NV	
Magnesite	NV	
Magnesium compounds	CA, DE, MI, UT	
Magnesium metal	UT	
Mica, crude	GA, NC, SD, VA	
Molybdenum mineral concentrates	AZ, CO, MT, NV, UT	
Nickel	MI	
Olivine	WA	
Palladium	MT	
Peat	FL, IL, ME, MI, MN	IA, IN, NJ, NY, OH, PA, WA.
Perlite, crude	AZ, ID, NM, NV, OR	
Phosphate rock	FL, ID, NC, UT	
Platinum	MT	
Potash	NM and UT	
Pumice and pumicite	CA, ID, KS, NM, OR	
Pyrophyllite, crude	NC	
Salt	LA, MI, NY, OH, TX	AL, AZ, CA, KS, NM, NV, OK, TN, UT, VA, WV.
Sand and gravel:		
Construction	AZ, CA, MI, MN, TX	All other States.
Industrial	IL, MN, MO, TX, WI	All other States, except AK, CT, DE, HI, KS, MA, MD, ME, MT, NH, NM, OR, UT, VT, WY.
Silica stone, special	AR	
Silica, tripoli	AR, IL, MO	

See footnotes at end of table.

TABLE 2—Continued  
NONFUEL MINERALS PRODUCED IN THE UNITED STATES, BY COMMODITY AND STATES IN 2017<sup>1</sup>

(Principal States based on quantity unless otherwise specified)

Commodity <sup>2</sup>	Principal States <sup>3</sup>	Other States <sup>3</sup>
Silver	AK, AZ, ID, NV, UT	CA, CO, MO, MT, NM, SD.
Soda ash	CA and WY	
Staurolite	FL	
Stone:		
Crushed	FL, MO, NC, PA, TX	All other States.
Dimension	GA, IN, TX, VT, WI	All other States, except AK, DE, FL, HI, IA, KY, LA, MS, ND, NE, NJ, OR, RI, SC, WV, WY.
Talc, crude	MT, TX, VT	
Titanium mineral concentrates:		
Ilmenite	FL and GA	
Rutile	GA	
Vermiculite, crude	SC and VA	
Wollastonite	NY	
Zeolites	CA, ID, NM, OR, TX	AZ.
Zinc	AK, ID, MO, TN, WA	
Zirconium mineral concentrates	FL and GA	

<sup>1</sup>Table includes data from the mineral commodity chapters published in the U.S. Geological Survey 2017 Minerals Yearbook as they were completed through January 2022.

<sup>2</sup>In addition to the mineral commodities listed, bauxite was produced in Alabama, Arkansas, and Georgia, small quantities of fluorspar were intermittently produced in Kentucky, and rhenium was recovered as a byproduct from molybdenum mineral concentrates in Arizona, Montana, and Utah.

<sup>3</sup>Listed in alphabetical order by abbreviation.

<sup>4</sup>Listed according to production value.

TABLE 3  
VALUE OF NONFUEL MINERAL PRODUCTION IN THE UNITED STATES AND PRINCIPAL NONFUEL MINERALS PRODUCED IN 2017<sup>1</sup>

State	Value <sup>2</sup> (thousands)	Rank <sup>3</sup>	Percent of U.S. total <sup>4</sup>	Principal commodities <sup>5</sup>
Alabama	\$1,350,000	20	1.70	Cement (masonry and portland), lime, sand and gravel (construction), stone (crushed).
Alaska	3,690,000	6	4.64	Gold, lead, sand and gravel (construction), silver, zinc.
Arizona	6,680,000	2	8.40	Cement (portland), copper, molybdenum mineral concentrates, sand and gravel (construction), stone (crushed).
Arkansas	902,000	29	1.13	Bromine, cement (portland), sand and gravel (construction), sand and gravel (industrial), stone (crushed).
California	4,240,000	4	5.33	Boron minerals, cement (portland), gold, sand and gravel (construction), stone (crushed).
Colorado	1,710,000	16	2.15	Cement (portland), gold, molybdenum mineral concentrates, sand and gravel (construction), stone (crushed).
Connecticut <sup>6</sup>	199,000	43	0.25	Clay [common clay and (or) shale], sand and gravel (construction), stone (crushed), stone (dimension).
Delaware <sup>6</sup>	21,700	50	0.03	Magnesium compounds, sand and gravel (construction), stone (crushed).
Florida	3,450,000	7	4.34	Cement (portland), phosphate rock, sand and gravel (construction), stone (crushed), zirconium mineral concentrates.
Georgia	1,930,000	13	2.43	Cement (portland), clay (kaolin and montmorillonite), sand and gravel (construction), stone (crushed).
Hawaii	120,000	45	0.15	Sand and gravel (construction) and stone (crushed).
Idaho	520,000	35	0.65	Lead, phosphate rock, sand and gravel (construction), silver, stone (crushed).
Illinois <sup>6</sup>	1,580,000	17	1.99	Cement (portland), sand and gravel (construction), sand and gravel (industrial), silica (tripoli), stone (crushed).
Indiana	1,030,000	25	1.29	Cement (portland), lime, sand and gravel (construction), stone (crushed), stone (dimension).
Iowa <sup>6</sup>	685,000	27	0.86	Cement (portland), lime, sand and gravel (construction), sand and gravel (industrial), stone (crushed).
Kansas <sup>6</sup>	587,000	28	0.74	Cement (portland), helium (Grade-A), salt, sand and gravel (construction), stone (crushed).
Kentucky <sup>6</sup>	519,000	30	0.65	Cement (portland), lime, sand and gravel (construction), sand and gravel (industrial), stone (crushed).
Louisiana <sup>6</sup>	555,000	34	0.70	Clay [common clay and (or) shale], salt, sand and gravel (construction), sand and gravel (industrial), stone (crushed).
Maine <sup>6</sup>	93,500	44	0.12	Cement (portland), peat, sand and gravel (construction), stone (crushed), stone (dimension).
Maryland <sup>6</sup>	392,000	33	0.49	Cement (masonry and portland), sand and gravel (construction), stone (crushed), stone (dimension).
Massachusetts <sup>6</sup>	266,000	42	0.33	Clay [common clay and (or) shale], lime, sand and gravel (construction), stone (crushed), stone (dimension).
Michigan	2,630,000	10	3.31	Cement (portland), iron ore, salt, sand and gravel (construction), stone (crushed).
Minnesota <sup>6</sup>	3,690,000	5	4.64	Iron ore, sand and gravel (construction), sand and gravel (industrial), stone (crushed), stone (dimension).
Mississippi <sup>6</sup>	344,000	37	0.43	Clay (ball clay and montmorillonite), sand and gravel (construction), sand and gravel (industrial), stone (crushed).
Missouri <sup>6</sup>	2,570,000	8	3.23	Cement (portland), lead, lime, sand and gravel (industrial), stone (crushed).
Montana	1,100,000	24	1.38	Copper, molybdenum mineral concentrates, palladium, platinum, sand and gravel (construction).
Nebraska <sup>6</sup>	177,000	39	0.22	Cement (portland), lime, sand and gravel (construction), sand and gravel (industrial), stone (crushed).
Nevada	8,290,000	1	10.43	Copper, gold, lime, sand and gravel (construction), silver.
New Hampshire <sup>6</sup>	111,000	46	0.14	Sand and gravel (construction), stone (crushed), stone (dimension).
New Jersey	343,000	41	0.43	Sand and gravel (construction), sand and gravel (industrial), stone (crushed).
New Mexico	1,250,000	22	1.57	Cement (portland), copper, potash, sand and gravel (construction), stone (crushed).
New York <sup>6</sup>	1,400,000	18	1.76	Cement (portland), clay [common clay and (or) shale], salt, sand and gravel (construction), stone (crushed).
North Carolina <sup>6</sup>	1,190,000	19	1.49	Clay [common clay and (or) shale], phosphate rock, sand and gravel (construction), sand and gravel (industrial), stone (crushed).
North Dakota <sup>6</sup>	92,300	48	0.12	Clay [common clay and (or) shale], lime, sand and gravel (construction), sand and gravel (industrial), stone (crushed).
Ohio <sup>6</sup>	1,250,000	15	1.57	Cement (portland), lime, salt, sand and gravel (construction), stone (crushed).
Oklahoma	845,000	31	1.06	Cement (portland), iodine, sand and gravel (construction), sand and gravel (industrial), stone (crushed).
Oregon	452,000	36	0.57	Cement (portland), diatomite, perlite (crude), sand and gravel (construction), stone (crushed).
Pennsylvania <sup>6</sup>	1,870,000	14	2.36	Cement (masonry and portland), lime, sand and gravel (construction), stone (crushed).
Rhode Island <sup>6</sup>	53,100	49	0.07	Sand and gravel (construction), sand and gravel (industrial), stone (crushed).

See footnotes at end of table.

TABLE 3—Continued

VALUE OF NONFUEL MINERAL PRODUCTION IN THE UNITED STATES AND PRINCIPAL NONFUEL MINERALS PRODUCED IN 2017<sup>1</sup>

State	Value <sup>2</sup> (thousands)	Rank <sup>3</sup>	Percent of U.S. total <sup>4</sup>	Principal commodities <sup>5</sup>
South Carolina <sup>6</sup>	984,000	26	1.24	Cement (portland), clay (kaolin), gold, sand and gravel (construction), stone (crushed).
South Dakota	371,000	38	0.47	Cement (portland), gold, lime, sand and gravel (construction), stone (crushed).
Tennessee	1,230,000	23	1.55	Cement (portland), sand and gravel (construction), sand and gravel (industrial), stone (crushed), zinc.
Texas	5,390,000	3	6.79	Cement (portland), salt, sand and gravel (construction), sand and gravel (industrial), stone (crushed).
Utah	2,650,000	9	3.33	Copper, gold, magnesium metal, salt, sand and gravel (construction).
Vermont <sup>6</sup>	112,000	47	0.14	Sand and gravel (construction), stone (crushed), stone (dimension), talc (crude).
Virginia	1,320,000	21	1.67	Cement (portland), lime, sand and gravel (construction), sand and gravel (industrial), stone (crushed).
Washington	823,000	32	1.04	Cement (portland), gold, sand and gravel (construction), stone (crushed), zinc.
West Virginia <sup>6</sup>	174,000	40	0.22	Cement (masonry and portland), lime, sand and gravel (industrial), stone (crushed).
Wisconsin <sup>6</sup>	2,240,000	12	2.81	Lime, sand and gravel (construction), sand and gravel (industrial), stone (crushed), stone (dimension).
Wyoming	2,530,000	11	3.18	Cement (portland), clay (bentonite), helium (Grade-A), sand and gravel (construction), soda ash.
Undistributed	3,490,000	XX	4.39	XX.
Total	79,500,000	XX	100.00	Cement (portland), copper, gold, sand and gravel (construction), stone (crushed).

XX Not applicable.

<sup>1</sup>Table includes data from the mineral commodity chapters published in the U.S. Geological Survey 2017 Minerals Yearbook as they were completed through January 2022.<sup>2</sup>Data are rounded to no more than three significant digits; may not add to total shown.<sup>3</sup>Rank based on total, unadjusted, State values.<sup>4</sup>Reported to two decimal places. Calculated using partial totals where applicable.<sup>5</sup>Principal commodities based on value. Listed in alphabetical order.<sup>6</sup>Partial total; excludes values that must be withheld to avoid disclosing company proprietary data, which are included with "Undistributed."



TABLE 4  
VALUE OF NONFUEL MINERAL PRODUCTION PER CAPITA AND PER SQUARE KILOMETER IN 2017, BY STATE<sup>1</sup>

State	Land area <sup>2</sup>		Value of nonfuel mineral production <sup>3</sup>				
	(square kilometers)	Population <sup>2</sup> (thousands)	Total (thousands)	Per capita		Per square kilometer	
				Dollars	Rank <sup>4</sup>	Dollars	Rank <sup>4</sup>
Alabama	131,171	4,874	\$1,350,000	278	15	10,300	24
Alaska	1,477,953	740	3,690,000	4,980	1	2,490	44
Arizona	294,207	7,044	6,680,000	948	5	22,700	3
Arkansas	134,771	3,001	902,000	300	14	6,690	29
California	403,466	39,358	4,240,000	108	37	10,500	23
Colorado	268,431	5,612	1,710,000	305	12	6,370	30
Connecticut	12,542	3,573	199,000 <sup>5</sup>	56	46	15,900	10
Delaware	5,047	957	21,700 <sup>5</sup>	23	50	4,310	38
Florida	138,887	20,964	3,450,000	164	25	24,800	2
Georgia	148,959	10,410	1,930,000	186	22	13,000	14
Hawaii	16,635	1,424	120,000	84	41	7,230	28
Idaho	214,045	1,718	520,000	303	13	2,430	45
Illinois	143,793	12,779	1,580,000 <sup>5</sup>	124	29	11,000	22
Indiana	92,789	6,658	1,030,000	154	27	11,100	21
Iowa	144,669	3,142	685,000 <sup>5</sup>	218	17	4,740	36
Kansas	211,754	2,909	587,000 <sup>5</sup>	202	19	2,770	43
Kentucky	102,269	4,452	519,000 <sup>5</sup>	116	32	5,070	31
Louisiana	111,898	4,671	555,000 <sup>5</sup>	119	31	4,960	32
Maine	79,883	1,335	93,500 <sup>5</sup>	70	44	1,170	48
Maryland	25,142	6,024	392,000 <sup>5</sup>	65	45	15,600	11
Massachusetts	20,202	6,860	266,000 <sup>5</sup>	39	48	13,200	13
Michigan	146,435	9,973	2,630,000	264	16	18,000	6
Minnesota	206,232	5,566	3,690,000 <sup>5</sup>	663	7	17,900	7
Mississippi	121,531	2,989	344,000 <sup>5</sup>	115	34	2,830	41
Missouri	178,040	6,107	2,570,000 <sup>5</sup>	421	10	14,400	12
Montana	376,962	1,052	1,100,000	1,050	4	2,920	40
Nebraska	198,974	1,916	177,000 <sup>5</sup>	92	40	888	49
Nevada	284,332	2,970	8,290,000	2,790	3	29,100	1
New Hampshire	23,187	1,349	111,000 <sup>5</sup>	82	42	4,800	33
New Jersey	19,047	8,886	343,000	39	49	18,000	5
New Mexico	314,161	2,092	1,250,000	598	8	3,980	39
New York	122,057	19,590	1,400,000 <sup>5</sup>	71	43	11,400	20
North Carolina	125,920	10,268	1,190,000 <sup>5</sup>	115	33	9,420	26
North Dakota	178,711	755	92,300 <sup>5</sup>	122	30	517	50
Ohio	105,829	11,660	1,250,000 <sup>5</sup>	107	38	11,800	18
Oklahoma	177,660	3,931	845,000	215	18	4,760	35
Oregon	248,608	4,144	452,000	109	36	1,820	47
Pennsylvania	115,883	12,788	1,870,000 <sup>5</sup>	146	28	16,200	8
Rhode Island	2,678	1,056	53,100 <sup>5</sup>	50	47	19,800	4
South Carolina	77,857	5,021	984,000 <sup>5</sup>	196	20	12,600	16
South Dakota	196,350	873	371,000	425	9	1,890	46
Tennessee	106,798	6,709	1,230,000	184	23	11,500	19
Texas	676,587	28,295	5,390,000	191	21	7,970	27
Utah	212,818	3,101	2,650,000	855	6	12,500	17
Vermont	23,871	624	112,000 <sup>5</sup>	179	24	4,690	37
Virginia	102,279	8,464	1,320,000	156	26	12,900	15
Washington	172,119	7,423	823,000	111	35	4,780	34
West Virginia	62,259	1,817	174,000 <sup>5</sup>	96	39	2,800	42
Wisconsin	140,268	5,790	2,240,000 <sup>5</sup>	386	11	15,900	9
Wyoming	251,470	579	2,530,000	4,360	2	10,000	25
Undistributed	XX	XX	3,490,000	XX	XX	XX	XX
Total or average	9,147,436 <sup>6</sup>	324,291 <sup>6</sup>	79,500,000	245	XX	8,690	XX

XX Not applicable.

<sup>1</sup>Table includes data from the mineral commodity chapters published in the U.S. Geological Survey 2017 Minerals Yearbook as they were completed through January 2022.

<sup>2</sup>Source: U.S. Census Bureau State and national total values.

<sup>3</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>4</sup>Rank based on total, unadjusted, State values.

<sup>5</sup>Partial total; excludes values that must be withheld to avoid disclosing company proprietary data, which are included with "Undistributed."

<sup>6</sup>Excludes Washington, DC (which has no mineral production), with an area of 158 square kilometers and a population of 694,906.

TABLE 5  
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES, BY STATE<sup>1, 2, 3</sup>

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

State and commodity	2015		2016		2017	
	Quantity	Value	Quantity	Value	Quantity	Value
Alabama:						
Clay:						
Bentonite	(4)	W	76	9,370	56	6,890
Common clay and (or) shale	1,410 <sup>r</sup>	6,370 <sup>r</sup>	1,500 <sup>r</sup>	6,700 <sup>r</sup>	1,540	5,560
Kaolin <sup>c</sup>	(4)	W	145	7,420	161	8,280
Gemstones, natural <sup>e</sup>	NA	92	NA	82	NA	77
Lime	2,340	302,000	2,270 <sup>r</sup>	292,000 <sup>r</sup>	2,170	289,000
Sand and gravel:						
Construction	9,620 <sup>r</sup>	67,400	11,400 <sup>r</sup>	76,500 <sup>r</sup>	12,000	93,700
Industrial	972	23,700	664	16,700	1,170	29,800
Stone, crushed	37,000 <sup>r</sup>	371,000 <sup>r</sup>	38,900 <sup>r</sup>	423,000 <sup>r</sup>	39,000	433,000
Combined values of bauxite, cement, iron oxide pigments (crude), salt, stone (dimension), and values indicated by symbol W	XX	534,000	XX	492,000 <sup>r</sup>	XX	488,000
Total	XX	1,300,000 <sup>r</sup>	XX	1,320,000 <sup>r</sup>	XX	1,350,000
Alaska:						
Gemstones, natural <sup>e</sup>	NA	73	NA	17	NA	25
Gold <sup>5</sup> kilograms	28,000	1,050,000	27,600	1,110,000	26,200	1,060,000
Lead <sup>5</sup> metric tons	161,000	324,000	164,000	341,000	163,000	411,000
Sand and gravel, construction	9,020	79,000	8,670	74,300	5,080	43,600
Silver <sup>5</sup> kilograms	490,000	248,000	520,000	286,000 <sup>r</sup>	514,000	282,000
Stone, crushed	1,040	12,100	749	15,300	515	10,600
Zinc <sup>5</sup> metric tons	629,000	1,330,000	658,000	1,470,000	611,000	1,880,000
Total	XX	3,040,000	XX	3,300,000	XX	3,690,000
Arizona:						
Copper <sup>5</sup>	961	5,430,000	969	4,800,000	868	5,460,000
Gemstones, natural <sup>e</sup>	NA	1,420	NA	2,090	NA	2,180
Sand and gravel, construction	39,500	363,000	40,300	370,000	41,700	395,000
Silver <sup>5</sup> kilograms	99,200	50,100	86,700	47,800	78,900	43,300
Stone:						
Crushed	10,800 <sup>r</sup>	96,200 <sup>r</sup>	10,100 <sup>r</sup>	97,700 <sup>r</sup>	10,700	99,900
Dimension	62	6,660	70	5,850	54	5,470
Combined values of cement, clay [bentonite and common clay and (or) shale (2015–16)], gold, gypsum (crude), helium [Grade-A (2016–17)], lime, molybdenum mineral concentrates, perlite (crude), rhenium, salt, sand and gravel (industrial), zeolites	XX	566,000 <sup>r</sup>	XX	536,000 <sup>r</sup>	XX	671,000
Total	XX	6,510,000 <sup>r</sup>	XX	5,860,000 <sup>r</sup>	XX	6,680,000
Arkansas:						
Clay:						
Common clay and (or) shale	427	1,640	415	1,920	270	1,840
Kaolin <sup>c</sup>	(4)	W	36	520	27	387
Gemstones, natural <sup>e</sup>	NA	441	NA	406	NA	446
Sand and gravel:						
Construction	7,510	66,000	7,510	66,800	7,760	73,500
Industrial	1,990	146,000	1,330	72,400 <sup>r</sup>	1,990	109,000
Silica stone, special metric tons	205	49	300 <sup>e</sup>	72 <sup>e</sup>	318	76
Stone:						
Crushed	27,800	236,000	29,400 <sup>r</sup>	264,000 <sup>r</sup>	30,600	290,000
Dimension	10	1,290	8	1,110	7	983
Combined values of bauxite, bromine, cement, gypsum (crude), lime, silica (tripoli), and value indicated by symbol W	XX	377,000 <sup>r</sup>	XX	371,000 <sup>r</sup>	XX	426,000
Total	XX	829,000	XX	778,000 <sup>r</sup>	XX	902,000

See footnotes at the end of the table.

TABLE 5—Continued  
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES, BY STATE<sup>1,2,3</sup>

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

State and commodity	2015		2016		2017	
	Quantity	Value	Quantity	Value	Quantity	Value
California:						
Cement:						
Masonry	188	20,800 <sup>c</sup>	220	25,800 <sup>c</sup>	229	27,000 <sup>c</sup>
Portland	9,770	887,000 <sup>c</sup>	9,600	907,000 <sup>c</sup>	9,960	988,000 <sup>c</sup>
Clay, common clay and (or) shale	400	10,600	439	16,800	501	12,800
Gemstones, natural <sup>c</sup>	NA	882	NA	769	NA	851
Gypsum, crude	690	5,380	814	7,180 <sup>r</sup>	858	11,900
Rare earths <sup>e,6</sup> metric tons	5,900	W	--	--	--	--
Sand and gravel:						
Construction	95,400	1,070,000	95,400	1,120,000	100,000	1,280,000
Industrial	1,860	66,100	1,620	54,200	1,780	55,000
Stone:						
Crushed	43,100 <sup>r</sup>	395,000 <sup>r</sup>	42,300 <sup>r</sup>	384,000 <sup>r</sup>	43,400	412,000
Dimension	21	7,780	17	6,750	19	6,890
Combined values of boron minerals, clay (bentonite, montmorillonite, kaolin), diatomite, feldspar, gold, lime, magnesium compounds, pumice and pumicite, salt, silver, soda ash, zeolites, and value indicated by symbol W	XX	958,000 <sup>r</sup>	XX	938,000 <sup>r</sup>	XX	1,440,000
Total	XX	3,420,000 <sup>r</sup>	XX	3,460,000 <sup>r</sup>	XX	4,240,000
Colorado:						
Clay, common clay and (or) shale	228	4,850	300	9,220	269	8,580
Gemstones, natural <sup>c</sup>	NA	326	NA	1,070	NA	431
Sand and gravel, construction	33,600	260,000	34,900	282,000 <sup>r</sup>	34,000	284,000
Stone:						
Crushed	14,900 <sup>r</sup>	131,000 <sup>r</sup>	15,400 <sup>r</sup>	148,000 <sup>r</sup>	16,700	162,000
Dimension	20	9,570	20	10,200	30	11,900
Combined values of cement, clay (fire clay), gold, gypsum (crude), helium [crude (2015) and Grade-A (2015–17)], lime, molybdenum mineral concentrates, sand and gravel (industrial), silver	XX	894,000 <sup>r</sup>	XX	1,020,000 <sup>r</sup>	XX	1,240,000
Total	XX	1,300,000 <sup>r</sup>	XX	1,470,000 <sup>r</sup>	XX	1,710,000
Connecticut:						
Clay, common clay and (or) shale	(4)	(7)	(4)	(7)	(4)	(7)
Gemstones, natural <sup>c</sup>	NA	8	NA	13	NA	8
Sand and gravel, construction	5,120	48,600	5,330	51,800	4,810	46,900
Stone:						
Crushed	9,360	142,000	9,480 <sup>r</sup>	146,000 <sup>r</sup>	9,640	150,000
Dimension	12	2,360	(4)	(7)	10	1,580
Total	XX	193,000 <sup>r</sup>	XX	198,000 <sup>r</sup>	XX	199,000
Delaware:						
Gemstones, natural <sup>c</sup>	NA	2	NA	2	NA	2
Magnesium compounds	(4)	(7)	(4)	(7)	(4)	(7)
Sand and gravel, construction	2,370	19,800	2,810	25,600 <sup>r</sup>	2,290	21,700
Stone, crushed	(4)	(7)	(4)	(7)	(4)	(7)
Total	XX	19,800	XX	25,600 <sup>r</sup>	XX	21,700
Florida:						
Cement:						
Masonry	400	51,900 <sup>c</sup>	509	70,700 <sup>c</sup>	417	59,000 <sup>c</sup>
Portland	5,500	551,000 <sup>c</sup>	5,860	600,000 <sup>c</sup>	5,940	639,000 <sup>c</sup>
Clay, kaolin <sup>c</sup>	(4)	W	17	3,630	15	3,190
Gemstones, natural <sup>c</sup>	NA	2	NA	4	NA	4
Peat metric tons	317,000	7,110	292,000	6,810	329,000	6,490
Sand and gravel:						
Construction	17,200	175,000	19,100	204,000	18,100	201,000
Industrial	485	32,100	392	12,900	363	9,330
Stone, crushed	69,100 <sup>r</sup>	808,000 <sup>r</sup>	73,900 <sup>r</sup>	927,000 <sup>r</sup>	73,400	936,000

See footnotes at end of table.

TABLE 5—Continued  
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES, BY STATE<sup>1, 2, 3</sup>

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

State and commodity	2015		2016		2017	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Florida:—Continued</b>						
Combined values of clay (attapulgitite), lime, phosphate rock, staurolite, titanium mineral concentrates (ilmenite), zirconium mineral concentrates, and value indicated by symbol W	XX	1,510,000	XX	1,600,000	XX	1,590,000
Total	XX	3,130,000	XX	3,420,000	XX	3,450,000
<b>Georgia:</b>						
Clay, kaolin <sup>e</sup>	5,190	827,000	4,720	788,000	4,970	822,000
Gemstones, natural <sup>c</sup>	NA	24	NA	11	NA	11
Sand and gravel, construction	6,110	42,400	6,360	43,800	6,720	47,700
<b>Stone:</b>						
Crushed	48,200	643,000	53,900	787,000 <sup>r</sup>	53,200	826,000
Dimension	140	13,000	139	13,100	131	13,000
Combined values of barite, bauxite, cement, clay [common clay and (or) shale and fuller's earth], iron oxide pigments [crude (2016–17)], lime, mica (crude), sand and gravel (industrial), titanium mineral concentrates [ilmenite and rutile (2016–17)], zirconium mineral concentrates	XX	212,000	XX	202,000 <sup>r</sup>	XX	226,000
Total	XX	1,740,000	XX	1,830,000	XX	1,930,000
<b>Hawaii:</b>						
Gemstones, natural <sup>c</sup>	NA	103	NA	69	NA	12
Sand and gravel, construction	459	10,300	357	7,720	449	9,170
Stone, crushed	5,150	101,000	5,260 <sup>r</sup>	105,000 <sup>r</sup>	5,090	111,000
Total	XX	112,000	XX	113,000 <sup>r</sup>	XX	120,000
<b>Idaho:</b>						
Gemstones, natural <sup>c</sup>	NA	1,630	NA	1,680	NA	410
Gold <sup>5</sup>	(4)	W	--	--	109	4,440
Sand and gravel, construction	14,100	83,000	15,100 <sup>r</sup>	87,600 <sup>r</sup>	16,000	95,700
<b>Stone:</b>						
Crushed	5,190 <sup>r</sup>	34,400 <sup>r</sup>	4,640 <sup>r</sup>	32,400 <sup>r</sup>	4,060	29,100
Dimension	45	7,050	46	7,970	52	8,260
Combined values of copper (2015), feldspar, garnet (industrial), lead, lime, perlite (crude), phosphate rock, pumice and pumicite, sand and gravel [industrial (2017)], silver, zeolites, zinc, and value indicated by symbol W	XX	412,000 <sup>r</sup>	XX	464,000 <sup>r</sup>	XX	382,000
Total	XX	538,000 <sup>r</sup>	XX	594,000	XX	520,000
<b>Illinois:</b>						
Cement, portland	1,410	153,000 <sup>e</sup>	1,550	178,000 <sup>e</sup>	1,340	161,000 <sup>e</sup>
Gemstones, natural <sup>c</sup>	NA	11	NA	11	NA	11
<b>Sand and gravel:</b>						
Construction	22,000	152,000	20,600	139,000	21,500	152,000
Industrial	14,100	867,000	10,600	353,000 <sup>r</sup>	12,600	730,000
Stone, crushed	54,500 <sup>r</sup>	570,000 <sup>r</sup>	50,200 <sup>r</sup>	531,000 <sup>r</sup>	49,500	538,000
Combined values of clay [common clay and (or) shale and montmorillonite], peat, silica (tripoli), stone (dimension)	XX	(7)	XX	(7)	XX	(7)
Total	XX	1,740,000	XX	1,200,000 <sup>r</sup>	XX	1,580,000
<b>Indiana:</b>						
Cement, portland	2,560	254,000 <sup>e</sup>	(4)	W	(4)	W
Clay, common clay and (or) shale	463	7,610	378	5,270	421	5,090
Gemstones, natural <sup>c</sup>	NA	5	NA	5	NA	5
Sand and gravel, construction	17,300	132,000	17,500	133,000	17,100	127,000
<b>Stone:</b>						
Crushed	49,500	384,000	47,400 <sup>r</sup>	390,000	48,300	420,000
Dimension	211	39,700	236	42,800	223	38,900

See footnotes at end of table.

TABLE 5—Continued  
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES, BY STATE<sup>1, 2, 3</sup>

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

State and commodity	2015		2016		2017	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Indiana:—Continued</b>						
Combined values of cement (masonry), clay (ball clay) gypsum (crude), lime, peat, sand and gravel (industrial), and values indicated by symbol W	XX	(7)	XX	415,000 <sup>r</sup>	XX	437,000
Total	XX	818,000 <sup>r</sup>	XX	986,000 <sup>r</sup>	XX	1,030,000
<b>Iowa:</b>						
Clay, common clay and (or) shale	191	707	156	636	173	662
Gemstones, natural <sup>c</sup>	NA	3	NA	3	NA	3
<b>Sand and gravel:</b>						
Construction	14,900	118,000	14,900	121,000 <sup>r</sup>	16,100	144,000
Industrial	1,790	133,000	1,340	58,700 <sup>r</sup>	2,120	135,000
Stone, crushed	36,000	380,000	37,400 <sup>r</sup>	402,000 <sup>r</sup>	36,200	406,000
Combined values of cement, gypsum (crude), lime, peat	XX	(7)	XX	(7)	XX	(7)
Total	XX	632,000	XX	582,000 <sup>r</sup>	XX	685,000
<b>Kansas:</b>						
Cement, portland	2,140	207,000 <sup>e</sup>	2,230	223,000 <sup>e</sup>	2,300	242,000 <sup>e</sup>
<b>Clay:</b>						
Common clay and (or) shale	302	1,720	286	W	286	W
Montmorillonite	(4)	W	(4)	W	29	W
Gemstones, natural <sup>c</sup>	NA	2	NA	2	NA	2
Salt	2,830	207,000	2,560	209,000	2,130	159,000
Sand and gravel, construction	9,000 <sup>r</sup>	55,100 <sup>r</sup>	10,100	59,500 <sup>r</sup>	9,610	52,900
<b>Stone:</b>						
Crushed	17,700	162,000	16,900 <sup>r</sup>	144,000 <sup>r</sup>	15,600	133,000
Dimension	11	1,090	13	1,270	(4)	W
Combined values of cement (masonry), gypsum (crude), helium [crude (2015–16) and Grade-A (2015–17)], pumice and pumicite, and values indicated by symbol W	XX	(7)	XX	(7)	XX	(7)
Total	XX	634,000 <sup>r</sup>	XX	636,000 <sup>r</sup>	XX	587,000
<b>Kentucky:</b>						
Clay, common clay and (or) shale	146	4,470	133	4,630	141	4,860
Gemstones, natural <sup>c</sup>	NA	16	NA	13	NA	17
Sand and gravel, construction	9,040	45,500	8,780 <sup>r</sup>	42,000 <sup>r</sup>	7,950	38,100
Stone, crushed	54,000	503,000	50,100 <sup>r</sup>	463,000 <sup>r</sup>	50,700	476,000
Combined values of cement, lime, sand and gravel (industrial)	XX	(7)	XX	(7)	XX	(7)
Total	XX	553,000 <sup>r</sup>	XX	509,000 <sup>r</sup>	XX	519,000
<b>Louisiana:</b>						
Gemstones, natural <sup>c</sup>	NA	8	NA	34	NA	8
Salt	12,700	325,000	12,000 <sup>r</sup>	307,000 <sup>r</sup>	11,800	342,000
<b>Sand and gravel:</b>						
Construction	16,300	185,000	17,200	198,000	14,500	168,000
Industrial	1,530	62,000	1,440 <sup>r</sup>	47,800 <sup>r</sup>	1,470	44,800
Combined values of clay [common clay and (or) shale], gypsum (crude), lime, stone (crushed)	XX	(7)	XX	(7)	XX	(7)
Total	XX	572,000	XX	553,000 <sup>r</sup>	XX	555,000
<b>Maine:</b>						
Gemstones, natural <sup>c</sup>	NA	376	NA	378	NA	540
Sand and gravel, construction	7,500 <sup>r</sup>	59,000 <sup>r</sup>	8,720 <sup>r</sup>	71,800 <sup>r</sup>	8,190	63,900
<b>Stone:</b>						
Crushed	4,290 <sup>r</sup>	34,000 <sup>r</sup>	4,170 <sup>r</sup>	29,900 <sup>r</sup>	4,320	29,100
Dimension	3	1,840	3	1,880	(4)	(7)
Combined values of cement, clay [common clay and (or) shale], peat	XX	(7)	XX	(7)	XX	(7)
Total	XX	95,300 <sup>r</sup>	XX	104,000 <sup>r</sup>	XX	93,500

See footnotes at end of table.

TABLE 5—Continued  
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES, BY STATE<sup>1,2,3</sup>

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

State and commodity	2015		2016		2017	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Maryland:</b>						
Gemstones, natural <sup>c</sup>	NA	2	NA	2	NA	2
Sand and gravel, construction	7,380	92,600	7,380	92,800	7,630	94,700
<b>Stone:</b>						
Crushed	22,700	246,000	22,100	258,000	24,300	295,000
Dimension	4	728	6	1,380	9	2,070
Combined values of cement and clay [common clay and (or) shale]	XX	(7)	XX	(7)	XX	(7)
<b>Total</b>	<b>XX</b>	<b>339,000</b>	<b>XX</b>	<b>352,000</b>	<b>XX</b>	<b>392,000</b>
<b>Massachusetts:</b>						
Clay, common clay and (or) shale	(4)	(7)	(4)	(7)	(4)	(7)
Gemstones, natural <sup>c</sup>	NA	2	NA	2	NA	2
Lime	(4)	(7)	(4)	(7)	(4)	(7)
Sand and gravel, construction	10,100	92,200	9,830	89,600	9,410	88,100
<b>Stone:</b>						
Crushed	12,100	159,000	12,600	174,000 <sup>r</sup>	12,700	178,000
Dimension	160	41,900	159	40,200	(4)	(7)
<b>Total</b>	<b>XX</b>	<b>293,000</b>	<b>XX</b>	<b>304,000<sup>r</sup></b>	<b>XX</b>	<b>266,000</b>
<b>Michigan:</b>						
<b>Cement:</b>						
Masonry	92	14,000 <sup>e</sup>	83	13,900 <sup>e</sup>	74	13,000 <sup>e</sup>
Portland	4,190	470,000 <sup>e</sup>	4,090	510,000 <sup>e</sup>	3,770	493,000 <sup>e</sup>
Cobalt <sup>6,8</sup> metric tons	760	W	690	W	640	W
Copper <sup>9</sup> do.	24,300	W	23,400	W	21,300	W
Gemstones, natural <sup>c</sup>	NA	15	NA	22	NA	29
Iron ore <sup>10</sup>	10,800	852,000	11,000	844,000	7,800	698,000
Lime	474	60,200	519	66,500 <sup>r</sup>	554	70,300
Nickel <sup>9,11</sup> metric tons	27,200	W	24,100	W	22,100	W
<b>Sand and gravel:</b>						
Construction	39,100	237,000	41,300	249,000	42,900	261,000
Industrial	3,370	77,300	3,410	54,000	618	28,700
Stone, crushed	32,500 <sup>r</sup>	217,000 <sup>r</sup>	37,300 <sup>r</sup>	240,000 <sup>r</sup>	39,100	255,000
Combined values of clay [common clay and (or) shale], gold, (2016–17), gypsum (crude), magnesium compounds, peat, salt, stone (dimension), and values indicated by symbol W	XX	836,000	XX	688,000 <sup>r</sup>	XX	812,000
<b>Total</b>	<b>XX</b>	<b>2,760,000<sup>r</sup></b>	<b>XX</b>	<b>2,670,000<sup>r</sup></b>	<b>XX</b>	<b>2,630,000</b>
<b>Minnesota:</b>						
Gemstones, natural <sup>c</sup>	NA	8	NA	8	NA	8
Iron ore <sup>10</sup>	35,400	2,890,000	30,800	2,210,000	40,100	3,060,000
Lime	(4)	(7)	(4)	(7)	(4)	(7)
Peat metric tons	58,300	2,860	71,000	4,900	67,700	4,840
<b>Sand and gravel:</b>						
Construction	49,300	239,000	46,400 <sup>r</sup>	225,000 <sup>r</sup>	42,700	219,000
Industrial	5,170	335,000	3,110	180,000	4,520	286,000
<b>Stone:</b>						
Crushed	7,780	97,800	7,340 <sup>r</sup>	93,300 <sup>r</sup>	7,240	97,600
Dimension	51	20,800	51	20,500	61	21,400
<b>Total</b>	<b>XX</b>	<b>3,590,000</b>	<b>XX</b>	<b>2,730,000<sup>r</sup></b>	<b>XX</b>	<b>3,690,000</b>
<b>Mississippi:</b>						
Gemstones, natural <sup>c</sup>	NA	2	NA	2	NA	2
<b>Sand and gravel:</b>						
Construction	9,950	78,900	10,300	85,000	11,000	90,400
Industrial	451	5,260	2,920 <sup>r</sup>	93,700 <sup>r</sup>	3,250	193,000
Stone, crushed	1,900	55,200	2,170	64,100	2,000	60,700

See footnotes at end of table.

TABLE 5—Continued  
 NONFUEL MINERAL PRODUCTION IN THE UNITED STATES, BY STATE<sup>1,2,3</sup>

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

State and commodity	2015		2016		2017	
	Quantity	Value	Quantity	Value	Quantity	Value
Mississippi:—Continued						
Combined values of clay [ball clay, bentonite, common clay and (or) shale, montmorillonite]	XX	(7)	XX	(7)	XX	(7)
Total	XX	139,000 <sup>f</sup>	XX	243,000 <sup>f</sup>	XX	344,000
Missouri:						
Cement, portland	8,540	849,000 <sup>e</sup>	8,340	909,000 <sup>e</sup>	9,380	1,070,000 <sup>e</sup>
Clay, common clay and (or) shale	426	3,590	340	2,830	322	2,660
Copper <sup>5</sup> metric tons	(4)	W	7,420	36,800	6,930	43,600
Lead <sup>5</sup> do.	(4)	W	136,000	282,000	120,000	303,000
Sand and gravel:						
Construction	9,890	67,700	9,830 <sup>f</sup>	70,500 <sup>f</sup>	8,880	67,200
Industrial	6,290	385,000	8,050	299,000 <sup>f</sup>	8,470	502,000
Silver <sup>5</sup> kilograms	(4)	W	4,280	2,360	3,880	2,130
Stone:						
Crushed	70,800 <sup>f</sup>	531,000 <sup>f</sup>	71,300 <sup>f</sup>	552,000 <sup>f</sup>	73,300	560,000
Dimension	(4)	W	(4)	W	59	14,600
Combined values of cement (masonry), clay (fire clay and montmorillonite), gemstones (natural), lime, silica (tripoli), zinc, and values indicated by symbol W	XX	778,000 <sup>f</sup>	XX	(7)	XX	(7)
Total	XX	2,610,000	XX	2,150,000 <sup>f</sup>	XX	2,570,000
Montana:						
Gemstones, natural <sup>c</sup>	NA	583	NA	600	NA	563
Palladium <sup>5</sup> kilograms	12,500	280,000	13,100	259,000	13,600	382,000
Platinum <sup>5</sup> do.	3,670	125,000	3,890	124,000	3,980	122,000
Sand and gravel, construction	12,100	92,300	11,400	91,000 <sup>f</sup>	10,400	84,400
Stone:						
Crushed	2,820	28,200	2,800	25,700	2,680	23,800
Dimension	24	1,000	(4)	W	27	4,620
Combined values of cement, clay [bentonite and common clay and (or) shale], copper, garnet (industrial), gold, lime, molybdenum mineral concentrates, rhenium, silver, talc (crude), and value indicated by symbol W	XX	489,000 <sup>f</sup>	XX	409,000 <sup>f</sup>	XX	483,000
Total	XX	1,020,000 <sup>f</sup>	XX	910,000 <sup>f</sup>	XX	1,100,000
Nebraska:						
Gemstones, natural <sup>c</sup>	NA	5	NA	5	NA	5
Sand and gravel, construction	12,700	91,000	12,700	94,200	11,700	87,600
Stone, crushed	7,030 <sup>f</sup>	85,100 <sup>f</sup>	6,880 <sup>f</sup>	86,000 <sup>f</sup>	7,060	89,200
Combined values of cement, clay [common clay and (or) shale], lime, sand and gravel (industrial)	XX	(7)	XX	(7)	XX	(7)
Total	XX	176,000 <sup>f</sup>	XX	180,000 <sup>f</sup>	XX	177,000
Nevada:						
Copper <sup>5</sup> metric tons	(4)	W	73,900 <sup>f</sup>	367,000	(4)	W
Gold <sup>5</sup> kilograms	162,000	6,050,000	171,000 <sup>f</sup>	6,870,000 <sup>f</sup>	173,000	7,020,000
Sand and gravel, construction	15,400	89,700	17,500	109,000	19,000	118,000
Silver <sup>5</sup> kilograms	290,000	147,000	278,000	147,000 <sup>f</sup>	265,000	146,000
Stone, crushed	9,010	83,900	9,760 <sup>f</sup>	78,400 <sup>f</sup>	11,400	96,000
Combined values of barite, cement, clay [attapulgitite (2016–17), bentonite, kaolin], diatomite, gemstones (natural), gypsum (crude), lime, lithium carbonate, magnesite, molybdenum mineral concentrates, perlite (crude), salt, sand and gravel (industrial), stone (dimension), and values indicated by symbol W	XX	897,000	XX	443,000 <sup>f</sup>	XX	905,000
Total	XX	7,260,000	XX	8,010,000 <sup>f</sup>	XX	8,290,000
New Hampshire:						
Gemstones, natural <sup>c</sup>	NA	8	NA	8	NA	8
Sand and gravel, construction	6,230	52,200	6,910	57,500	7,240	59,300

See footnotes at end of table.

TABLE 5—Continued  
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES, BY STATE<sup>1,2,3</sup>

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

State and commodity	2015		2016		2017		
	Quantity	Value	Quantity	Value	Quantity	Value	
New Hampshire:—Continued							
Stone:							
Crushed	5,550	51,500	5,660	55,300	5,190	51,900	
Dimension	(4)	(7)	(4)	(7)	(4)	(7)	
Total	XX	104,000	XX	113,000	XX	111,000	
New Jersey:							
Gemstones, natural <sup>c</sup>	NA	2	NA	2	NA	2	
Peat	(4)	(12)	(4)	(12)	(4)	(12)	
Sand and gravel:							
Construction	11,800	94,600	12,400 <sup>r</sup>	103,000	13,400	107,000	
Industrial	950	35,500	879	35,900	1,110	44,900	
Stone, crushed	17,800	161,000	16,600	159,000 <sup>r</sup>	17,100	192,000	
Total	XX	291,000	XX	298,000 <sup>r</sup>	XX	343,000	
New Mexico:							
Copper <sup>5,13</sup>	metric tons	181,000	1,020,000	174,000	864,000	125,000	788,000
Gemstones, natural <sup>c</sup>		NA	47	NA	35	NA	21
Sand and gravel, construction		8,700 <sup>r</sup>	78,300 <sup>r</sup>	9,500 <sup>r</sup>	85,000 <sup>r</sup>	9,290	89,600
Stone, crushed		5,120	45,700	4,760	43,800	4,410	40,000
Combined values of cement, clay [common clay and (or) shale], gold, gypsum (crude), perlite (crude), potash, pumice and pumicite, salt, silver, stone (dimension), zeolites		XX	472,000	XX	375,000	XX	333,000
Total		XX	1,620,000	XX	1,370,000	XX	1,250,000
New York:							
Clay, common clay and (or) shale		525	25,300	668	28,400	831	33,000
Gemstones, natural <sup>c</sup>		NA	94	NA	104	NA	211
Salt		7,320	615,000	6,690 <sup>r</sup>	566,000	6,270	560,000
Sand and gravel, construction		30,600	297,000	30,600 <sup>r</sup>	317,000 <sup>r</sup>	30,300	325,000
Stone:							
Crushed		40,700 <sup>r</sup>	475,000 <sup>r</sup>	38,300 <sup>r</sup>	468,000 <sup>r</sup>	37,000	463,000
Dimension		126	17,200	93	13,200	84	13,900
Combined values of cement, garnet (industrial), peat, sand and gravel (industrial), wollastonite		XX	(7)	XX	(7)	XX	(7)
Total		XX	1,430,000 <sup>r</sup>	XX	1,390,000	XX	1,400,000
North Carolina:							
Clay, common clay and (or) shale		1,160 <sup>r</sup>	28,100 <sup>r</sup>	1,600 <sup>r</sup>	37,200 <sup>r</sup>	1,620	34,900
Gemstones, natural <sup>c</sup>		NA	299	NA	574	NA	227
Sand and gravel:							
Construction		8,050 <sup>r</sup>	53,200 <sup>r</sup>	8,120	52,900	8,660	54,500
Industrial		4,050	55,100	4,180	58,900	3,610	53,900
Stone:							
Crushed		49,700	782,000	57,800	962,000 <sup>r</sup>	60,200	1,030,000
Dimension		91	18,600	92	18,000	84	14,600
Combined values of andalusite, clay (fire clay), feldspar, mica (crude), phosphate rock, pyrophyllite (crude)		XX	(7)	XX	(7)	XX	(7)
Total		XX	937,000 <sup>r</sup>	XX	1,130,000 <sup>r</sup>	XX	1,190,000
North Dakota:							
Clay, common clay and (or) shale		(4)	(7)	46	352	48	373
Gemstones, natural <sup>c</sup>		NA	5	NA	5	NA	5
Lime		(4)	(7)	(4)	(7)	(4)	(7)
Sand and gravel:							
Construction		18,400	118,000	13,100 <sup>r</sup>	91,400 <sup>r</sup>	12,200	89,400
Industrial		(4)	(7)	(4)	(7)	(4)	(7)
Stone, crushed		788	6,650	734 <sup>r</sup>	6,840	427	2,550
Total		XX	125,000	XX	98,600 <sup>r</sup>	XX	92,300

See footnotes at end of table.



TABLE 5—Continued  
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES, BY STATE<sup>1,2,3</sup>

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

State and commodity	2015		2016		2017	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Ohio:</b>						
Cement, portland	916	104,000 <sup>e</sup>	(4)	(7)	(4)	(7)
<b>Clay:</b>						
Common clay and (or) shale	715 <sup>r</sup>	12,900 <sup>r</sup>	724 <sup>r</sup>	15,100 <sup>r</sup>	689	15,000
Fire clay	(4)	(7)	(4)	(7)	156	2,450
Gemstones, natural <sup>c</sup>	NA	5	NA	5	NA	5
Lime	1,500	201,000	1,380 <sup>r</sup>	187,000 <sup>r</sup>	1,470	199,000
<b>Sand and gravel:</b>						
Construction	32,900	271,000	33,300 <sup>r</sup>	273,000 <sup>r</sup>	32,300	284,000
Industrial	1,440	79,400	1,310	51,800	1,560	83,600
<b>Stone:</b>						
Crushed	58,400	523,000	61,200 <sup>r</sup>	626,000 <sup>r</sup>	59,800	666,000
Dimension	22	6,070	17	6,810	(4)	(7)
Combined values of cement (masonry), peat, salt	XX	(7)	XX	(7)	XX	(7)
Total	XX	1,200,000	XX	1,160,000 <sup>r</sup>	XX	1,250,000
<b>Oklahoma:</b>						
Clay, common clay and (or) shale	741	2,310	862	2,800	688	2,380
Gemstones, natural <sup>c</sup>	NA	5	NA	5	NA	5
<b>Sand and gravel:</b>						
Construction	10,800	88,300	10,200	88,400 <sup>r</sup>	9,240	86,100
Industrial	2,980	70,700	3,210 <sup>r</sup>	71,900 <sup>r</sup>	4,030	177,000
<b>Stone:</b>						
Crushed	38,400	340,000	37,200 <sup>r</sup>	339,000 <sup>r</sup>	35,700	339,000
Dimension	67	5,920	67	5,790	55	7,260
Combined values of cement, feldspar, gypsum (crude), helium [crude (2015) and Grade-A (2015–17)], iodine (crude), lime, salt	XX	290,000 <sup>r</sup>	XX	283,000 <sup>r</sup>	XX	233,000
Total	XX	797,000 <sup>r</sup>	XX	791,000 <sup>r</sup>	XX	845,000
<b>Oregon:</b>						
Gemstones, natural <sup>c</sup>	NA	1,180	NA	2,330	NA	1,380
Pumice and pumicite	(4)	W	(4)	W	135,000	3,530
Sand and gravel, construction	12,200	108,000	12,400	111,000	14,900	145,000
Stone, crushed	18,300	132,000	20,200 <sup>r</sup>	147,000 <sup>r</sup>	19,300	149,000
Combined values of cement (portland), clay [bentonite and common clay and (or) shale], diatomite, lime, perlite (crude), sand and gravel [industrial (2015–16)], zeolites, and values indicated by symbol W	XX	153,000	XX	127,000	XX	153,000
Total	XX	395,000	XX	388,000 <sup>r</sup>	XX	452,000
<b>Pennsylvania:</b>						
<b>Cement:</b>						
Masonry	179	26,600 <sup>e</sup>	170	26,300 <sup>e</sup>	168	27,000 <sup>e</sup>
Portland	3,920	396,000 <sup>e</sup>	3,820	405,000 <sup>e</sup>	3,630	404,000 <sup>e</sup>
Clay, common clay and (or) shale	406	2,930	350	2,640	406	3,360
Gemstones, natural <sup>c</sup>	NA	2	NA	2	NA	2
Lime	968	132,000	910 <sup>r</sup>	115,000 <sup>r</sup>	806	170,000
Peat	(4)	(7)	(4)	(7)	(4)	(7)
<b>Sand and gravel:</b>						
Construction	9,310	101,000	8,940 <sup>r</sup>	94,100 <sup>r</sup>	8,600	89,900
Industrial	(4)	(7)	(4)	(7)	(4)	(7)
<b>Stone:</b>						
Crushed	89,300 <sup>r</sup>	1,100,000	85,800 <sup>r</sup>	1,140,000 <sup>r</sup>	87,300	1,170,000
Dimension	42	6,410	39 <sup>r</sup>	7,410 <sup>r</sup>	26	6,600
Total	XX	1,770,000 <sup>r</sup>	XX	1,790,000 <sup>r</sup>	XX	1,870,000
<b>Rhode Island:</b>						
Gemstones, natural <sup>c</sup>	NA	2	NA	2	NA	2

See footnotes at end of table.

TABLE 5—Continued  
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES, BY STATE<sup>1,2,3</sup>

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

State and commodity	2015		2016		2017	
	Quantity	Value	Quantity	Value	Quantity	Value
Rhode Island:—Continued						
Sand and gravel:						
Construction	2,120 <sup>r</sup>	27,000	2,140	26,900	2,350	29,000
Industrial	(4)	(7)	(4)	(7)	(4)	(7)
Stone, crushed	2,360	25,300	2,280	24,500	2,230	24,100
Total	XX	52,300	XX	51,300	XX	53,100
South Carolina:						
Cement:						
Masonry	168	26,000 <sup>e</sup>	185	28,500 <sup>e</sup>	174	28,000 <sup>e</sup>
Portland	3,070	318,000 <sup>e</sup>	2,860	300,000 <sup>e</sup>	2,970	328,000 <sup>e</sup>
Clay:						
Common clay and (or) shale	(4)	(7)	165	1,010	191	1,130
Kaolin <sup>c</sup>	346	30,600	325 <sup>r</sup>	29,700 <sup>r</sup>	338	29,900
Gemstones, natural <sup>c</sup>	NA	2	NA	2	NA	2
Gold <sup>5</sup> kilograms	--	--	--	--	3670	149,000
Sand and gravel:						
Construction	8,380 <sup>r</sup>	44,400 <sup>r</sup>	8,850 <sup>r</sup>	51,000 <sup>r</sup>	8,870	56,400
Industrial	551	24,400	495	21,000	522	24,600
Stone, crushed	23,900	275,000	28,200	337,000 <sup>r</sup>	29,100	367,000
Vermiculite, crude	(4)	(7)	(4)	(7)	(4)	(7)
Total	XX	719,000	XX	768,000 <sup>r</sup>	XX	984,000
South Dakota:						
Gold <sup>5</sup> kilograms	(4)	W	(4)	W	2,970	120,000
Sand and gravel, construction	11,200	55,000	10,200	50,000	10,800	51,100
Stone, crushed	6,580	47,600	6,850	49,100 <sup>r</sup>	6,440	47,800
Combined values of cement, clay [common clay and (or) shale], feldspar, gemstones (natural), gypsum (crude), lime, mica (crude), sand and gravel (industrial), silver, stone (dimension), and values indicated by symbol W	XX	226,000	XX	266,000	XX	152,000
Total	XX	329,000	XX	365,000 <sup>r</sup>	XX	371,000
Tennessee:						
Clay, ball clay	826 <sup>r</sup>	43,400 <sup>r</sup>	892 <sup>r</sup>	32,800 <sup>r</sup>	911	46,700
Sand and gravel:						
Construction	6,620	52,900	7,450	57,500	7,340	55,900
Industrial	1,540	49,100	1,570	48,500	1,500	56,400
Stone:						
Crushed	40,200 <sup>r</sup>	486,000	43,700 <sup>r</sup>	550,000 <sup>r</sup>	45,600	589,000
Dimension	52	10,200	57	9,840	46	8,530
Combined values of cadmium (byproduct of zinc production), cement, clay (montmorillonite), gemstones (natural), lime, salt, zinc	XX	413,000	XX	340,000 <sup>r</sup>	XX	475,000
Total	XX	1,050,000 <sup>r</sup>	XX	1,040,000 <sup>r</sup>	XX	1,230,000
Texas:						
Cement:						
Masonry	268	46,200 <sup>e</sup>	287	48,700 <sup>e</sup>	287	50,000 <sup>e</sup>
Portland	10,400	1,200,000 <sup>e</sup>	10,900	1,260,000 <sup>e</sup>	11,300	1,380,000 <sup>e</sup>
Clay:						
Bentonite	51	8,570	43	8,170	48	9,460
Common clay and (or) shale	2,270 <sup>r</sup>	40,600 <sup>r</sup>	2,550 <sup>r</sup>	27,400 <sup>r</sup>	2,680	43,400
Gemstones, natural <sup>c</sup>	NA	180	NA	33	NA	53
Lime	1,460	170,000	1,530	176,000	1,460	172,000
Salt	7,570	173,000	7,390 <sup>r</sup>	173,000 <sup>r</sup>	7,220	184,000
Sand and gravel:						
Construction	82,900	787,000	84,200 <sup>r</sup>	800,000 <sup>r</sup>	81,900	869,000
Industrial	14,200	706,000	10,800 <sup>r</sup>	454,000 <sup>r</sup>	14,300	755,000

See footnotes at end of table.

TABLE 5—Continued  
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES, BY STATE<sup>1,2,3</sup>

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

State and commodity	2015		2016		2017		
	Quantity	Value	Quantity	Value	Quantity	Value	
Texas:—Continued							
Stone:							
Crushed	155,000 <sup>r</sup>	1,560,000 <sup>r</sup>	158,000 <sup>r</sup>	1,650,000 <sup>r</sup>	159,000	1,760,000	
Dimension	1,060	142,000	1,180	130,000	1,330	142,000	
Combined values of clay [ball clay, fire clay, kaolin (2015–16), montmorillonite], gypsum (crude), helium [crude (2015–16)], iodine [crude (2015)], talc (crude), zeolites	XX	65,400	XX	55,900 <sup>r</sup>	XX	31,300	
Total	XX	4,900,000 <sup>r</sup>	XX	4,780,000 <sup>r</sup>	XX	5,390,000	
Utah:							
Beryllium	metric tons	205	W	155	W	150	W
Clay, common clay and (or) shale		267	4,280	352	5,310	315	4,860
Gemstones, natural <sup>c</sup>		NA	174	NA	417	NA	408
Salt		2,010	226,000	2,080	212,000	2,020	256,000
Sand and gravel, construction		28,800	214,000	31,600	236,000 <sup>r</sup>	31,100	241,000
Stone:							
Crushed		8,130 <sup>r</sup>	58,900 <sup>r</sup>	7,800 <sup>r</sup>	57,800 <sup>r</sup>	9,520	71,600
Dimension		6	620	7	996	4	470
Combined values of cement, clay (bentonite), copper, gold, gypsum (crude), helium [crude (2015) and Grade-A (2015–17)], iron oxide pigments, lime, magnesium compounds, magnesium metal, molybdenum mineral concentrates, phosphate rock, potash, rhenium, silver, and values indicated by symbol W		XX	1,680,000 <sup>r</sup>	XX	1,740,000	XX	2,080,000
Total		XX	2,190,000	XX	2,250,000	XX	2,650,000
Vermont:							
Gemstones, natural <sup>c</sup>		NA	2	NA	2	NA	2
Sand and gravel, construction		4,970	36,100	5,390	36,400 <sup>r</sup>	5,440	38,900
Stone:							
Crushed		4,820 <sup>r</sup>	49,100 <sup>r</sup>	4,800	49,100 <sup>r</sup>	4,570	45,800
Dimension		87	27,900	99	29,100	104	27,200
Talc, crude		(4)	(7)	(4)	(7)	(4)	(7)
Total		XX	113,000 <sup>r</sup>	XX	115,000 <sup>r</sup>	XX	112,000
Virginia:							
Kyanite	metric tons	109,000	38,000 <sup>e</sup>	79,700	28,200 <sup>r,e</sup>	91,300	32,000 <sup>e</sup>
Sand and gravel, construction		7,640 <sup>r</sup>	82,300 <sup>r</sup>	8,230 <sup>r</sup>	93,200 <sup>r</sup>	8,450	105,000
Stone:							
Crushed		48,500 <sup>r</sup>	759,000 <sup>r</sup>	50,000 <sup>r</sup>	822,000 <sup>r</sup>	52,800	896,000
Dimension		12	7,690	13	8,360	15	8,760
Combined values of cement, clay [common clay and (or) shale and montmorillonite], feldspar, gemstones (natural), lime, mica (crude), salt, sand and gravel (industrial), staurolite (2015), titanium mineral concentrates [ilmenite (2015)], vermiculite (crude), zirconium mineral concentrates (2015)		XX	283,000	XX	244,000 <sup>r</sup>	XX	282,000
Total		XX	1,170,000 <sup>r</sup>	XX	1,200,000 <sup>r</sup>	XX	1,320,000
Washington:							
Gemstones, natural <sup>c</sup>		NA	99	NA	61	NA	35
Sand and gravel, construction		33,400	274,000	35,400	284,000	33,300	277,000
Stone, crushed		14,200 <sup>r</sup>	201,000 <sup>r</sup>	15,500 <sup>r</sup>	213,000 <sup>r</sup>	14,900	210,000
Combined values of cement (portland), clay [common clay and (or) shale] diatomite, gold, lead, lime, olivine (2016–17), peat, sand and gravel (industrial), stone (dimension), zinc		XX	319,000	XX	351,000	XX	336,000
Total		XX	794,000 <sup>r</sup>	XX	848,000 <sup>r</sup>	XX	823,000

See footnotes at end of table.

TABLE 5—Continued  
NONFUEL MINERAL PRODUCTION IN THE UNITED STATES, BY STATE<sup>1, 2, 3</sup>

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

State and commodity	2015		2016		2017	
	Quantity	Value	Quantity	Value	Quantity	Value
West Virginia:						
Gemstones, natural <sup>c</sup>	NA	2	NA	2	NA	2
Sand and gravel:						
Construction	583	4,950	556	4,720	501	4,250
Industrial	681	37,500	588	32,400	94	5,260
Stone, crushed	15,000	166,000	14,300	161,000 <sup>r</sup>	14,600	165,000
Combined values of cement, clay [common clay and (or) shale], lime, salt	XX	(7)	XX	(7)	XX	(7)
Total	XX	208,000	XX	198,000 <sup>r</sup>	XX	174,000
Wisconsin:						
Gemstones, natural <sup>c</sup>	NA	8	NA	8	NA	8
Lime	(4)	(7)	(4)	(7)	(4)	(7)
Sand and gravel:						
Construction	28,000	208,000	27,100	183,000	27,100	185,000
Industrial	32,200	1,390,000	16,800	637,000	31,500	1,810,000
Stone:						
Crushed	22,700	171,000	24,700 <sup>r</sup>	200,000 <sup>r</sup>	25,100	207,000
Dimension	199	41,200	225	38,500	192	36,000
Total	XX	1,810,000	XX	1,060,000 <sup>r</sup>	XX	2,240,000
Wyoming:						
Clay:						
Bentonite	3,600 <sup>r</sup>	347,000 <sup>r</sup>	3,640 <sup>r</sup>	350,000 <sup>r</sup>	4,000	385,000
Common clay and (or) shale	(4)	W	29	464	38	54
Gemstones, natural <sup>c</sup>	NA	18	NA	18	NA	19
Sand and gravel, construction	15,000	134,000	8,910 <sup>r</sup>	81,100 <sup>r</sup>	8,410	76,100
Stone, crushed	18,300 <sup>r</sup>	52,800	9,950	46,000	9,850	49,200
Combined values of cement, gypsum (crude), helium (Grade-A), lime, soda ash, and value indicated by symbol W	XX	2,040,000	XX	1,990,000 <sup>r</sup>	XX	2,010,000
Total	XX	2,570,000 <sup>r</sup>	XX	2,470,000 <sup>r</sup>	XX	2,530,000
Undistributed:						
Combined values of Connecticut, Delaware, Illinois, Indiana (2015), Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Missouri (2016–17), Nebraska, New Hampshire, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, Vermont, West Virginia, Wisconsin	XX	3,090,000 <sup>r</sup>	XX	3,300,000 <sup>r</sup>	XX	3,490,000

<sup>r</sup>Estimated. <sup>r</sup>Revised. do. Ditto. NA Not available. W Withheld to avoid disclosing company proprietary data; included in “Combined values” data for each State. XX Not applicable. -- Zero.

<sup>1</sup>Table includes data from the mineral commodity chapters published in the U.S. Geological Survey 2017 Minerals Yearbook as they were completed through January 2022.

<sup>2</sup>Production as measured by mine output, mine shipments, sales, or marketable production (including consumption by producers). Mine output measured as sold or used by producers is primarily shown in the tables, because values can be assigned. Where sold or used data are not available, actual mine output is used as the production measurement and value is estimated average price of the mineral commodity for that year.

<sup>3</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>4</sup>Withheld to avoid disclosing company proprietary data.

<sup>5</sup>Recoverable content of ores and concentrates.

<sup>6</sup>Rare-earth-oxide (REO) basis.

<sup>7</sup>Withheld to avoid disclosing company proprietary data; value included in “Undistributed.”

<sup>8</sup>Content of mineral concentrates.

<sup>9</sup>Source: Lundin Mining Corp., 2017, Management’s discussion and analysis for the year ended December 31, 2017: Toronto, Ontario, Canada, Lundin Mining Corp., [variously paged]. (Accessed January 6, 2020, at <https://www.lundinmining.com/site/assets/files/3725/2017ye.pdf>.)

<sup>10</sup>Production based on publicly available data; refer to the Minerals Yearbook iron ore chapter.

<sup>11</sup>Recoverable content of nickel sulfide concentrates.

<sup>12</sup>Withheld to avoid disclosing company proprietary data; included in “Total.”

<sup>13</sup>Source: Freeport-McMoRan Copper & Gold Inc., 2017, Form 10-K—2017: U.S. Securities and Exchange Commission, part I, 200 p. (Accessed January 6, 2020, at [https://s22.q4cdn.com/529358580/files/doc\\_financials/10-K/10\\_k2017.pdf](https://s22.q4cdn.com/529358580/files/doc_financials/10-K/10_k2017.pdf).)

TABLE 6  
NONFUEL RAW MINERAL PRODUCTION IN THE COMMONWEALTH OF PUERTO RICO<sup>1,2,3</sup>

(Thousand metric tons, gross weight, and thousand dollars)

Commodity	2015		2016		2017	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement, portland	536	W	458	W	443	W
Clay, common clay and (or) shale <sup>6</sup>	61	335	61	335	NA	NA
Lime	(4)	W	(4)	W	(4)	W
Salt <sup>6</sup>	46	1,790	46	1,790	45	1,800
Stone, crushed	5,210	52,200 <sup>r</sup>	4,490 <sup>r</sup>	44,000 <sup>r</sup>	5,060	48,700
Total <sup>5</sup>	XX	54,400 <sup>r</sup>	XX	46,200 <sup>r</sup>	XX	50,500

<sup>6</sup>Estimated. <sup>r</sup>Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; excluded from "Total." XX Not applicable.

<sup>1</sup>Table includes data from the mineral commodity chapters published in the U.S. Geological Survey 2017 Minerals Yearbook as they were completed through January 2022.

<sup>2</sup>Production as measured by mine output, mine shipments, sales, or marketable production (including consumption by producers). Mine output measured as sold or used by the producers is primarily shown in the tables, because values can be assigned. Where sold or used data are not available, actual mine output is used as the production measurement and value is estimated average price of the mineral commodity for that year.

<sup>3</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>4</sup>Withheld to avoid disclosing company proprietary data.

<sup>5</sup>Does not include construction sand and gravel data, which were unavailable.

TABLE 7  
U.S. EXPORTS OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity	2016		2017		
	Quantity	Value	Quantity	Value	
<b>Metals:</b>					
<b>Aluminum:</b>					
Crude, semicrude, and scrap	metric tons	2,820,000	7,670,000 <sup>†</sup>	2,900,000	8,010,000
Manufactures	do.	97,200 <sup>†</sup>	403,000 <sup>†</sup>	96,900	412,000
<b>Antimony:</b>					
Metal, alloys, waste and scrap	do.	623	3,090	653	2,920
Oxide, Sb content	do.	1,330	7,690	1,600	9,130
Arsenic metal, As content <sup>3</sup>	do.	1,760	NA	698	NA
<b>Bauxite and alumina:</b>					
Alumina, calcined equivalent		1,330 <sup>†</sup>	575,000 <sup>†</sup>	516	412,000
<b>Bauxite:</b>					
Calcined, refractory and other grade		20	6,230	14	5,990
Crude and dried		5	NA	5	NA
Beryllium, unwrought powders, waste and scrap, other, Be content	kilograms	34,400	20,900	38,200	21,600
Bismuth, metal, alloys, waste and scrap, Bi content	do.	431,000 <sup>†</sup>	4,910 <sup>†</sup>	392,000	4,680
<b>Cadmium:</b>					
Pigments	do.	2,190,000	41,300	617,000	19,200
Sulfide, gross weight	do.	625	125	--	--
Unwrought metal and powders	do.	157,000	228	223,000	381
Waste and scrap	do.	11,900	53	18	28
<b>Chromium:</b>					
Ores and concentrate	metric tons	2,760	1,650	11,100	4,760
<b>Metals and alloys:</b>					
Metal, unwrought powders, waste and scrap, other	do.	506	14,300	622	14,400
Ferroalloys (high-carbon, low-carbon), ferrochromium-silicon, Cr content	do.	816	2,400	956	3,270
<b>Chemicals:</b>					
Sulfates	do.	165	815	7	49
Salts of oxometallic or peroxometallic acids, zinc and lead chromate, sodium dichromate, potassium dichromate, other	do.	484 <sup>†</sup>	2,540 <sup>†</sup>	2,420	5,830
Pigments and preparations	do.	299 <sup>†</sup>	2,720 <sup>†</sup>	296	3,830
<b>Cobalt:</b>					
Acetates	do.	314	1,580	199	2,420
Chlorides	do.	1	17	6	94
Oxides and hydroxides	do.	134	1,380	200	3,090
Metal, unwrought, powders, waste and scrap, mattes, other intermediate products of metallurgy	do.	3,980 <sup>†</sup>	78,000 <sup>†</sup>	5,540	117,000
<b>Copper:</b>					
Ore and concentrate	do.	331,000	2,210,000	237,000	1,580,000
Unmanufactured, does not include unalloyed scrap, Cu content	do.	174,000 <sup>†</sup>	756,000 <sup>†</sup>	129,000	679,000
Semimanufactures, excludes sulfate	do.	250,000	1,530,000 <sup>†</sup>	251,000	1,780,000
Sulfate	do.	5,840	34,900	6,160	36,900
Scrap, unalloyed	do.	412,000 <sup>†</sup>	1,310,000	494,000	1,860,000
<b>Ferroalloys not listed elsewhere:</b>					
Ferrophosphorus	do.	463	855	2,430	2,610
Other	do.	6,300	11,600	6,410	9,660
Germanium, metal <sup>†</sup>	do.	4,780	NA	3,670	NA
<b>Gold:</b>					
Ores and concentrates	do.	4,220	157,000	3,610	137,000
Dore and precipitates	do.	147,000	5,730,000	176,000	7,180,000
Bullion, refined	do.	241,000	9,650,000	281,000	11,300,000
Waste and scrap	do.	321,000	2,260,000	114,000	1,040,000
Metal powder	do.	438	11,100	382	8,550
Compounds	do.	1,060,000	106,000	766,000	117,000
<b>Iron and steel:</b>					
Steel mill products		8,450	NA	9,550	NA

See footnotes at end of table.

TABLE 7—Continued  
 U.S. EXPORTS OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity	2016		2017	
	Quantity	Value	Quantity	Value
Metals:—Continued				
Iron and steel:—Continued				
Fabricated steel products	1,800	NA	1,790	NA
Cast iron and steel products	188	NA	189	NA
Iron and steel scrap:				
Ferrous, includes tinplate and terneplate, excludes used rails for rerolling and other uses and ships, boats, and other vessels for scrapping	12,600	3,550,000	15,000	4,860,000
Pig iron, all grades	16,300 <sup>r</sup>	4,120 <sup>r</sup>	36,600	12,200
Direct-reduced iron, steelmaking grade	178,000	21,600	640,000	155,000
Ships, boats, and other vessels for scrapping	3	435	3	403
Used rails for rerolling and other uses, includes mixed (used plus new) rails	17 <sup>r</sup>	18,600	8	12,800
Iron ore	8,770	582,000 <sup>r</sup>	10,600	775,000
Lead:				
Ore and concentrates, Pb content	341,000	480,000	269,000	522,000
Base bullion, gross weight	1,310	3,230	1,550	3,730
Refined lead and alloys, unwrought, gross weight	42,700 <sup>r</sup>	37,200 <sup>r</sup>	23,900	44,800
Wrought and other products, gross weight	5,900 <sup>r</sup>	27,000 <sup>r</sup>	7,550	33,700
Scrap, gross weight	16,700	16,200	20,000	23,200
Magnesium, gross weight:				
Waste and scrap	996	2,040	1,200	2,270
Metal	5,460 <sup>r</sup>	23,000	1,890	18,500
Alloys	10,700	37,000	8,900	28,700
Powder, sheets, tubing, ribbons, wire, other forms	2,080	48,800	1,660	47,200
Manganese, gross weight:				
Ores and concentrates with 20% or more manganese	630	1,440	1,150	1,930
Ferromanganese, all grades	6,580	6,850	9,250	14,200
Silicomanganese	2,410	2,290	8,460	11,900
Metal, including alloys and waste and scrap	6,460	9,300	4,050	4,760
Dioxide	4,130	7,240	5,770	9,280
Mercury, amalgams of precious metals whether or not chemically defined	107,000	297,000	112,000	479,000
Molybdenum:				
Ore and concentrates, including roasted, Mo content	27,700	343,000	39,800	592,000
Chemicals:				
Oxides and hydroxides, gross weight	853	11,600	533	8,420
Molybdates, all, Mo content	1,440	17,200	1,530	22,000
Ferromolybdenum, Mo content	449 <sup>r</sup>	13,300	440	10,800
Other, includes powders, unwrought, bars and rods, waste and scrap, wire, other, gross weight	1,030	62,700	1,040	62,000
Nickel:				
Primary, unwrought and chemicals, Ni content	10,300	334,000	11,000	453,000
Secondary, stainless steel scrap and waste and scrap, Ni content	63,700	541,000	51,500	545,000
Wrought, not alloyed, bars, rods, profiles, wire, sheets, strip, foil, tubes, pipes, Ni content	746	23,100	963	24,300
Alloyed, unwrought ingot, bars, rods, profiles, wire, sheets, strip, foil, tubes, pipes, other alloyed articles, gross weight	41,300	1,520,000	45,600	1,640,000
Niobium (columbium) and tantalum, gross weight:				
Synthetic concentrates, niobium-tantalum	379,000	6,030	113,000	3,300
Niobium:				
Ores and concentrates	14,300	103	7,460	165
Ferroniobium	2,180,000	25,500	2,250,000	26,200
Tantalum:				
Ores and concentrates	162,000	7,300	109,000	3,840
Unwrought powders	192,000	73,800	163,000	60,600
Unwrought, other	31,100	9,000	56,600	17,600
Waste and scrap	171,000	23,200	169,000	17,500
Wrought	58,000	34,300	95,400	54,400

See footnotes at end of table.

TABLE 7—Continued  
 U.S. EXPORTS OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity	2016		2017		
	Quantity	Value	Quantity	Value	
Metals:—Continued					
Platinum-group metals:					
Palladium, Pd content	kilograms	17,500	272,000	52,300	888,000
Platinum, includes waste and scrap and metal, Pt content	do.	287,000	1,130,000	211,000	1,170,000
Iridium, osmium, ruthenium, gross weight	do.	736	11,300	939	11,700
Rhodium, Rh content	do.	794	19,600	844	30,700
Rare earths, estimated rare-earth-oxide (REO) content:					
Compounds:					
Cerium compounds	do.	309,000	4,840	1,140,000	8,010
Scandium or yttrium oxides	do.	2,060	453 <sup>r</sup>	1,820	407
Other oxides, chlorides, unspecified compounds	do.	279,000 <sup>r</sup>	11,800	597,000	12,200
Metals:					
Ferrocenium and other pyrophoric alloys	do.	943,000	8,270	982,000	8,430
Other, metals and alloys	do.	103,000	3,120	55,400	2,000
Selenium and tellurium:					
Selenium, Se content	do.	150,000	1,770	268,000	4,550
Tellurium, Te content	do.	2,620 <sup>r</sup>	520 <sup>r</sup>	2,310	383
Silicon, Si content:					
Ferrosilicon	metric tons	7,110	23,400	10,800	29,100
Metal	do.	59,600	1,620,000	70,800	1,580,000
Silver:					
Ores and concentrates, Ag content	kilograms	15,900	27,500	16,300	26,800
Bullion, Ag content	do.	237,000	139,000	91,800	54,100
Dore, Ag content	do.	35,800	21,300	49,400	34,700
Metal powder, gross weight	do.	771,000 <sup>r</sup>	467,000 <sup>r</sup>	872,000	546,000
Nitrate, gross weight	do.	43,600	4,040	50,900	5,170
Semimanufactured forms containing 99.5% or more by weight of silver, gross weight	do.	722,000 <sup>r</sup>	427,000	508,000	292,000
Waste and scrap, gross weight	do.	13,400,000	1,480,000 <sup>r</sup>	13,000,000	1,810,000
Unwrought, other, gross weight	do.	233,000 <sup>r</sup>	167,000 <sup>r</sup>	120,000	62,000
Thorium and thorium-bearing materials, compounds	do.	63,900	1,790	88,600	1,340
Tin:					
Unwrought:					
Refined	do.	1,150	21,600	1,560	32,500
Alloys	do.	1,040	17,400	965	17,900
Wrought:					
Bars, rods, profiles, wire	do.	4,620	39,700	5,420	40,400
Foil	do.	41	622	95	446
Plates, sheet, strip	do.	725	2,950	2,670	3,400
Tubes, pipes, tube and pipe fittings	do.	141	2,120	309	2,670
Waste and scrap	do.	4,570	11,200	3,360	8,500
Flakes and powders	do.	124	2,290	81	1,850
Tinplate and terneplate	do.	110,000	72,500	143,000	96,200
Titanium:					
Metal, scrap, unwrought, wrought products and castings, ferrotitanium and ferrosilicon titanium	do.	40,800 <sup>r</sup>	1,580,000 <sup>r</sup>	46,600	1,720,000
Ores and concentrates	do.	7,330	9,830	8,940	12,300
Pigment, dioxide and oxide	do.	651,000	1,430,000	634,000	1,600,000
Tungsten, W content:					
Ammonium paratungstate	do.	108	1,800	97	987
Carbide powder	do.	763	34,600	901	41,400
Metal powders	do.	308	17,900	367	22,500
Miscellaneous tungsten-bearing materials, ferrotungsten, ferrosilicon tungsten, unwrought, waste and scrap, wrought, compounds	do.	2,020	61,200	1,650	82,300
Ores and concentrates	do.	183	2,080	532	10,500

See footnotes at end of table.



TABLE 7—Continued  
 U.S. EXPORTS OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity		2016		2017	
		Quantity	Value	Quantity	Value
Metals:—Continued					
Vanadium:					
Aluminum-vanadium master alloy, gross weight	kilograms	95,200	2,200	236,000	6,960
Ferrovandium, V content	do.	400,000	7,280	229,000	6,000
Metal, including waste and scrap, gross weight	do.	18,700	641	59,000	1,540
Pentoxide, anhydride, gross weight	do.	5,150	108	127,000	1,570
Other oxides and hydroxides, gross weight	do.	81,300	681	148,000	1,690
Zinc:					
Compounds, gross weight:					
Chromates of zinc or of lead	metric tons	25	644	39	847
Lithopone	do.	1,260	7,160	762	4,630
Chloride	do.	856	1,130	288	498
Oxide	do.	55,300	56,300	66,100	90,100
Sulfate	do.	588 <sup>r</sup>	850	776	871
Sulfide	do.	1,040	14,500	636	16,200
Ores and concentrates, Zn content	do.	597,000	938,000	682,000	1,430,000
Refined	do.	46,900	NA	32,200	NA
Zirconium:					
Ferrozirconium	do.	476	839	62	154
Ores and concentrates	do.	5,050	12,200	48,400	47,400
Oxide, includes germanium oxide and zirconium dioxide	do.	5,420	NA	5,140	NA
Unwrought, including powders	do.	203	7,350	393	15,700
Waste and scrap and other	do.	948	95,500	1,210	106,000
Total, metals		XX	51,100,000 <sup>r</sup>	XX	57,400,000
Industrial minerals:					
Abrasives, manufactured:					
Aluminum oxide, crude	metric tons	14,200	46,600 <sup>r</sup>	15,400	54,700
Metallic abrasives	do.	28,600	35,700	31,000	50,700
Silicon carbide, crude, ground and refined	do.	6,820	20,300	6,100	19,500
Asbestos, includes reexports:					
Manufactured	do.	2,690 <sup>r</sup>	35,400	4,820	30,400
Unmanufactured	do.	587	116	143	92
Barite, natural barium sulfate	do.	78,500	30,100	116,000	29,700
Boron minerals and compounds:					
Boric acid, includes orthoboric and anhydrous	do.	241,000	150,000	228,000	143,000
Sodium borates	do.	552,000	289,000 <sup>r</sup>	541,000	278,000
Bromine, Br equivalent:					
Elemental	do.	5,370 <sup>r</sup>	13,600 <sup>r</sup>	5,680	10,000
Compounds, inorganic and organic	do.	22,900 <sup>r</sup>	73,800 <sup>r</sup>	37,700	110,000
Cement, hydraulic and clinker <sup>4</sup>		1,097 <sup>r</sup>	169,062 <sup>r</sup>	1,035	164,039
Clay:					
Artificially activated clay and earth	metric tons	143,000	80,100	147,000	77,700
Ball clay	do.	40,600	9,320	82,500	15,200
Bentonite	do.	801,000	174,000	961,000	199,000
Fire clay	do.	184,000	36,400	225,000	46,400
Fuller's earth	do.	86,100	34,400	78,300	31,900
Kaolin	do.	2,290,000	527,000	2,310,000	546,000
Other, n.e.c. <sup>5</sup>	do.	256,000	72,700	244,000	67,700
Diamond:					
Exclusive of industrial diamond, including reexports	thousand carats	11,500	19,400,000	11,100	18,800,000
Industrial including exports and reexports:					
Unworked, reexports	do.	527 <sup>r</sup>	15,400	981	19,200
Powder, dust and grit, natural and synthetic	do.	152,000	71,500	183,000	81,200
Diatomite		66	37,600 <sup>r</sup>	87	44,100
Feldspar	metric tons	5,890	1,520	5,340	1,210
Fluorspar	do.	11,900	1,900	10,900	1,940

See footnotes at end of table.

TABLE 7—Continued  
 U.S. EXPORTS OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity	2016		2017		
	Quantity	Value	Quantity	Value	
Industrial minerals:—Continued					
Garnet, industrial	metric tons	13,400	10,800	23,300	15,800
Graphite, natural and synthetic	do.	44,400	166,000	49,900	214,000
Gypsum and gypsum products:					
Crude		43 <sup>r</sup>	18,700 <sup>r</sup>	36	16,500
Plasters		93	36,800	107	39,700
Boards		726 <sup>r</sup>	131,000	514	104,000
Other		XX	75,500 <sup>r</sup>	XX	81,500
Helium, Grade-A	million cubic meters	60.8 <sup>r</sup>	NA	73.7	NA
Iodine:					
Crude	metric tons	1,050	23,300	1,230	22,700
Potassium iodide	do.	246	4,020	311	6,040
Iron oxide pigments and hydroxides:					
Pigment grade	do.	15,800	45,600	13,500	36,400
Other grade	do.	47,800	26,100	39,800	23,600
Kyanite concentrate	do.	37,100	13,000	42,400	14,900
Lime		329	64,500	391	74,200
Lithium chemicals, Li content:					
Carbonate	metric tons	195	6,150	246	11,400
Carbonate, U.S.P. <sup>6</sup>	do.	20	2,720	18	3,480
Hydroxide	do.	1,300	70,600	1,700	111,000
Magnesium compounds:					
Chloride, hydroxide and peroxide, sulfate		XX	29,700 <sup>r</sup>	XX	36,400
Magnesia and crude magnesite:					
Caustic-calcined magnesia	metric tons	8,060	5,490	6,040	4,810
Dead-burned and fused magnesia	do.	48,400	30,300	55,300	34,800
Other magnesia	do.	9,370	9,820	14,500	14,000
Crude	do.	523	620	862	1,060
Mica:					
Scrap and flake:					
Powder	do.	6,020	8,430 <sup>r</sup>	6,340	9,040
Waste	do.	321 <sup>r</sup>	456 <sup>r</sup>	452	340
Sheet:					
Unworked	do.	2 <sup>r</sup>	50 <sup>r</sup>	2	32
Worked	do.	687	16,400	702	14,200
Nitrogen:					
Anhydrous ammonia, gross weight		222	52,200	744	142,000
Major compounds, other, N content		1,230	NA	1,190	NA
Peat		30	NA	30	NA
Perlite, crude		16 <sup>r</sup>	2,010 <sup>r</sup>	18	2,180
Phosphate rock:					
Diammonium phosphate		1,710	586,000 <sup>r</sup>	1,620	538,000
Elemental phosphorus	metric tons	16,800 <sup>r</sup>	60,400 <sup>r</sup>	16,300	54,300
Monoammonium phosphate		2,520 <sup>r</sup>	931,000 <sup>r</sup>	2,240	798,000
Phosphoric acid		598 <sup>r</sup>	204,000	483	162,000
Potash, gross weight:					
Potassium chloride	metrics tons	22,400 <sup>r</sup>	12,200	26,500	11,500
Potassium sulfates, all grades	do.	316,000 <sup>r</sup>	111,000	426,000	104,000
Potassium nitrate	do.	7,980 <sup>r</sup>	7,690	9,120	6,760
Pumice and pumicite		9	NA	11	NA
Salt		729 <sup>r</sup>	146,000	1,120	180,000
Sand and gravel:					
Construction:					
Sand		22	8,020	26	8,810
Gravel		11 <sup>r</sup>	5,860	11	6,470
Industrial		2,780	316,000	4,680	462,000

See footnotes at end of table.

TABLE 7—Continued  
 U.S. EXPORTS OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity	2016		2017	
	Quantity	Value	Quantity	Value
Industrial minerals:—Continued				
Soda ash	6,760 <sup>r</sup>	1,310,000 <sup>r</sup>	6,990	1,400,000
Stone:				
Crushed	530	47,100	634	53,300
Dimension	XX	65,500	XX	69,700
Strontium carbonate kilograms	154,000	147	60,100	72
Sulfur:				
Elemental	2,060 <sup>r</sup>	214,000 <sup>r</sup>	2,340	252,000
Sulfuric acid, 100% H <sub>2</sub> SO <sub>4</sub> metric tons	180,000 <sup>r</sup>	30,000	254,000	31,400
Talc, does not include powders—talcum (in package), face, compact—or cut and sawed talc do.	239,000	82,800	220,000	123,000
Vermiculite	2 <sup>e</sup>	NA	2	NA
Wollastonite <sup>e</sup> metric tons	<10,000	NA	<10,000	NA
Zeolites <sup>e</sup> do.	<1,000	NA	<1,000	NA
Total, industrial minerals	XX	26,400,000 <sup>r</sup>	XX	26,100,000
Grand total	XX	77,500,000 <sup>r</sup>	XX	83,500,000

<sup>e</sup>Estimated. <sup>r</sup>Revised. do. Ditto. NA Not available. XX Not applicable. -- Zero.

<sup>1</sup>Table includes data from the mineral commodity chapters published in the U.S. Geological Survey 2017 Minerals Yearbook as they were completed through January 2022.

<sup>2</sup>Data are rounded to no more than three significant digits except cement data; may not add to totals shown.

<sup>3</sup>Listed as metal only, but may include alloys, waste, and compounds.

<sup>4</sup>Data unrounded as appear in cement Minerals Yearbook chapter. Does not include Puerto Rico.

<sup>5</sup>Not elsewhere classified.

<sup>6</sup>U.S. pharmaceutical-grade lithium carbonate.

TABLE 8  
U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity	2016		2017		
	Quantity	Value <sup>3</sup>	Quantity	Value <sup>3</sup>	
<b>Metals:</b>					
<b>Aluminum:</b>					
Crude, semicrude, and scrap	metric tons	6,020,000	12,400,000	6,900,000	15,900,000
Manufactures	do.	467,000 <sup>r</sup>	1,170,000 <sup>r</sup>	518,000	1,420,000
<b>Antimony:</b>					
Ore and concentrate, Sb content	do.	119	1,030	61	540
Oxide, Sb content	do.	16,200	92,400	17,900	129,000
Metal, alloys and waste and scrap	do.	7,130	47,500	6,830	55,600
<b>Arsenic:</b>					
Arsenic acid	do.	--	--	(4)	4
Metal	do.	793	2,260	942	2,240
Sulfides	do.	35	98	--	--
Trioxide	do.	7,000	4,000	7,900	4,320
<b>Bauxite and alumina:</b>					
Alumina, calcined equivalent		1,140	489,000 <sup>r</sup>	1,330	704,000
<b>Bauxite:</b>					
Calcined, refractory and other grade		574	51,300	579	68,400
Crude and dried		4,930 <sup>r</sup>	169,000 <sup>r,5</sup>	3,430	109,000 <sup>5</sup>
Beryllium, ores and concentrates, oxide and hydroxide, unwrought including powders, waste and scrap, other, beryllium-copper master alloy, beryllium-copper plates, sheets, and strip, Be content	kilograms	68,100	11,800	61,800	14,100
Bismuth, metal, alloys, waste and scrap, Bi content	do.	2,190,000	21,600	2,820,000	29,100
<b>Cadmium:</b>					
Oxide	do.	58,600	626	58,800	671
Pigments	do.	228,000 <sup>r</sup>	4,300 <sup>r</sup>	158,000	3,740
Sulfide, gross weight	do.	--	--	645	114
Unwrought metal and powders	do.	240,000	713	254,000	1,030
Waste and scrap	do.	51,700	125	20,100	57
<b>Chromium:</b>					
Chromite ore, Cr <sub>2</sub> O <sub>3</sub> content	metric tons	64,600	26,400	61,300	33,600
<b>Metals and alloys:</b>					
Ferroalloys (high-carbon, low-carbon), ferrochromium-silicon, Cr content	do.	266,000	467,000	319,000	826,000
Metal, unwrought powders, waste and scrap, other, gross weight	do.	13,800	137,000	14,500	140,000
<b>Chemicals, gross weight:</b>					
Oxides, hydroxides, trioxide and other	do.	5,360	19,200	6,120	24,100
Sulfates	do.	482	340	436	414
Salts of oxometallic or peroxometallic acids, zinc and lead chromate, sodium dichromate, potassium dichromate, other	do.	1,970	6,270 <sup>r</sup>	2,010	6,330
Carbide	do.	100	1,940	194	4,460
Pigments and preparations based on chromium, gross weight	do.	1,780	7,920 <sup>r</sup>	1,880	8,530
<b>Cobalt, Co content:</b>					
Metal, unwrought, excluding alloys and waste and scrap, includes cathode and metal powder, may include intermediate products of cobalt metallurgy	do.	10,800	267,000	9,530	465,000
Oxides and hydroxides	do.	1,410	39,300	1,520	76,600
Other forms, includes acetates, carbonates, chlorides, sulfates	do.	677	20,500	857	34,200
<b>Copper:</b>					
Ore and concentrate, Cu content	do.	67	178	14,000	25,700
Unmanufactured, does not include unalloyed scrap, Cu content	do.	709,000	3,440,000	815,000	4,990,000
Semimanufactures, excludes sulfate	do.	268,000 <sup>r</sup>	1,560,000 <sup>r</sup>	264,000	1,880,000
Sulfate	do.	45,200	80,800	53,300	112,000
Scrap, unalloyed, Cu content	do.	29,200	117,000	35,500	170,000
<b>Ferroalloys not listed elsewhere:</b>					
Ferrophosphorus	do.	5,550	2,850	8,420	3,930
Other	do.	6,760	11,500	6,790	16,400

See footnotes at end of table.

TABLE 8—Continued  
 U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity	2016		2017	
	Quantity	Value <sup>3</sup>	Quantity	Value <sup>3</sup>
Metals:—Continued				
Gallium:				
Unwrought metal and powders kilograms	10,500	2,910	20,400	4,430
Gallium arsenide wafers:				
Doped do.	1,250,000	209,000	804,000	203,000
Undoped do.	40,400	188,000	NA	NA
Germanium:				
Powder do.	2,240	2,630	2,330	2,580
Unwrought do.	6,660	6,800	6,660	6,590
Wrought do.	2,120	3,230	2,050	2,550
Gold:				
Ores and concentrates do.	259 <sup>r</sup>	8,350 <sup>r</sup>	342	9,110
Dore and precipitates do.	196,000	7,940,000	154,000	6,500,000
Bullion, refined do.	177,000	7,190,000	99,900	4,050,000
Waste and scrap do.	23,000	464,000	18,300	395,000
Metal powder do.	260	8,970	216	8,260
Compounds do.	44,400	6,210	1,980	3,550
Indium, unwrought metal and powders do.	160,000	35,100	127,000	26,900
Iron and steel:				
Steel mill products	30,000	NA	34,600	NA
Fabricated steel products	5,600	NA	6,090	NA
Cast iron and steel products	504	NA	523	NA
Stainless steel metric tons	896,000	NA	1,080,000	NA
Iron and steel scrap:				
Ferrous, includes tinplate and terneplate, excludes used rails for rerolling and other uses and ships, boats, and other vessels for scrapping	3,860	949,000	4,630	1,490,000
Pig iron, all grades metric tons	3,870,000	948,000	5,130,000	1,770,000
Direct-reduced iron, steelmaking grade do.	1,600,000	334,000	1,790,000	563,000
Ships, boats, and other vessels for scrapping	(4)	509	51	7,610
Used rails for rerolling and other uses, includes mixed (used plus new) metric tons rails	95,400	22,800	49,600	16,500
Iron ore	3,010	241,000	3,700	355,000
Lead:				
Base bullion, gross weight metric tons	237	396	--	--
Refined lead, unwrought, gross weight do.	416,000	809,000	538,000	1,200,000
Wrought and other products, gross weight do.	8,210 <sup>r</sup>	31,100 <sup>r</sup>	7,480	33,600
Scrap, Pb content do.	1,480 <sup>r</sup>	1,090	4,180	6,280
Magnesium:				
Waste and scrap, gross weight do.	21,900	50,300	16,900	32,900
Metal, gross weight do.	13,300	46,000	16,500	51,400
Alloys, Mg content do.	7,040	38,100	5,290	28,800
Powder, sheets, tubing, ribbons, wire, other forms, Mg content do.	3,260	20,800	3,270	24,600
Manganese:				
Ores and concentrates with 20% or more Mn, all grades, Mn content do.	140,000	42,000	170,000	73,300
Ferromanganese, all grades, Mn content do.	172,000	213,000	256,000	465,000
Silicomanganese, Mn content do.	178,000	195,000	236,000	401,000
Metal, unwrought, other wrought, waste and scrap, gross weight do.	22,900	47,700	29,100	61,000
Chemicals, gross weight:				
Manganese dioxide do.	5,510	11,700	7,500	15,900
Potassium permanganate do.	736	1,840	934	2,330
Mercury:				
Metal kilograms	24,300	276	20,300	284
Amalgams of precious metals whether or not chemically defined do.	20,200	34,300	22,800	67,200
Molybdenum:				
Ores and concentrates, including roasted and unroasted, Mo content metric tons	14,900	214,000 <sup>r</sup>	24,300	414,000

See footnotes at end of table.

TABLE 8—Continued  
 U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity	2016		2017		
	Quantity	Value <sup>3</sup>	Quantity	Value <sup>3</sup>	
Metals:—Continued					
Molybdenum:—Continued					
Chemicals:					
Oxides and hydroxides, gross weight	kilograms	3,280	41,400	2,920	42,700
Molybdates, all, Mo content	do.	1,580	32,700	1,550	35,700
Orange, gross weight	do.	737	2,420	840	3,370
Ferromolybdenum, Mo content	do.	1,900	46,900	5,130	112,000
Other, includes powders, unwrought, bars and rods, waste and scrap, wire, other, gross weight	do.	1,950 <sup>r</sup>	50,800	2,770	72,700
Nickel:					
Primary, unwrought and chemicals, Ni content	do.	111,000	1,230,000	150,000	1,690,000
Secondary, stainless steel scrap and waste and scrap, Ni content	do.	32,300	325,000	38,100	494,000
Wrought, not alloyed, bars, rods, profiles, wire, sheets, strip, foil, tubes, pipes, Ni content	do.	774	19,900	977	23,800
Alloyed, unwrought ingot, bars, rods, profiles, wire, sheets, strip, foil, tubes, pipes, other alloyed articles, gross weight	do.	26,700	719,000 <sup>r</sup>	32,200	788,000
Niobium (columbium) and tantalum, gross weight:					
Synthetic concentrates, niobium-tantalum	kilograms	9,150	46	14,900	1,970
Niobium:					
Ores and concentrates	do.	1,160	18	1,120	12
Oxide	do.	1,220,000	41,200	1,280,000	39,900
Ferriobium	do.	9,350,000 <sup>r</sup>	211,000 <sup>r</sup>	10,500,000	227,000
Unwrought powders	do.	1,240,000 <sup>r</sup>	59,300 <sup>r</sup>	1,530,000	68,100
Tantalum:					
Ores and concentrates	do.	675,000	37,300	1,010,000	39,500
Unwrought, powders	do.	156,000	52,200	235,000	68,400
Unwrought, other	do.	164,000	45,400	225,000	49,000
Waste and scrap	do.	489,000	41,900	610,000	59,600
Wrought	do.	47,900	20,600	74,500	28,700
Platinum-group metals:					
Platinum, grain and nuggets, sponge, other unwrought, other, waste and scrap, coins, Pt content	do.	201,000	2,180,000	416,000	2,690,000
Palladium, unwrought, Pd content	do.	68,100	1,340,000	75,000	2,080,000
Palladium, other, Pd content	do.	12,300	275,000	11,000	320,000
Iridium, unwrought and other forms, Ir content	do.	1,300	23,000	1,420	38,100
Osmium, unwrought and other forms, Os content	do.	27	159	856	1,740
Ruthenium, unwrought and other forms, Ru content	do.	8,410	14,500	14,500	34,200
Rhodium, unwrought and other forms, Rh content	do.	10,700	230,000	11,600	386,000
Rare earths, estimated equivalent rare-earth-oxide (REO) content:					
Cerium compounds, including oxides	do.	1,830,000	21,600	2,390,000	26,000
Other rare-earth compounds:					
Carbonates, lanthanum and other	do.	1,600,000	4,520	453,000	2,580
Chlorides, includes mixtures of oxides or chlorides	do.	256,000	2,480	269,000	2,660
Oxides, except cerium oxide	do.	3,420,000	11,500	2,300,000	9,160
Unspecified	do.	4,310,000	64,900	5,540,000	84,700
Yttrium materials and compounds content by weight greater than 19% but less than 85% oxide equivalent	do.	71,000	4,620	41,300	2,420
Metals and alloys:					
Ferrocium and other pyrophoric alloys	do.	268,000	4,360	309,000	4,340
Cesium, unalloyed	do.	104,000	467	84,400	581
Lanthanum, unalloyed	do.	50,900	396	115,000	891
Neodymium, unalloyed	do.	8,360	327	3,940	146
Other, unalloyed	do.	52,100	1,360	47,900	1,720
Other, alloys	do.	188,000	1,310	273,000	1,980

See footnotes at end of table.

TABLE 8—Continued  
 U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity	2016		2017		
	Quantity	Value <sup>3</sup>	Quantity	Value <sup>3</sup>	
Metals:—Continued					
Rhenium:					
Metal	kilograms	25,900	65,500	26,700	71,100
Ammonium perrhenate	do.	8,570	14,000	11,300	10,100
Selenium and tellurium:					
Selenium, Se content:					
Selenium	do.	411,000	12,500	450,000	16,600
Dioxide	do.	21,300 <sup>r</sup>	558 <sup>r</sup>	18,500	677
Tellurium, Te content	do.	72,700	4,880	163,000	12,700
Silicon, Si content:					
Ferrosilicon	metric tons	155,000	246,000	147,000	275,000
Metal	do.	122,000	379,000	136,000	395,000
Silver:					
Ores and concentrates, ash and residues, Ag content	kilograms	4,790 <sup>r</sup>	1,520 <sup>r</sup>	6,840	2,370
Bullion, Ag content	do.	4,870,000	2,680,000	3,950,000	2,160,000
Dore, Ag content	do.	1,290,000	1,090,000	1,080,000	958,000
Metal powder, gross weight	do.	358,000 <sup>r</sup>	52,500	430,000	60,000
Nitrate, gross weight	do.	3,390	731	6	649
Semimanufactured forms containing 99.5% or more by weight of silver, gross weight	do.	692,000	357,000	462,000	247,000
Waste and scrap, gross weight	do.	6,640,000 <sup>r</sup>	260,000	5,390,000	387,000
Unwrought, other, gross weight	do.	343,000	164,000	392,000	182,000
Thorium-bearing materials:					
Thorium ore, monazite concentrate	metric tons	16	4 <sup>r</sup>	--	--
Compounds	do.	3.12 <sup>r</sup>	284	8.51	731
Tin, gross weight:					
Unwrought:					
Refined	do.	32,200	540,000	34,100	674,000
Alloys	do.	1,910	30,000	1,590	30,200
Wrought:					
Bars, rods, profiles, wire	do.	1,200	63,800	1,130	64,600
Foil	do.	86	2,150	98	3,170
Plates, sheet, strip	do.	94	500	74	438
Tubes, pipes, tube and pipe fittings	do.	1	32	11	89
Waste and scrap	do.	27,200	5,460	52,100	15,800
Flakes and powders	do.	219	5,160	171	4,330
Oxides	do.	383	6,270	559	10,800
Tinplate and terneplate	do.	805,000	726,000	854,000	820,000
Titanium:					
Concentrates:					
Ilmenite	do.	669,000 <sup>r</sup>	84,800 <sup>r</sup>	760,000	131,000
Rutile, natural and synthetic	do.	349,000	230,000	334,000	214,000
Metal:					
Waste and scrap	do.	18,500	93,600	25,200	122,000
Unwrought:					
Sponge	do.	16,200	148,000	24,100	208,000
Ingots	do.	690 <sup>r</sup>	15,100	1,550	23,000
Powder	do.	161	12,000	157	12,800
Other	do.	1,230	31,900	1,120	29,700
Wrought products and castings, includes bar, bloom, castings, foil, pipe, plate, profile, rod, sheet, sheet bar, slab, strip, tube, wire, other	do.	7,130 <sup>r</sup>	348,000 <sup>r</sup>	8,650	404,000
Ferrotitanium and ferrosilicon titanium	do.	3,140	7,840	2,550	7,570
Pigment, dioxide and oxide	do.	247,000	536,000 <sup>r</sup>	239,000	601,000
Titaniferous iron ore	do.	15,200	1,430	11,900	8,330
Slag	do.	402,000	254,000	479,000	305,000

See footnotes at end of table.

TABLE 8—Continued  
U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity	2016		2017		
	Quantity	Value <sup>3</sup>	Quantity	Value <sup>3</sup>	
<b>Metals:—Continued</b>					
<b>Tungsten, W content:</b>					
Ammonium paratungstate	metric tons	1,020	20,700	2,230	48,100
Ferrotungsten and ferrosilicon tungsten	do.	236	6,130	209	5,800
Miscellaneous tungsten-bearing materials, metal powders, carbide powder, unwrought, waste and scrap, wrought, oxides, calcium tungstate, other tungstates, other compounds	do.	5,050 <sup>r</sup>	164,000	7,350	234,000
Ores and concentrates	do.	3,580	65,100	3,930	83,200
<b>Vanadium, V content:</b>					
Aluminum-vanadium master alloy	kilograms	157,000	4,120	288,000	10,800
Ferrovandium	do.	1,590,000	47,800	2,810,000	92,800
Metal, including waste and scrap	do.	33,200	1,040	54,100	2,600
Miscellaneous chemicals, sulfates and vanadates	do.	325,000	4,520	353,000	6,290
Pentoxide, anhydride	do.	2,460,000	25,400	3,400,000	60,300
Vanadium-bearing ash and residues	do.	2,820,000 <sup>r</sup>	10,000	2,530,000	14,500
Other oxides and hydroxides	do.	660,000	10,000	148,000	3,680
<b>Zinc:</b>					
<b>Compounds, gross weight:</b>					
Oxide	metric tons	123,000	239,000	114,000	294,000
Sulfate	do.	79,900	60,400	91,100	85,400
Chloride, chromates of zinc or of lead, lithopone, sulfide	do.	XX	9,740	XX	10,800
Ores and concentrates, Zn content	do.	50 <sup>r</sup>	NA	6,780	NA
Refined	do.	713,000	NA	729,000	NA
<b>Zirconium and hafnium:</b>					
Hafnium, unwrought, including powders	do.	180	32,600	113	42,100
<b>Zirconium:</b>					
Ferrozirconium	do.	59	240	161	601
Ores and concentrates	do.	38,400	38,100	37,300	37,800
Oxide	do.	2,620	NA	3,380	NA
Unwrought, including powder	do.	841	27,700	656	12,000
Waste and scrap, and other	do.	399	29,300	525	37,700
Total, metals		XX	57,400,000 <sup>r</sup>	XX	64,600,000
<b>Industrial minerals:</b>					
<b>Abrasives, manufactured:</b>					
Aluminum oxide, crude, ground and refined	metric tons	155,000	106,000	205,000	142,000
Metallic abrasives	do.	54,200 <sup>r</sup>	29,400 <sup>r</sup>	29,700	30,200
Silicon carbide, crude, ground and refined	do.	116,000	87,100 <sup>r</sup>	137,000	108,000
<b>Asbestos:</b>					
Chrysotile and other unspecified type	do.	747 <sup>r</sup>	1,430	332	621
Manufactured products with basis of asbestos, cellulose, or other minerals		NA	7,670 <sup>r</sup>	NA	8,390
<b>Barite:</b>					
Chloride, oxide, hydroxide, peroxide, precipitated carbonate		XX	9,430	XX	10,900
Crude	metric tons	270,000	44,100	734,000	75,600
Ground	do.	966,000	117,000	1,470,000	149,000
Other sulfates	do.	20,900	30,500	18,000	29,100
<b>Boron minerals and compounds:</b>					
Borax, refined		173	60,400	158	55,500
Boric acid	metric tons	46,300	27,800	39,600	23,000
Colemanite		35	11,400	11	20,400
Ulexite		43	4,790	24	10,900
<b>Bromine, Br equivalent:</b>					
Elemental	metric tons	2,690	8,090	2,710	9,290
Inorganic compounds	do.	53,600	106,000	47,400	94,900
Organic compounds	do.	2,150	13,600	2,580	16,900
Cement, hydraulic and clinker <sup>6</sup>		13,237	883,669	13,497	976,019

See footnotes at end of table.



TABLE 8—Continued  
 U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity	2016		2017		
	Quantity	Value <sup>3</sup>	Quantity	Value <sup>3</sup>	
Industrial minerals:—Continued					
Clay:					
Artificially activated clay and earth	metric tons	26,200	14,400	28,500	16,900
Ball clay	do.	347	103	404	105
Bentonite	do.	22,400	8,180 <sup>r</sup>	33,000	10,400
Chamotte or Dinas Earth	do.	562	115	484	169
Kaolin	do.	389,000	43,600	316,000	38,700
Fire clay	do.	22,000	6,400	39,500	15,400
Fuller's earth	do.	372	217	1,370	202
Other, n.e.c. <sup>7</sup>	do.	11,300	5,460	11,300	6,270
Diamond, industrial:					
Diamond stones, natural industrial and miners', natural and synthetic	thousand carats	1,370	18,700	1,230	15,800
Powder, dust and grit, natural and synthetic	do.	216,000	49,200	399,000	62,400
Diatomite		8	NA	9	NA
Feldspar and nepheline syenite:					
Feldspar	metric tons	36,900	3,430	290,000	7,500
Nepheline syenite	do.	572,000	73,000	1,460,000	88,400
Fluorspar:					
Aluminum fluoride	do.	20,400 <sup>r</sup>	23,100	20,600	23,700
Cryolite	do.	15,700	12,800	9,900	12,100
Fluorspar	do.	383,000	102,000	401,000	105,000
Hydrofluoric acid	do.	126,000	190,000	123,000	177,000
Garnet, industrial	do.	156,000 <sup>r</sup>	31,500 <sup>r</sup>	54,200	16,500
Gemstones	thousand carats	1,890,000	25,200,000	791,000	25,100,000
Graphite:					
Natural	metric tons	38,900	47,600	51,900	58,500
Synthetic	do.	75,000	127,000	111,000	176,000
Electric furnace electrodes	do.	58,900	143,000	75,300	228,000
Gypsum:					
Crude		4,340	63,200	4,890	69,800
Plasters		41	15,300	23	7,790
Boards		375 <sup>r</sup>	88,500 <sup>r</sup>	443	109,000
Other		XX	35,600	XX	34,500
Helium, Grade-A	million cubic meters	23.7 <sup>r</sup>	NA	18.5	NA
Iodine:					
Crude	metric tons	4,320	98,000	4,180	81,700
Potassium iodide	do.	202	3,730	227	3,990
Iron oxide pigments:					
Natural	do.	7,110	3,480	3,340	2,720
Synthetic	do.	172,000	193,000	175,000	198,000
Kyanite and related materials	do.	2,510	710	7,430	2,070
Lime		376	61,500 <sup>r,5</sup>	367	62,300 <sup>5</sup>
Lithium chemicals, Li content:					
Carbonate	metric tons	2,920	76,100	3,030	79,000
Carbonate, U.S.P. <sup>8</sup>	do.	3	508	--	--
Hydroxide	do.	211	11,700	302	27,900
Magnesium compounds:					
Compounds, chlorides, hydroxide, peroxide, sulfates	do.	XX	62,000 <sup>r</sup>	XX	56,500
Magnesia and crude magnesite:					
Caustic-calcined magnesite	do.	158,000	43,600	180,000	43,500
Dead-burned and fused magnesite	do.	149,000	88,500 <sup>r</sup>	155,000	122,000
Other magnesite	do.	39,800	23,600	71,000	33,200
Crude	do.	1,270	1,980	7,320	2,780

See footnotes at end of table.

TABLE 8—Continued  
 U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

Commodity	2016		2017		
	Quantity	Value <sup>3</sup>	Quantity	Value <sup>3</sup>	
Industrial minerals:—Continued					
Mica:					
Scrap and flake:					
Powder	metric tons	27,200	17,800	27,000	18,100
Waste	do.	4,320	2,630	2,730	2,080
Sheet:					
Unworked	do.	61	155	66	154
Worked	do.	2,000	17,300	1,780	15,600
Nitrogen:					
Anhydrous ammonia		4,670	1,570,000	3,760	1,170,000
Major compounds, other, N content		8,170	4,550,000	6,900	3,980,000
Peat		1,130	314,000	1,150	335,000
Perlite, processed crude		199 <sup>r</sup>	21,500 <sup>r</sup>	171	22,100
Phosphate rock and phosphatic materials:					
Phosphate rock:					
Unground		1,320	118,000 <sup>5</sup>	2,190	161,000 <sup>5</sup>
Ground		267	41,000 <sup>r,5</sup>	328	49,300 <sup>5</sup>
Dicalcium phosphate		28	21,200 <sup>5</sup>	20	18,800 <sup>5</sup>
Elemental phosphorus		5	18,000 <sup>5</sup>	8	26,400 <sup>5</sup>
Triple superphosphate		295	89,400 <sup>5</sup>	--	-- <sup>5</sup>
Diammonium phosphate		586	213,000 <sup>5</sup>	805	286,000 <sup>5</sup>
Monoammonium phosphate		853	334,000 <sup>5</sup>	1,040	406,000 <sup>5</sup>
Fertilizer containing nitrates and phosphates		32	12,700 <sup>r,5</sup>	9	3,140 <sup>5</sup>
Phosphoric acid		2	401 <sup>5</sup>	(4)	66 <sup>5</sup>
Potash, gross weight:					
Potassium chloride	metric tons	7,310,000	2,030,000	9,420,000	1,910,000
Potassium sulfate	do.	113,000	40,700	127,000	46,000
Potassium nitrate	do.	66,000	43,900	106,000	62,000
Potassium sodium nitrate mixture	do.	4,130	1,910	5,470	1,580
Pumice:					
Crude or unmanufactured	do.	170,000	4,260	166,000	4,710
Wholly or partially manufactured	do.	189 <sup>r</sup>	513 <sup>r</sup>	130	715
Salt					
Sand and gravel:					
Construction		3,490	45,500 <sup>5</sup>	6,520	62,200 <sup>5</sup>
Industrial		281	15,400 <sup>5</sup>	365	18,600 <sup>5</sup>
Soda ash		35	6,660 <sup>r,5</sup>	19	4,810 <sup>5</sup>
Stone:					
Crushed, chips, calcium carbonate fines, excludes precipitated carbonates		19,700	210,000 <sup>r,5</sup>	18,500	185,000 <sup>5</sup>
Dimension		XX	2,170,000	XX	2,110,000
Strontium:					
Celestite	kilograms	10,100,000	787	25,700,000	1,890
Carbonate	do.	8,940,000 <sup>r</sup>	7,250 <sup>r</sup>	8,400,000	6,920
Metal	do.	83,900	521	183,000	1,610
Nitrate	do.	2,430,000	3,020 <sup>r</sup>	2,780,000	3,430
Oxide, hydroxide, peroxide	do.	36,800	82	489,000	768
Sulfur:					
Elemental <sup>9</sup>		1,810 <sup>r,c</sup>	79,800	1,850	107,000
Sulfuric acid, 100% H <sub>2</sub> SO <sub>4</sub>	metric tons	3,220,000	315,000 <sup>r</sup>	2,920,000	125,000
Talc, unmanufactured	do.	378,000	130,000	354,000	121,000
Vermiculite		46	NA	53	NA
Wollastonite <sup>c</sup>	metric tons	≤2,000 <sup>r</sup>	NA	≤1,000	NA
Zeolites <sup>c</sup>	do.	<1,000	NA	<1,000	NA
Total, industrial minerals		XX	41,400,000 <sup>r</sup>	XX	40,600,000
Grand total		XX	98,800,000 <sup>r</sup>	XX	105,000,000

See footnotes at end of table.

TABLE 8—Continued

U.S. IMPORTS FOR CONSUMPTION OF PRINCIPAL MINERALS AND PRODUCTS, EXCLUDING MINERAL FUELS<sup>1,2</sup>

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

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<sup>c</sup>Estimated. <sup>r</sup>Revised. do. Ditto. NA Not available. XX Not applicable. -- Zero.

<sup>1</sup>Table includes data from the mineral commodity chapters published in the U.S. Geological Survey 2017 Minerals Yearbook as they were completed through January 2022.

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Customs value unless otherwise specified.

<sup>4</sup>Less than ½ unit.

<sup>5</sup>Cost, insurance, and freight value.

<sup>6</sup>Data unrounded as appear in cement Minerals Yearbook chapter. Does not include Puerto Rico. Data adjusted by the U.S. Geological Survey.

<sup>7</sup>Not elsewhere classified.

<sup>8</sup>U.S. pharmaceutical-grade lithium carbonate.

<sup>9</sup>General imports.

TABLE 9  
WORLD AND U.S. PRODUCTION OF SELECTED NONFUEL MINERAL COMMODITIES<sup>1,2</sup>

(Thousand metric tons, gross weight, unless otherwise specified)

Commodity		World total					United States	
		2013	2014	2015	2016	2017	2017	Percent of world total <sup>3</sup>
<b>Metals:</b>								
Alumina, calcined equivalent <sup>4</sup>		106,000	111,000	119,000	121,000	129,000	1,430	1.1
Aluminum, primary <sup>5</sup>		52,100 <sup>r</sup>	54,200	57,800 <sup>r</sup>	58,600 <sup>r</sup>	59,800	741	1.2
Antimony, Sb content	metric tons	193,000	157,000	151,000 <sup>r</sup>	155,000 <sup>r</sup>	137,000	--	--
Arsenic trioxide <sup>6</sup>	do.	38,300	33,100 <sup>r</sup>	37,200 <sup>r</sup>	35,700 <sup>r</sup>	34,600	--	--
Bauxite <sup>7</sup>		296,000 <sup>r</sup>	258,000	298,000 <sup>r</sup>	282,000 <sup>r</sup>	308,000	W	W
Beryl <sup>8</sup>	metric tons	7,400	8,440 <sup>r</sup>	6,630 <sup>r</sup>	5,530 <sup>r</sup>	5,300	3,760	70.9
Bismuth, refinery	do.	17,100 <sup>r</sup>	17,800 <sup>r</sup>	18,700 <sup>r</sup>	16,900 <sup>r</sup>	16,900	--	--
Cadmium, refinery <sup>7,9</sup>	do.	22,500 <sup>r</sup>	25,100 <sup>r</sup>	24,600 <sup>r</sup>	25,800 <sup>r</sup>	25,400	W	W
Chromite		37,300 <sup>r</sup>	36,700 <sup>r</sup>	36,500 <sup>r</sup>	34,400 <sup>r</sup>	35,700	--	--
<b>Cobalt, Co content:</b>								
Mine <sup>10</sup>	metric tons	103,000 <sup>r</sup>	113,000 <sup>r</sup>	117,000 <sup>r</sup>	109,000 <sup>r</sup>	120,000	640 <sup>e</sup>	0.5
Refinery <sup>11</sup>	do.	86,700	92,600 <sup>r</sup>	99,800	96,600	117,000	--	--
<b>Copper:</b>								
Mine, recoverable, Cu content <sup>12</sup>		18,400 <sup>r</sup>	18,600 <sup>r</sup>	19,200	20,400 <sup>r</sup>	20,000 <sup>p</sup>	1,260	6.3
Smelter <sup>13</sup>		16,600	18,000	18,500	18,900	19,200 <sup>p</sup>	470	2.5
Refinery <sup>14</sup>		21,300	22,800	23,200	23,700 <sup>r</sup>	23,900 <sup>p</sup>	1,080	4.5
Gold, mine	metric tons	2,960 <sup>r</sup>	3,050 <sup>r</sup>	3,120 <sup>r</sup>	3,180 <sup>r</sup>	3,230	237	7.3
Indium, refinery	kilograms	831,000 <sup>r</sup>	881,000	731,000	682,000	714,000	--	--
<b>Iron and steel:</b>								
Direct-reduced iron <sup>15</sup>		70,300 <sup>r</sup>	74,400 <sup>r</sup>	68,400 <sup>r</sup>	71,400 <sup>r</sup>	75,000	2,990	4.0
Pig iron <sup>15</sup>		1,170,000	1,190,000	1,160,000	1,160,000	1,180,000	22,400	1.9
Raw steel <sup>16</sup>		1,610,000	1,670,000	1,620,000	1,630,000	1,690,000	81,600	4.8
Iron ore <sup>17</sup>		2,190,000 <sup>r</sup>	2,330,000 <sup>r</sup>	2,310,000 <sup>r</sup>	2,340,000 <sup>r</sup>	2,430,000	47,900	2.0
<b>Lead:</b>								
Mine, concentrates, Pb content		5,280 <sup>r</sup>	5,260	4,920 <sup>r</sup>	4,870 <sup>r</sup>	4,650	310 <sup>18</sup>	6.7
Refinery <sup>19</sup>		10,800 <sup>r</sup>	10,600 <sup>r</sup>	10,500 <sup>r,e</sup>	10,800 <sup>r,e</sup>	11,300 <sup>e</sup>	1,140	10.1
Magnesium, primary <sup>7</sup>	metric tons	910,000	995,000 <sup>r</sup>	970,000 <sup>r</sup>	989,000 <sup>r</sup>	1,040,000	W	W
Manganese ore, Mn content <sup>20</sup>		17,200	17,900 <sup>r</sup>	17,000	15,400 <sup>r</sup>	17,300	--	--
Mercury, mine <sup>7</sup>	metric tons	2,320 <sup>r</sup>	2,770	3,300 <sup>r</sup>	3,670 <sup>r</sup>	3,790 <sup>p</sup>	NA	NA
Molybdenum, mine, Mo content	do.	281,000	305,000 <sup>r</sup>	288,000	278,000 <sup>r</sup>	297,000	40,700	13.7
<b>Nickel, Ni content:</b>								
Mine, recoverable	do.	2,610,000 <sup>r</sup>	2,140,000 <sup>r</sup>	2,120,000 <sup>r</sup>	2,000,000 <sup>r</sup>	2,160,000	22,100 <sup>21</sup>	1.0
Plant	do.	1,980,000	2,000,000	2,030,000 <sup>r</sup>	2,010,000 <sup>r</sup>	1,970,000	--	--
Niobium (columbium) mineral concentrates, Nb content	do.	59,700 <sup>r</sup>	69,000 <sup>r</sup>	65,500 <sup>r</sup>	58,300 <sup>r</sup>	69,100 <sup>e</sup>	--	--
<b>Platinum-group metals:</b>								
Palladium	kilograms	205,000 <sup>r</sup>	193,000	217,000 <sup>r</sup>	210,000 <sup>r</sup>	226,000	13,600 <sup>e,22</sup>	6.0
Platinum	do.	192,000 <sup>r</sup>	150,000	195,000	191,000	199,000	3,980 <sup>e,22</sup>	2.0
Other	do.	62,100 <sup>r</sup>	48,000 <sup>r</sup>	65,100 <sup>r</sup>	66,000 <sup>r</sup>	63,900	--	--
Rare earths, rare-earth-oxide (REO) equivalent <sup>e</sup>	metric tons	107,000	124,000 <sup>r</sup>	129,000 <sup>r</sup>	129,000	132,000	--	--
Rhenium <sup>e</sup>	kilograms	45,600 <sup>r</sup>	45,100 <sup>r</sup>	47,900 <sup>r</sup>	49,000 <sup>r</sup>	48,800	8,200 <sup>23</sup>	16.8
Selenium, refinery, Se content <sup>7</sup>	metric tons	2,280 <sup>r</sup>	2,470 <sup>r</sup>	2,660 <sup>r</sup>	2,800 <sup>r</sup>	2,710	W	W
Silver, mine <sup>24</sup>	do.	26,700 <sup>r</sup>	27,800 <sup>r</sup>	27,400 <sup>r</sup>	27,900 <sup>r</sup>	27,800	1,030	3.7
Tantalum mineral concentrates, Ta content	do.	1,300 <sup>r</sup>	1,390 <sup>r</sup>	1,490 <sup>r</sup>	1,540 <sup>r</sup>	1,810 <sup>e</sup>	--	--
Tellurium, refinery, Te content <sup>7</sup>	do.	365 <sup>r</sup>	439 <sup>r</sup>	411 <sup>r</sup>	416 <sup>r</sup>	467 <sup>e</sup>	W	W
<b>Tin, Sn content:</b>								
Mine <sup>24</sup>	metric tons	302,000 <sup>r</sup>	324,000 <sup>r</sup>	318,000 <sup>r</sup>	301,000 <sup>r</sup>	313,000	--	--
Smelter <sup>25</sup>	do.	353,000 <sup>r</sup>	405,000 <sup>r</sup>	370,000 <sup>r</sup>	364,000 <sup>r</sup>	378,000	10,300	2.7
<b>Titanium mineral concentrates:</b>								
Ilmenite and leucoxene		10,400 <sup>r</sup>	10,400 <sup>r</sup>	9,540 <sup>r</sup>	9,550 <sup>r</sup>	9,090	100 <sup>26</sup>	1.1
Rutile <sup>7</sup>		629 <sup>r</sup>	660	762 <sup>r</sup>	886 <sup>r</sup>	803	W	W
Tungsten, W content	metric tons	79,400 <sup>r</sup>	82,600 <sup>r</sup>	83,800 <sup>r</sup>	79,600 <sup>r</sup>	82,100	--	--

See footnotes at end of table.

TABLE 9—Continued  
WORLD AND U.S. PRODUCTION OF SELECTED NONFUEL MINERAL COMMODITIES<sup>1,2</sup>

(Thousand metric tons, gross weight, unless otherwise specified)

Commodity		World total					United States	
		2013	2014	2015	2016	2017	2017	Percent of world total <sup>3</sup>
<b>Metals:—Continued</b>								
Vanadium, V content <sup>27</sup>	metric tons	81,400	85,300 <sup>r</sup>	82,000 <sup>r</sup>	69,600 <sup>r</sup>	71,200	--	--
<b>Zinc:</b>								
Mine, Zn content of mineral concentrates and direct shipping ore		13,800 <sup>r</sup>	13,700 <sup>r</sup>	13,500	12,700 <sup>r</sup>	12,500	774 <sup>18</sup>	6.2
Smelter		13,200 <sup>r</sup>	13,500 <sup>r</sup>	13,700 <sup>r</sup>	13,800	13,800	132	1.0
Zirconium mineral concentrates		1,010 <sup>r,7</sup>	1,580 <sup>r,7</sup>	1,450 <sup>r</sup>	1,290 <sup>r,7</sup>	1,470	80 <sup>28</sup>	5.4
<b>Industrial minerals:</b>								
Asbestos, marketable fiber		1,650 <sup>r</sup>	1,520 <sup>r</sup>	1,330 <sup>r</sup>	1,280	1,170	--	--
Barite		9,000	9,870	8,250 <sup>r</sup>	7,440 <sup>r</sup>	8,670	334 <sup>29</sup>	3.9
Bromine <sup>7</sup>	metric tons	389,000	375,000	328,000 <sup>r</sup>	367,000 <sup>r</sup>	388,000	W	W
Celestite	do.	286,000 <sup>r</sup>	285,000 <sup>r</sup>	286,000 <sup>r</sup>	218,000 <sup>r,e</sup>	255,000 <sup>e</sup>	--	--
Cement, hydraulic		4,030,000 <sup>r</sup>	4,150,000 <sup>r</sup>	4,070,000 <sup>r</sup>	4,150,000 <sup>r</sup>	4,080,000	86,799 <sup>30,31,32</sup>	2.1
<b>Clay:</b>								
Bentonite		17,000 <sup>r,33</sup>	19,000 <sup>r,33</sup>	21,000 <sup>r,33</sup>	20,000 <sup>r,33</sup>	21,000 <sup>33</sup>	4,430	21.2
Fuller's earth		3,500 <sup>33</sup>	3,400 <sup>r,33</sup>	3,500 <sup>r,33</sup>	3,200 <sup>r,33</sup>	3,300 <sup>33</sup>	1,840 <sup>34</sup>	56.5
Kaolin		34,000 <sup>r,33</sup>	37,000 <sup>33</sup>	37,000 <sup>r,33</sup>	37,000 <sup>r,33</sup>	37,000 <sup>33</sup>	5,560	15.1
Diamond, natural <sup>e,35</sup>	thousand carats	131,000 <sup>r</sup>	124,000 <sup>r</sup>	127,000	127,000 <sup>r</sup>	151,000	--	--
Diatomite		2,930 <sup>r</sup>	3,190 <sup>r</sup>	3,090 <sup>r</sup>	2,530 <sup>r</sup>	2,460	768 <sup>29</sup>	31.3
Feldspar		22,400	23,900 <sup>r</sup>	25,100 <sup>r</sup>	23,800 <sup>r</sup>	24,700	440 <sup>e,33,36</sup>	1.8
Fluorspar <sup>37</sup>		7,100 <sup>r</sup>	6,730 <sup>r</sup>	5,820 <sup>r</sup>	5,760 <sup>r</sup>	5,880	NA	NA
Garnet, industrial		1,160	1,100	1,010	1,130	974	107	11.0
Graphite, natural <sup>e</sup>		699 <sup>r</sup>	905 <sup>r</sup>	946 <sup>r</sup>	864 <sup>r</sup>	897	--	--
Gypsum		161,000 <sup>r</sup>	153,000 <sup>r</sup>	135,000 <sup>r</sup>	156,000 <sup>r</sup>	155,000	20,700 <sup>38</sup>	13.3
Iodine, crude <sup>7</sup>	metric tons	30,800	29,600	32,500 <sup>r</sup>	29,200 <sup>r</sup>	29,200	W	W
Iron oxide pigments, natural <sup>7</sup>		1,750	2,720	2,480	2,510	2,500	W	W
Kyanite and related minerals	do.	363,000 <sup>r</sup>	372,000 <sup>r</sup>	402,000 <sup>r</sup>	393,000	394,000	91,300 <sup>39</sup>	23.2
Lime <sup>40</sup>		340,000 <sup>33</sup>	350,000 <sup>33</sup>	370,000 <sup>r,33</sup>	410,000 <sup>r,33</sup>	410,000 <sup>33</sup>	17,600 <sup>31</sup>	4.3
Magnesite, crude salable <sup>7</sup>		25,900 <sup>r</sup>	24,800 <sup>r</sup>	28,100 <sup>r</sup>	28,500 <sup>r</sup>	29,100	W	W
Mica	metric tons	382,000 <sup>r</sup>	341,000 <sup>r</sup>	338,000 <sup>r</sup>	340,000 <sup>r</sup>	356,000	40,000 <sup>41</sup>	11.2
Monazite mineral concentrates	do.	4,250	6,680 <sup>r</sup>	6,970 <sup>r</sup>	9,430	9,050	--	--
Nitrogen, ammonia, N content		140,000 <sup>r</sup>	140,000 <sup>r</sup>	142,000 <sup>r</sup>	144,000	142,000	11,600 <sup>42</sup>	8.2
Peat		29,900 <sup>r</sup>	28,500 <sup>r</sup>	27,900 <sup>r</sup>	28,200 <sup>r</sup>	28,200	498 <sup>43</sup>	1.8
Perlite, processed ore		4,510 <sup>r</sup>	4,480 <sup>r</sup>	4,350 <sup>r</sup>	4,520 <sup>r</sup>	4,430	570	12.9
Phosphate rock		232,000	236,000 <sup>r</sup>	261,000 <sup>r</sup>	263,000 <sup>r</sup>	270,000	27,900 <sup>29</sup>	10.4
Potash, marketable, K <sub>2</sub> O equivalent		36,100	41,300 <sup>r</sup>	40,700	39,000 <sup>r</sup>	41,400	480 <sup>33</sup>	1.2
Pumice and related materials		20,100 <sup>r</sup>	18,500 <sup>r</sup>	16,900 <sup>r</sup>	17,300 <sup>r</sup>	17,600	383 <sup>29</sup>	2.2
Salt, all forms		296,000 <sup>r</sup>	292,000 <sup>r</sup>	292,000 <sup>r</sup>	284,000 <sup>r</sup>	286,000	39,600 <sup>31,44</sup>	13.8
Sand and gravel, industrial, silica		231,000 <sup>r</sup>	338,000 <sup>r</sup>	294,000 <sup>r</sup>	251,000 <sup>r</sup>	273,000	102,000 <sup>29</sup>	37.2
Soda ash, natural and manufactured		51,500 <sup>r</sup>	52,600 <sup>r</sup>	53,400 <sup>r</sup>	53,700 <sup>r</sup>	54,000 <sup>e</sup>	12,000 <sup>45</sup>	22.2
Sulfur, all forms, S content <sup>46</sup>		77,000 <sup>r</sup>	78,300 <sup>r</sup>	78,100 <sup>r</sup>	79,000 <sup>r</sup>	80,200	9,640	12.0
Talc and pyrophyllite		8,080 <sup>r</sup>	8,220 <sup>r</sup>	7,170 <sup>r</sup>	7,170 <sup>r</sup>	7,270	610 <sup>47</sup>	8.4
Vermiculite		359	384	368 <sup>r</sup>	394 <sup>r</sup>	404	100 <sup>e,29,48</sup>	24.8

<sup>e</sup>Estimated. <sup>p</sup>Preliminary. <sup>r</sup>Revised. do. Ditto. NA Not available. W Withheld to avoid disclosing company proprietary data; not included in "World total." -- Zero.

<sup>1</sup>Table includes data from the mineral commodity chapters published in the U.S. Geological Survey 2017 Minerals Yearbook as they were completed through January 2022.

<sup>2</sup>Data are rounded to no more than three significant digits unless otherwise specified.

<sup>3</sup>Reported to one decimal place.

<sup>4</sup>Calcined alumina or the total of calcined alumina plus the calcined equivalent of hydrate.

<sup>5</sup>Primary aluminum is defined as "The weight of liquid aluminum as tapped from pots, excluding the weight of any alloying materials as well as that of any metal produced from either returned scrap or remelted material."

<sup>6</sup>Includes calculated arsenic trioxide equivalent of output of elemental arsenic compounds other than arsenic trioxide; inclusion of such materials would not duplicate reported arsenic trioxide production.

<sup>7</sup>World totals do not include U.S. production.

<sup>8</sup>Beryl ore for the production of beryllium and excludes gem-quality beryl. U.S. production is mine shipments; includes bertrandite ore, calculated as equivalent to beryl containing 11% beryllium oxide.

TABLE 9—Continued  
WORLD AND U.S. PRODUCTION OF SELECTED NONFUEL MINERAL COMMODITIES<sup>1,2</sup>

(Thousand metric tons, gross weight, unless otherwise specified)

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- <sup>9</sup>Includes unwrought production from ores, concentrates, flue dusts, and other materials of both domestic and imported origin.
- <sup>10</sup>Recoverable cobalt content of ores, mineral concentrates, or intermediate products from cobalt, copper, nickel, platinum, or zinc operations. U.S. production is cobalt content of concentrates.
- <sup>11</sup>Cobalt refined from ores, concentrates, or intermediate products and does not include production of downstream products from refined cobalt.
- <sup>12</sup>Copper content of concentrates produced (includes cement copper). U.S. production includes mineral concentrates and electrowon leaching.
- <sup>13</sup>Includes total production of smelted copper metal, including low-grade cathode produced by electrowinning methods. The smelter feed may be derived from ore, concentrates, copper precipitate or matte (primary), and (or) scrap (secondary). U.S. production is primary only.
- <sup>14</sup>Includes total production of refined copper whether produced by pyrometallurgical or electrolytic refining methods and whether derived from primary unrefined copper or from scrap. Copper cathode derived from electrowinning processing is also included. U.S. production is secondary only.
- <sup>15</sup>Sources: Midrex Technologies, Inc., governments, and companies.
- <sup>16</sup>Source: American Iron and Steel Institute (AISI). Raw steel is defined by AISI as steel formed in solid state after melting, suitable for further processing or sale.
- <sup>17</sup>Production of usable ore represents total for all iron ore products used in steelmaking.
- <sup>18</sup>Total content of ores and mineral concentrates. Table 1 reports recoverable content.
- <sup>19</sup>Total output of refined lead whether derived from ores and concentrates (primary) or scrap (secondary); includes the lead content of antimonial lead but does not include, to the extent possible, simple remelting of scrap.
- <sup>20</sup>Mostly concentrates or comparable shipping product.
- <sup>21</sup>Recoverable content of nickel sulfide mineral concentrates.
- <sup>22</sup>Excludes that produced as a byproduct from gold-copper ores.
- <sup>23</sup>Based on 80% recovery of estimated rhenium contained in molybdenum mineral concentrates.
- <sup>24</sup>Recoverable content of ores and mineral concentrates.
- <sup>25</sup>Includes primary production (from ores and concentrates) and secondary production (recovered from scrap). U.S. production is secondary only.
- <sup>26</sup>Includes U.S. production, rounded to one significant digit, of ilmenite, leucocoxene, and rutile to avoid disclosing company proprietary data.
- <sup>27</sup>Production from ores, concentrates, and slag.
- <sup>28</sup>Rounded to no more than one significant digit.
- <sup>29</sup>Sold or used by producers and (or) marketable production.
- <sup>30</sup>Data are not rounded. Refer to the Minerals Yearbook cement chapter.
- <sup>31</sup>Includes Puerto Rico.
- <sup>32</sup>Portland and masonry cements only. Includes a small (less than 0.3% per year) component of double-counting where portland cement (not clinker) is consumed to make masonry cement; the precise amount of double-counting cannot be determined because of the involvement of portland cement stockpiles.
- <sup>33</sup>Rounded to no more than two significant digits.
- <sup>34</sup>Does not include attapulgitite.
- <sup>35</sup>Includes gem and industrial. Source: Kimberley Process Certification Scheme.
- <sup>36</sup>Includes hand-cobbed feldspar, flotation-concentrate feldspar, feldspar in feldspar-quartz mixtures, and aplite.
- <sup>37</sup>Includes production by grade (acid, ceramic, and metallurgical).
- <sup>38</sup>Does not include byproduct gypsum.
- <sup>39</sup>Does not include synthetic mullite. Estimated using several prior-years' output as reported to the Virginia Department of Mines.
- <sup>40</sup>Quicklime, hydrated lime, and dead-burned dolomite.
- <sup>41</sup>Includes scrap and flake. Does not include, if any, U.S. production of low-quality sericite and sheet mica.
- <sup>42</sup>Synthetic anhydrous ammonia; does not include coke oven byproduct ammonia.
- <sup>43</sup>Production. Table 1 reports sales by producers.
- <sup>44</sup>Includes brine, rock, solar, and vacuum and open pans.
- <sup>45</sup>U.S. production is natural only.
- <sup>46</sup>Includes native, including Frasch; pyrite; and byproduct of metallurgy, natural gas, oil sands, and petroleum.
- <sup>47</sup>Does not include pyrophyllite.
- <sup>48</sup>Rounded to the nearest 100,000 metric tons.