U.S. Department of the Interior U.S. Geological Survey

MINERAL COMMODITY SUMMARIES 2019

Abrasives Aluminum Antimony Arsenic Asbestos Barite Bauxite Beryllium **Bismuth** Boron **Bromine** Cadmium Cement Cesium Chromium Clays Cobalt Copper Diamond Diatomite Feldspar

Fluorspar Gallium Garnet Gemstones Germanium Gold Graphite Gypsum Hafnium Helium Indium lodine Iron and Steel Iron Ore **Iron Oxide Pigments Kyanite** Lead Lime Lithium Magnesium Manganese

Mercury Mica Molybdenum Nickel Niobium Nitrogen Palladium Peat Perlite **Phosphate Rock** Platinum Potash Pumice **Quartz Crystal Rare Earths** Rhenium **Rubidium** Salt Sand and Gravel Scandium Selenium

Silicon Silver Soda Ash Stone Strontium Sulfur Talc **Tantalum** Tellurium Thallium Thorium Tin Titanium Tungsten Vanadium Vermiculite **Wollastonite** Yttrium Zeolites Zinc Zirconium



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U.S. Department of the Interior DAVID BERNHARDT, Acting Secretary

U.S. Geological Survey James F. Reilly II, Director

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2018 U.S. NET IMPORT RELIANCE¹

Commodity	Percent	
ARSENIC (trioxide)	100	
ASBESTOS	100	
CESIUM	100	
FLUORSPAR	100	
GALLIUM	100	
GRAPHITE (natural)	100	
INDIUM	100	
MANGANESE	100	
MICA (sheet, natural)	100	
NEPHELINE SYENITE	100	
NIOBIUM (columbium)	100	
RARE EARTHS (compounds and metals) ³	100	
RUBIDIUM	100	
SCANDIUM	100	
STRONTIUM	100	
TANTALUM	100	
THORIUM	100	
VANADIUM	100	
GEMSTONES	99	
BISMUTH	96	
YTTRIUM	>95	
POTASH	92	
TITANIUM MINERAL CONCENTRATES	91	
DIAMOND (dust, grit, and powder)	89	
ANTIMONY (oxide)	85	
ZINC	85	
BARITE	84	
RHENIUM	84	
STONE (dimension)	82	
TIN	78	
ABRASIVES, fused AI oxide (crude)	>75	
ABRASIVES, silicon carbide (crude)	>75	
BAUXITE	>75	
TELLURIUM	>75	
TITANIUM (sponge)	75	
PLATINUM	73	
CHROMIUM	71	
PEAT	70	
GARNET (industrial)	68	
SILVER	65	
COBALT	61	
NICKEL	52	
GERMANIUM	>50	
IODINE	>50	
IRON OXIDE PIGMENTS (natural)	>50	
IRON OXIDE PIGMENTS (synthetic)	>50	
LITHIUM	>50	
TUNGSTEN	>50	
ALUMINUM	50	
MAGNESIUM COMPOUNDS	48	
ALUMINA	45	
SILICON	34	
PALLADIUM	33	
COPPER	32	
VERMICULITE	30	
LEAD	29	
PUMICE	29	
SALT	28	
MICA (scrap and flake, natural)	26	
PERLITE	25	
BROMINE	<25	
CADMIUM	<25	
MAGNESIUM METAL	<25	
IRON and STEEL	24	

Major import sources (2014-17)² Morocco, China, Belgium Brazil, Russia Canada Mexico, Vietnam, South Africa, China China, United Kingdom, Germany, Ukraine China, Mexico, Canada, Brazil China, Canada, Republic of Korea, Taiwan South Africa, Gabon, Australia, Georgia China, Brazil, Belgium, Austria Canada Brazil, Canada, Russia, Germany China, Estonia, France, Japan Canada Europe, China, Japan, Russia Mexico, Germany, China Brazil, Rwanda, Australia, Congo (Kinshasa) India United Kingdom Austria, Canada, Republic of Korea, Russia India, Israel, Belgium, South Africa China, Belgium, Mexico, Republic of Korea China, Estonia, Japan, Republic of Korea Canada, Russia, Belarus, Israel South Africa, Australia, Canada, Mozambique China, Ireland, Republic of Korea, Romania China, Thailand, Belgium, Bolivia Canada, Mexico, Peru, Australia China, India, Mexico, Morocco Chile, Germany, Belgium, Poland Brazil, China, Italy, Turkey Indonesia, Malaysia, Peru, Bolivia China, France, Hong Kong, Canada China, Netherlands, South Africa, Romania Jamaica, Brazil, Guinea, Guyana Canada, China, Germany Japan, Kazakhstan, Ukraine, China South Africa, Germany, United Kingdom, Italy South Africa, Kazakhstan, Russia Canada Australia. India. South Africa. China Mexico, Canada, Peru, Republic of Korea Norway, China, Japan, Finland Canada, Norway, Australia, Russia China, Belgium, Germany, Russia Chile, Japan Cyprus, Spain, France, Austria China, Germany, Brazil, Canada Argentina, Chile, China, Russia China, Bolivia, Germany, Canada Canada, Russia, United Arab Emirates, China China, Canada, Australia, Brazil Australia, Brazil, Suriname, Jamaica Russia, Brazil, Canada, China South Africa, Russia, Italy, United Kingdom Chile, Canada, Mexico South Africa, Brazil, China, Zimbabwe Canada, Mexico, Republic of Korea, India Greece, Iceland, Mexico Chile, Canada, Mexico, Egypt Canada, China, India, Japan Greece, Mexico, Turkey Israel, Jordan, China Canada, Australia, China, Belgium Israel, Canada, United Kingdom, Mexico Canada, Brazil, Republic of Korea

¹Not all mineral commodities covered in this publication are listed here. Those not shown include mineral commodities for which the United States is a net exporter (abrasives, metallic; boron; clays; diatomite; gold; helium; iron and steel scrap; iron ore; kyanite; molybdenum concentrates; sand and gravel, industrial; selenium; soda ash; titanium dioxide pigment; wollastonite; zeolites; and zirconium) or less than 24% import reliant (beryllium; cement; diamond, industrial stones; feldspar; gypsum; iron and steel slag; lime; nitrogen (fixed)–ammonia; phosphate rock; sand and gravel, construction; stone, crushed; sulfur; and talc and pyrophyllite). For some mineral commodities (hafnium; mercury; quartz crystal, industrial; and thallium), not enough information is available to calculate the exact percentage of import reliance.

³Data include lanthanides.

(Data in metric tons of antimony content unless otherwise noted)

Domestic Production and Use: In 2018, no marketable antimony was mined in the United States. A mine in Nevada that had extracted about 800 tons of stibnite ore from 2013 through 2014 was placed on care-and-maintenance status in 2015 and had no reported production in 2018. Primary antimony metal and oxide were produced by one company in Montana using imported feedstock. Secondary antimony production was derived mostly from antimonial lead recovered from spent lead-acid batteries. The estimated value of secondary antimony produced in 2018, based on the average New York dealer price for antimony, was about \$34 million. Recycling supplied about 14% of estimated domestic consumption, and the remainder came mostly from imports. The value of antimony consumption in 2018, based on the average New York dealer price, was about \$251 million. The estimated distribution of domestic primary antimony consumption was as follows: nonmetal products, including ceramics and glass and rubber products, 33%; flame retardants, 36%; and metal products, including antimonial lead and ammunition, 31%.

Salient Statistics—United States:	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u> e
Production:					
Mine (recoverable antimony)	—	—	_	—	_
Smelter:					
Primary	519	627	645	602	400
Secondary	4,280	3,740	3,810	^e 4,000	4,000
Imports for consumption:					
Ore and concentrates	378	308	119	61	98
Oxide	17,600	16,700	16,200	17,900	21,000
Unwrought, powder, waste and scrap ¹	6,210	5,790	7,150	6,830	6,500
Exports:					
Ore and concentrates ¹	41	31	12	46	47
Oxide	1,670	1,760	1,330	1,600	1,960
Unwrought, powder, waste and scrap ¹	1,570	1,440	623	653	550
Consumption, apparent ²	25,400	23,700	26,000	26,800	29,000
Price, metal, average, dollars per pound ³	4.25	3.27	3.35	3.98	3.90
Stocks, yearend	1,400	1,290	1,090	1,360	1,400
Employment, plant, number (yearend) ^e	27	27	27	27	27
Net import reliance ⁴ as a percentage of					
apparent consumption	81	82	83	83	85

<u>Recycling</u>: The bulk of secondary antimony is recovered at secondary lead smelters as antimonial lead, most of which was generated by, and then consumed by, the lead-acid battery industry.

Import Sources (2014–17): Metal: China, 58%; India, 17%; Vietnam, 6%; United Kingdom, 5%; and other, 14%. Ore and concentrate: Italy, 73%; China, 15%; India, 6%; Mexico, 3% and other, 3%. Oxide: China, 61%; Thailand, 11%; Belgium, 10%; Bolivia, 8%; and other, 10%.

Number	Normal Trade Relations 12–31–18
2617.10.0000	Free.
2825.80.0000	Free.
8110.10.0000	Free.
8110.20.0000	Free.
8110.90.0000	Free.
	Number 2617.10.0000 2825.80.0000 8110.10.0000 8110.20.0000 8110.90.0000

Depletion Allowance: 22% (Domestic), 14% (Foreign).

Government Stockpile: None.

ANTIMONY

Events, Trends, and Issues: In May 2018, the U.S. Department of the Interior, in coordination with other executive branch agencies, published a list of 35 critical minerals (83 FR 23295), including antimony. This list was developed to serve as an initial focus, pursuant to Executive Order 13817, "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals" (82 FR 60835).

One company operated a smelter in Montana that produced antimony metal and oxides from imported intermediate products (antimony oxide and sodium antimonate), primarily from a smelter in Mexico that processed concentrates from mines in Australia and Mexico. The company reported successful testing of a new product, antimony trisulfide, which would be produced at the facility in Montana. The company also announced the reopening of two of its mines in Mexico.

China continued to be the leading global antimony producer in 2018 and accounted for more than 70% of global mine production. In 2016 and 2017, many large-scale producers reduced production and many small-scale producers closed in response to price declines in China and stricter environmental standards from Provincial and national governments. In 2018, producers in Hunan, Yunnan, and Guizhou Provinces maintained a steady production rate after their smelters completed upgrades to meet the environmental standards. In the next several years, antimony mining in the Guizhou Province was expected to be limited as a part of the Chinese Government's mining industry reforms aiming to reduce mine overproduction.

World Mine Production and Reserves:

	Mine production		Reserves⁵
	<u>2017</u>	<u>2018</u> e	
United States			⁶ 60,000
Australia	3,120	3,100	⁷ 140,000
Bolivia	2,700	2,700	310,000
Burma	1,000	1,000	NA
China	98,000	100,000	480,000
Guatemala	25	25	NA
Iran	300	300	NA
Kazakhstan	700	700	NA
Laos	340	300	NA
Mexico	243	240	18,000
Pakistan	60	60	NA
Russia (recoverable)	14,400	14,000	350,000
Tajikistan	14,000	14,000	50,000
Turkey	2,000	2,000	100,000
Vietnam	380	300	<u>NA</u>
World total (rounded)	137,000	140,000	1,500,000

<u>World Resources</u>: U.S. resources of antimony are mainly in Alaska, Idaho, Montana, and Nevada. Principal identified world resources are in Australia, Bolivia, China, Mexico, Russia, South Africa, and Tajikistan. Additional antimony resources may occur in Mississippi Valley-type lead deposits in the Eastern United States.

<u>Substitutes</u>: Selected organic compounds and hydrated aluminum oxide are substitutes as flame retardants. Chromium, tin, titanium, zinc, and zirconium compounds substitute for antimony chemicals in enamels, paint, and pigments. Combinations of calcium, copper, selenium, sulfur, and tin are substitutes for alloys in lead-acid batteries.

^eEstimated. NA Not available. — Zero.

¹Gross weight.

²Defined as primary production + secondary production from old scrap + net import reliance.

³New York dealer price for 99.65% metal, cost, insurance, freight U.S. ports. Source: Platts Metal Week.

⁴Defined as imports of antimony in oxide, unwrought, powder, waste and scrap – exports of antimony in oxide, unwrought, powder, waste and scrap + adjustments for industry stock changes.

⁵See Appendix C for resource and reserve definitions and information concerning data sources.

⁶Company-reported probable reserves for the Stibnite Gold Project in Idaho.

⁷For Australia, Joint Ore Reserves Committee-compliant reserves were 65,000 tons.