

SULFUR

(Data in thousand metric tons of sulfur unless otherwise noted)

Domestic Production and Use: In 2015, recovered elemental sulfur and byproduct sulfuric acid were produced at 103 operations in 27 States. Total shipments were valued at about \$933 million. Elemental sulfur production was 8.7 million tons; Louisiana and Texas accounted for about 52% of domestic production. Elemental sulfur was recovered, in descending order of tonnage, at petroleum refineries, natural-gas-processing plants, and coking plants by 39 companies at 96 plants in 26 States. Byproduct sulfuric acid, representing about 6% of production of sulfur in all forms, was recovered at seven nonferrous smelters in five States by five companies. Domestic elemental sulfur provided 64% of domestic consumption, and byproduct acid accounted for about 5%. The remaining 31% of sulfur consumed was provided by imported sulfur and sulfuric acid. About 90% of sulfur consumed was in the form of sulfuric acid.

Salient Statistics—United States:	2011	2012	2013	2014	2015^e
Production					
Recovered elemental	8,230	8,410	8,600	9,040	8,720
Other forms	<u>720</u>	<u>586</u>	<u>616</u>	<u>587</u>	<u>575</u>
Total (rounded)	8,950	9,000	9,210	9,630	9,300
Shipments, all forms	8,930	9,030	9,200	9,670	9,330
Imports for consumption:					
Recovered, elemental ^e	3,270	2,930	2,990	2,370	2,200
Sulfuric acid, sulfur content	871	933	972	1,060	1,200
Exports:					
Recovered, elemental	1,310	1,860	1,770	2,000	1,600
Sulfuric acid, sulfur content	108	53	54	52	60
Consumption, apparent, all forms	11,700	11,000	11,300	11,000	11,000
Price, reported average value, dollars per ton of elemental sulfur, f.o.b., mine and (or) plant	159.88	123.54	68.71	80.07	100.00
Stocks, producer, yearend	175	132	161	142	140
Employment, mine and/or plant, number	2,600	2,600	2,600	2,600	2,600
Net import reliance ¹ as a percentage of apparent consumption	23	18	19	13	16

Recycling: Typically, between 2.5 million and 5 million tons of spent sulfuric acid is reclaimed from petroleum refining and chemical processes during any given year.

Import Sources (2011–14): Elemental: Canada, 82%; Mexico, 12%; Venezuela, 4%; and other, 2%. Sulfuric acid: Canada, 67%; Mexico, 18%; and other, 15%. Total sulfur imports: Canada, 78%; Mexico, 14%; Venezuela, 3%; and other, 5%.

Tariff: Item	Number	Normal Trade Relations 12–31–15
Sulfur, crude or unrefined	2503.00.0010	Free.
Sulfur, all kinds, other	2503.00.0090	Free.
Sulfur, sublimed or precipitated	2802.00.0000	Free.
Sulfuric acid	2807.00.0000	Free.

Depletion Allowance: 22% (Domestic and foreign).

Government Stockpile: None.

Events, Trends, and Issues: Total U.S. sulfur production decreased by about 3% and shipments decreased by about 4% compared with those of 2014. Domestic production of elemental sulfur from petroleum refineries and recovery from natural gas operations decreased by 4%. Domestically, refinery sulfur production is expected to remain relatively constant as well as byproduct sulfuric acid, unless one or more of the remaining nonferrous-metal smelters close.

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World sulfur production increased slightly and is likely to steadily increase for the foreseeable future. Significantly increased production is expected from sulfur recovery at liquefied natural gas operations in the Middle East and a moderate increase in recovered sulfur from petroleum and natural gas operations in Africa, East and South Asia, and Latin America, unless a downturn in the world economy limits investments in those areas. In addition, sulfur production may decrease as global demand for oil or natural gas declines.

The contract sulfur prices in Tampa, FL, began 2015 at around \$129 per ton. The price increased to \$147 per ton at the beginning of February and remained at that level through mid-April when prices decreased to \$132 per ton. Export prices were higher than domestic prices. In the past few years, sulfur prices have been variable, a result of the volatility of the demand for sulfur. The price decrease seen in 2015 is a reflection of China's decreased demand for sulfur.

Domestic phosphate rock consumption was lower in 2015 than in 2014, which resulted in decreased demand for sulfur to process the phosphate rock into phosphate fertilizers. Decreased consumption of sulfur can also be attributed to decreased use of sulfuric acid resulting from the decline in copper-ore leaching.

World Production and Reserves:

	Production—All forms		Reserves ²
	2014	2015 ^e	
United States	9,630	9,300	Reserves of sulfur in crude oil, natural gas, and sulfide ores are large. Because most sulfur production is a result of the processing of fossil fuels, supplies should be adequate for the foreseeable future. Because petroleum and sulfide ores can be processed long distances from where they are produced, sulfur production may not be in the country to which the reserves were attributed. For instance, sulfur from Saudi Arabian oil may be recovered at refineries in the United States.
Australia	830	900	
Brazil	540	540	
Canada	5,910	6,000	
Chile	1,700	1,700	
China	10,500	11,000	
Finland	740	740	
Germany	3,800	3,800	
India	2,830	2,800	
Iran	2,100	2,100	
Italy	740	740	
Japan	3,250	3,300	
Kazakhstan	2,740	2,700	
Korea, Republic of	1,400	1,400	
Kuwait	800	800	
Mexico	1,840	1,800	
Netherlands	515	510	
Poland	1,070	1,100	
Qatar	820	820	
Russia	7,300	7,300	
Saudi Arabia	3,300	3,300	
United Arab Emirates	1,900	1,900	
Uzbekistan	540	540	
Venezuela	800	800	
Other countries	4,210	4,210	
World total (rounded)	70,000	70,100	

World Resources: Resources of elemental sulfur in evaporite and volcanic deposits and sulfur associated with natural gas, petroleum, tar sands, and metal sulfides amount to about 5 billion tons. The sulfur in gypsum and anhydrite is almost limitless, and 600 billion tons of sulfur is contained in coal, oil shale, and shale rich in organic matter. Production from these sources would require development of low-cost methods of extraction. The domestic sulfur resource is about one-fifth of the world total.

Substitutes: Substitutes for sulfur at present or anticipated price levels are not satisfactory; some acids, in certain applications, may be substituted for sulfuric acid.

^eEstimated.

¹Defined as imports – exports + adjustments for industry stock changes.

²See [Appendix C](#) for resource/reserve definitions and information concerning data sources.