SULFUR

(Data in thousand metric tons, sulfur content, unless otherwise specified)

Domestic Production and Use: In 2024, recovered elemental sulfur and byproduct sulfuric acid were produced at 86 operations in 26 States. Total shipments were valued at about $410 million. Elemental sulfur production was estimated to be 8.2 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 31 companies at 81 plants in 25 States. Byproduct sulfuric acid, representing about 8% of production of sulfur in all forms, was recovered at five nonferrous-metal smelters in four States by four companies. Domestic elemental sulfur accounted for 65% of domestic consumption, and byproduct sulfuric acid accounted for about 7%. The remaining 28% 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:	2020	2021	2022	2023	2024[e]
Production:					
Recovered elemental	7,310	7,470	8,010	8,010	7,500
Other forms	579	600	636	640	660
Total (rounded)	7,880	8,070	8,640	8,650	8,200
Shipments, all forms	7,900	8,080	8,640	8,660	8,200
Imports for consumption:					
Recovered elemental[e]	2,230	2,370	1,670	1,460	1,300
Sulfuric acid	1,190	1,070	1,060	1,080	1,200
Exports:					
Recovered elemental	1,330	1,900	1,740	1,920	1,800
Sulfuric acid	64	129	123	64	50
Consumption, apparent, all forms[1]	9,940	9,490	9,490	9,220	8,800
Price, average unit value, free on board, mine and (or) plant, dollars per metric ton of elemental sulfur	24.90	90.40	177.8	58.90	50.00
Stocks, producer, yearend	109	113	126	122	110
Employment, mine and (or) plant, number	2,400	2,400	2,400	2,400	2,400
Net import reliance[2] as a percentage of apparent consumption	21	15	9	6	7

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 (2020–23): Elemental: Canada, 79%; Kazakhstan, 8%; Russia, 8%; and other, 5%. Sulfuric acid: Canada, 55%; Mexico, 21%; Spain, 8%; and other, 16%. Total sulfur imports: Canada, 70%; Mexico, 8%; Kazakhstan, 5%; Russia, 5%; and other, 12%.

Tariff: Item	Number	Normal Trade Relations 12–31–24
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 and shipments in 2024 were each estimated to be 5% less than that in 2023. Domestic production of elemental sulfur from petroleum refineries and recovery from natural gas operations was estimated to have decreased by 6%. Domestically, refinery sulfur production was expected to remain about the same as refining utilization remains high. Domestic byproduct sulfuric acid was expected to remain relatively constant, unless one or more of the remaining nonferrous-metal smelters close.

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Domestic phosphate rock consumption in 2024 was estimated to be about the same as that in 2023, which indicated there was no significant change in the amount of sulfur needed to process the phosphate rock into phosphate fertilizers. New sulfur demand associated with phosphate fertilizer projects was expected mostly in Africa and west Asia.

World sulfur production in 2024 was an estimated 85 million tons compared with 85.8 million tons in 2023. Starting in 2025, sulfur production from the Middle East was expected to increase owing to upgrades and new refining projects. Also, an increase in nickel production from high-pressure acid leach projects to produce battery materials was expected to increase sulfur demand.

Contract sulfur prices in Tampa, FL, began 2024 at $69 per long ton. The sulfur price increased to $81 per long ton in early March, then decreased to $76 per long ton in early July, and fourth quarter 2024 prices increased to $116 per long ton. In the past few years, sulfur prices have been variable, a result of volatility in the demand for sulfur.

World Production and Reserves:

	Production, all forms		Reserves[3]
	2023	2024[e]	
United States	8,650	8,200	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 are expected to 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	900	900	
Canada	4,980	5,000	
Chile	1,300	1,300	
China[4]	19,400	19,000	
India	3,680	3,700	
Iran	2,000	2,000	
Japan	3,070	3,100	
Kazakhstan	5,090	5,100	
Korea, Republic of	3,080	3,100	
Kuwait	1,300	1,300	
Poland	1,040	1,100	
Qatar	3,100	3,100	
Russia	7,530	7,500	
Saudi Arabia	7,500	7,500	
Turkmenistan	870	900	
United Arab Emirates	6,000	6,000	
Other countries	6,270	6,400	
World total (rounded)	85,800	85,000	

World Resources:[3] Resources of elemental sulfur in evaporite and volcanic deposits, and sulfur associated with natural gas, petroleum, tar sands, and metal sulfides, total 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 that is 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, but usually at a higher cost.

[e]Estimated.

[1]Defined as shipments + imports – exports ± adjustments for industry stock changes.

[2]Defined as imports – exports ± adjustments for industry stock changes.

[3]See Appendix C for resource and reserve definitions and information concerning data sources.

[4]Sulfur production in China includes byproduct elemental sulfur recovered from natural gas and petroleum, the estimated sulfur content of byproduct sulfuric acid from metallurgy, and the sulfur content of sulfuric acid from pyrite.