IODINE

(Data in metric tons, elemental iodine, unless otherwise specified)

Domestic Production and Use: Iodine was produced from brines in 2024 by three companies operating in Oklahoma. U.S. iodine production in 2024 was withheld to avoid disclosing company proprietary data but was estimated to have increased from that in 2023. The annual average cost, insurance, and freight unit value of iodine imports in 2024 was estimated to be $59 per kilogram, about 4% less than that in 2023.

Because domestic and imported iodine was used by downstream manufacturers to produce many intermediate iodine compounds, it was difficult to establish an accurate end-use pattern. Crude iodine and inorganic iodine compounds were estimated to account for almost 80% of domestic iodine consumption in 2024, and organic iodine compounds were estimated to account for about 20%. Worldwide, the leading uses of iodine and its compounds were X-ray contrast media (XRCM), pharmaceuticals, liquid crystal displays (LCDs), iodophors, animal feed, and fluorochemicals, in descending order of quantity consumed. Other applications of iodine included biocides, food supplements, and nylon.

Salient Statistics—United States:	2020	2021	2022	2023	2024[e]
Production	W	W	W	W	W
Imports for consumption	4,570	4,120	4,270	2,860	3,300
Exports	1,130	1,280	1,140	1,410	1,200
Consumption:					
Apparent[1]	W	W	W	W	W
Reported	3,750	3,720	3,330	2,580	2,900
Price, crude iodine, average unit value of imports (cost, insurance, and freight), dollars per kilogram	31.57	32.72	45.81	61.55	59.00
Employment, number[e]	60	60	60	60	60
Net import reliance[2] as a percentage of apparent consumption	>50	>50	>50	<50	>50

Recycling: Small amounts of iodine were recycled.

Import Sources (2020–23): Chile, 90%; Japan, 9%; and other, 1%.

Tariff: Item	Number	Normal Trade Relations 12–31–24
Iodine, crude	2801.20.0000	Free.

Depletion Allowance: 14% (domestic and foreign).

Government Stockpile: None.

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IODINE

Events, Trends, and Issues: According to industry publications, spot prices for iodine crystal averaged about $69 per kilogram during the first 9 months of 2024. This was about 3% less than the 2023 annual average of $71.48 per kilogram. Though average iodine prices were lower in 2024 compared with average prices in 2023, iodine sales increased, reflecting strong global demand in 2024.

One U.S. producer opened a seventh iodine production plant in the second half of 2024.The new plant was expected to add an additional 100 to 150 metric tons per year of crystalline iodine to the company's annual production. The company also signed an agreement for an eighth plant that was expected to become operational in 2025.

As in recent years, Chile was the world's leading producer of iodine, followed by Japan and the United States. Excluding production in the United States, Chile accounted for about two-thirds of world production in 2024. Most of the world's iodine supply comes from three areas: the Chilean desert nitrate mines, the gasfields and oilfields in Japan, and the iodine-rich brine wells in northwestern Oklahoma.

World Mine Production and Reserves: China and Uzbekistan also produce crude iodine, but output is not officially reported, and available information was inadequate to make reliable estimates of output.

	Mine production[e]		Reserves[3]
	2023	2024	
United States	W	W	250,000
Azerbaijan	200	210	170,000
Chile	21,000	22,000	610,000
Indonesia	30	30	NA
Iran	700	700	40,000
Japan	9,900	9,300	4,900,000
Russia	3	3	120,000
Turkmenistan	770	770	70,000
World total (rounded)	[4]32,600	[4]33,000	6,200,000

World Resources:[3] Seawater contains 0.06 part per million iodine, and the oceans are estimated to contain approximately 90 billion tons of iodine. Seaweeds of the Laminaria family are able to extract and accumulate up to 0.45% iodine on a dry basis. Although not as economical as the production of iodine as a byproduct of gas, nitrates, and oil, the seaweed industry represented a major source of iodine prior to 1959 and remains a large resource.

Substitutes: No comparable substitutes exist for iodine in many of its principal applications, such as in animal feed, catalytic, nutritional, pharmaceutical, and photographic uses. Bromine and chlorine could be substituted for iodine in biocide, colorant, and ink, although they are usually considered less desirable than iodine. Antibiotics can be used as a substitute for iodine biocides.

[e]Estimated. NA Not available. W Withheld to avoid disclosing company proprietary data.

[1]Defined as production + imports – exports.

[2]Defined as imports – exports.

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

[4]Excludes U.S. production.