

DIATOMITE

(Data in thousand metric tons unless otherwise specified)

Domestic Production and Use: In 2023, production of diatomite, also known as diatomaceous earth, was estimated to be 830,000 tons with an estimated processed value of \$340 million, free on board (f.o.b.) plant. Six companies produced diatomite at 12 mining areas and 9 processing facilities in California, Nevada, Oregon, and Washington. Approximately 50% of diatomite was used in filtration products. The remaining 50% was used in absorbents, lightweight aggregates, fillers, and other applications. A small amount, less than 1%, was used for specialized pharmaceutical and biomedical purposes. The unit value of diatomite varied widely in 2023, from approximately \$10 per metric ton when used as a lightweight aggregate in portland cement concrete to more than \$1,000 per metric ton for limited specialty markets, including art supplies, cosmetics, and deoxyribonucleic acid (DNA) extraction. The price for diatomite used for filtration was approximately \$720 per metric ton.

<u>Salient Statistics—United States:</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023^e</u>
Production ¹	768	822	998	827	830
Imports for consumption	10	14	14	14	13
Exports	66	67	68	63	60
Consumption, apparent ²	712	769	944	778	780
Price, average value, f.o.b. plant, dollars per metric ton	338	326	410	416	410
Employment, mine and plant, number ^e	370	370	370	370	370
Net import reliance ³ as a percentage of apparent consumption	E	E	E	E	E

Recycling: None.

Import Sources (2019–22): Canada, 58%; Mexico, 13%; Germany, 12%; Argentina, 7%; and other, 10%.

<u>Tariff:</u>	<u>Item</u>	<u>Number</u>	<u>Normal Trade Relations</u>
	Siliceous fossil meals, including diatomite	2512.00.0000	<u>12–31–23</u> Free.

Depletion Allowance: 14% (domestic and foreign).

Government Stockpile: None.

Events, Trends, and Issues: The amount of domestically produced diatomite sold or used by producers in 2023 was slightly higher than that in 2022. Apparent consumption in 2023 was an estimated 780,000 tons, essentially unchanged compared with that in 2022. Exports were estimated to have decreased by 5% compared with those in 2022. The United States remained the leading global producer and consumer of diatomite. Filtration (including the cleansing of greases and oils and the purification of beer, liquors, water, and wine) continued to be the leading end use for diatomite. An important application for diatomite is the removal of microbial contaminants, such as bacteria, protozoa, and viruses in public water systems. Domestically, diatomite used in the production of cement was the second-ranked use. Other applications for diatomite include filtration of human blood plasma, pharmaceutical processing, and use as a nontoxic insecticide. Caution in the processing and use of diatomite was suggested because many forms contain crystalline silica, which is known to cause cancer, birth defects, or other reproductive harm to humans when exposed to levels above permissible levels.

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In 2023, the United States accounted for an estimated 32% of total world production, followed by Denmark with 17%; China with 10%; Turkey with 8%; and Argentina, Mexico, and Peru, each with 4%. Smaller quantities of diatomite were mined in 19 additional countries. The production of diatomite in 2023 was essentially unchanged from that in 2022.

World Mine Production and Reserves: Reserves for China and Spain were revised based on Government reports.

	Mine production ^e		Reserves ⁴
	2022	2023	
United States ¹	827	830	250,000
Argentina	100	100	NA
China	270	270	170,000
Czechia	46	50	NA
Denmark (processed) ⁵	440	440	NA
France	75	80	NA
Germany	50	50	NA
Korea, Republic of	50	50	NA
Mexico	96	100	NA
Mozambique	73	75	NA
Peru	95	100	NA
Russia	51	50	NA
Spain	50	55	57,000
Turkey	210	210	44,000
Other countries	171	170	NA
World total (rounded)	2,600	2,600	Large

World Resources:⁴ Diatomite deposits form from an accumulation of amorphous hydrous silica cell walls of dead diatoms in oceanic and fresh waters. Diatomite is also known as kieselguhr (Germany), moler (an impure Danish form), and tripolite (after an occurrence near Tripoli, Libya). Because U.S. diatomite occurrences are at or near Earth's surface, recovery from most deposits is achieved through low-cost, open pit mining. Outside the United States, however, underground mining is fairly common owing to deposit location and topographic constraints. World resources of crude diatomite are adequate for the foreseeable future.

Substitutes: Many materials can be substituted for diatomite. However, the unique properties of diatomite assure its continued use in many applications. Expanded perlite and silica sand compete for filtration. Filters made from manufactured materials, notably ceramic, polymeric, or carbon membrane filters and filters made with cellulose fibers, are becoming competitive as filter media. Alternate filler materials include clay, ground limestone, ground mica, ground silica sand, perlite, talc, and vermiculite. For thermal insulation, materials such as various clays, exfoliated vermiculite, expanded perlite, mineral wool, and special brick can be used. Transportation costs will continue to determine the maximum economic distance that most forms of diatomite may be shipped and still remain competitive with alternative materials.

^eEstimated. E Net exporter. NA Not available.

¹Processed ore sold or used by producers.

²Defined as production + imports – exports.

³Defined as imports – exports.

⁴See Appendix C for resource and reserve definitions and information concerning data sources.

⁵Includes sales of moler production.