WOLLASTONITE

(Data in metric tons unless otherwise noted)

Domestic Production and Use: Wollastonite was mined by two companies in New York during 2022. U.S. production of wollastonite (sold or used by producers) was withheld to avoid disclosing company proprietary data but was estimated to have increased from that in 2021. Economic resources of wollastonite typically form as a result of thermal metamorphism of siliceous limestone during regional deformation or chemical alteration of limestone by siliceous hydrothermal fluids along faults or contacts with magmatic intrusions. Deposits of wollastonite have been identified in Arizona, California, Idaho, Nevada, New Mexico, New York, and Utah; however, New York is the only State where long-term continuous mining has taken place.

The U.S. Geological Survey does not collect consumption statistics for wollastonite, but consumption was estimated to have increased slightly in 2022 compared with that in 2021. Ceramics (frits, sanitaryware, and tile), friction products (primarily brake linings), metallurgical applications (flux and conditioner), paint (architectural and industrial paints), plastics and rubber markets (thermoplastic and thermoset resins and elastomer compounds), and miscellaneous uses (including adhesives, concrete, glass, and sealants) accounted for wollastonite sales in the United States.

In ceramics, wollastonite decreases shrinkage and gas evolution during firing; increases green and fired strength; maintains brightness during firing; permits fast firing; and reduces crazing, cracking, and glaze defects. In metallurgical applications, wollastonite serves as a flux for welding, a source for calcium oxide, a slag conditioner, and protects the surface of molten metal during the continuous casting of steel. As an additive in paint, it improves the durability of the paint film, acts as a pH buffer, improves resistance to weathering, reduces gloss and pigment consumption, and acts as a flatting and suspending agent. In plastics, wollastonite improves tensile and flexural strength, reduces resin consumption, and improves thermal and dimensional stability at elevated temperatures. Surface treatments are used to improve the adhesion between wollastonite and the polymers to which it is added. As a substitute for asbestos in floor tiles, friction products, insulating board and panels, paint, plastics, and roofing products, wollastonite is resistant to chemical attack, stable at high temperatures, and improves flexural and tensile strength.

Salient Statistics—United States: The United States was thought to be a net exporter of wollastonite in 2022. Comprehensive trade data were not available for wollastonite because it is imported and exported under generic Harmonized Tariff Schedule of the United States and Schedule B codes, respectively, that include multiple mineral commodities. Prices for domestically produced wollastonite were estimated to be between $340 to $370 per metric ton. Price data for globally produced wollastonite were unavailable. Products with finer grain sizes and acicular (highly elongated) particles sold for higher prices. Surface treatment, when necessary, also increased the selling price. Approximately 60 people were employed at wollastonite mines and mills in 2022 (excluding office workers) in the United States.

Recycling: None.

Import Sources (2018–21): Comprehensive trade data were not available, but wollastonite was primarily imported from Canada and Mexico.

Tariff: Item	Number	Normal Trade Relations 12–31–22
Mineral substances not elsewhere specified or included	2530.90.8050	Free.

Depletion Allowance: 10% (domestic and foreign).

Government Stockpile: None.

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WOLLASTONITE

Events, Trends, and Issues: Construction starts of new housing units through August 2022 increased by 2.7% compared with those during the same period in 2021 with the largest increase in starts being in two- to four-unit dwellings. Sales of wollastonite to domestic construction-related markets, such as adhesives, caulks, cement board, ceramic tile, paints, stucco, and wallboard, were thought to have increased. However, sales of wollastonite were thought to be slightly lower for primary iron and steel production, which decreased by 3% in the first 7 months of 2022 compared with production during the same period of 2021. The production of motor vehicles and parts, which contain wollastonite in friction products and plastic and rubber components, increased by 3% in the first 7 months of 2022. Plastics production was expected to be slightly higher in 2022 than that in 2021.

Globally, ceramics, paint, and polymers (such as plastics and rubber) accounted for most wollastonite sales. Lesser global uses for wollastonite included miscellaneous construction products, friction materials, metallurgical applications, and paper. Several research projects continued in Canada, India, and the United States to evaluate the efficacy of wollastonite in carbon dioxide sequestration. Studies were being conducted to evaluate wollastonite's ability to capture atmospheric carbon dioxide when added to crop fields and its ability to enhance crop productivity. Wollastonite's ability to reduce carbon dioxide emissions in cement production by lowering kiln temperatures needed to produce cement and absorbing carbon dioxide in the process was being evaluated. Global sales of wollastonite were estimated to be in the range of 900,000 to 1,000,000 tons, higher than those in 2021.

World Mine Production and Reserves: More countries than those listed may produce wollastonite; however, many countries do not publish wollastonite production data.

	Mine production[e]		Reserves[1]
	2021	2022	
United States	W	W	World resources of wollastonite are thought to exceed 100 million tons. Many deposits have been identified but have not been surveyed sufficiently to quantify their reserves.
Canada	20,000	20,000	
China	890,000	900,000	
India	110,000	120,000	
Mexico	103,000	100,000	
Other countries	15,000	20,000	
World total (rounded)[2]	1,140,000	1,200,000	

World Resources:[1] Reliable estimates of wollastonite resources do not exist for most countries. Large deposits of wollastonite have been identified in China, Finland, India, Mexico, and the United States. Smaller, but significant, deposits have been identified in Canada, Chile, Kenya, Namibia, South Africa, Spain, Sudan, Tajikistan, Turkey, and Uzbekistan.

Substitutes: The acicular nature of many wollastonite products allows wollastonite to compete with other acicular materials, such as ceramic fiber, glass fiber, steel fiber, and several organic fibers, such as aramid, polyethylene, polypropylene, and polytetrafluoroethylene, in products where improvements in dimensional stability, flexural modulus, and heat deflection are sought. Wollastonite also competes with several nonfibrous minerals or rocks, such as kaolin, mica, and talc, which are added to plastics to increase flexural strength, and such minerals as barite, calcium carbonate, gypsum, and talc, which impart dimensional stability to plastics. In ceramics, wollastonite competes with carbonates, feldspar, lime, and silica as a source of calcium and silica. Its use in ceramics depends on the formulation of the ceramic body and the firing method.

[e]Estimated. W Withheld to avoid disclosing company proprietary data.

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

[2]Excludes U.S. production.