WOLLASTONITE

(Data in metric tons unless otherwise noted)

Domestic Production and Use: Wollastonite was mined by two companies in New York during 2019. U.S. production of wollastonite (sold or used by producers) was withheld to avoid disclosing company proprietary data but was estimated to have decreased from that of 2018. 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 decreased in 2019, compared with that of 2018. 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 2019. Comprehensive trade data were not available for wollastonite because it is imported and exported under a generic Harmonized Tariff Schedule of the United States code that includes multiple mineral commodities. Prices for domestically produced wollastonite were estimated to be between $300 to $320 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 64 people were employed at wollastonite mines and mills in 2019 (excluding office workers).

Recycling: None.

Import Sources (2015–18): Comprehensive trade data were not available, but wollastonite was primarily imported from Canada, Finland, India, and Mexico.

Tariff: Item	**Number**	**Normal Trade Relations 12–31–19**
Mineral substances not elsewhere specified or included	2530.90.8050	Free.

Depletion Allowance: 10% (Domestic and foreign).

Government Stockpile: None.

Prepared by **Kenneth C. Curry [(703) 648–7793, kcurry@usgs.gov]**

WOLLASTONITE

Events, Trends, and Issues: Construction of new housing units through August 2019, decreased slightly compared with those during the same period in 2018, suggesting that sales of wollastonite to domestic construction-related markets, such as adhesives, caulks, cement board, ceramic tile, paints, stucco, and wallboard, might have decreased. Most major markets, in which wollastonite is used, were estimated to have decreased, except for primary iron and steel. Production of motor vehicles and parts, which contain wollastonite in friction products and plastic and rubber components, decreased; plastics production decreased; rubber production decreased; but primary iron and steel products increased.

Globally, ceramics, polymers (such as plastics and rubber), and paint accounted for most wollastonite sales. Lesser global uses for wollastonite included miscellaneous construction products, friction materials, metallurgical applications, and paper. Global sales of wollastonite were estimated to be in the range of 850,000 to 900,000 tons, similar to those in 2018.

The leading U.S. producer of wollastonite delayed plans to develop a mine within the Adirondack Forest Preserve of New York, and instead continued to use resources from its current mine. The Adirondack Forest Preserve land became available for development as part of a land swap transaction approved by the State of New York in 2013.

World Mine Production and Reserves: The United States is thought to rank among the top producers globally; however, many countries do not publish wollastonite production. Data for China were revised based on a new data source, which significantly increased estimated production compared with the previously published data.

	Mine production[e]		Reserves[1]
	2018	2019	
United States	W	W	World reserves of wollastonite exceed 100 million tons. Many deposits, however, have not been surveyed, precluding accurate estimates of reserves.
Canada	15,000	20,000	
China	870,000	890,000	
Finland	10,000	11,000	
India	150,000	150,000	
Mexico	84,000	93,000	
Other countries	6,000	6,000	
World total (rounded)[2]	1,100,000	1,200,000	

World Resources: 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 it 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.