

WOLLASTONITE

(Data in metric tons unless otherwise noted)

Domestic Production and Use: Wollastonite was mined by two companies in New York. U.S. production statistics are withheld by the U.S. Geological Survey (USGS) to protect company proprietary data. Wollastonite mined in the United States formed when impure limestone was metamorphosed or silica-bearing fluids were introduced into calcareous sediments during metamorphism. In both cases, calcite reacted with silica to produce wollastonite and carbon dioxide. Wollastonite also can crystallize directly from a magma that has high carbon content, but this is a less common occurrence. Domestic deposits of wollastonite have been identified in Arizona, California, Idaho, Nevada, New Mexico, New York, and Utah, but New York is the only State where long-term continuous mining has taken place.

The USGS does not collect consumption statistics for wollastonite. Plastics and rubber products, however, were estimated to account for 25% to 35% of U.S. consumption, followed by ceramics with 20% to 25%; paint, 10% to 15%; metallurgical applications, 10% to 15%; friction products, 10% to 15%; and miscellaneous, 10% to 15%.

Salient Statistics—United States: U.S. production, as reported in the trade literature, was about 65,000 tons in 2009. Production probably increased by 3% to 7% in 2010 compared with that in 2009. Comprehensive trade data are not available but exports were likely in the range of 24,000 to 28,000 tons and imports probably were less than 4,000 tons in 2010. Prices for wollastonite were reported in the trade literature to range from \$80 to \$1,984 per ton. Products with finer grain sizes and being more acicular in morphology sold for higher prices. Surface treatment, when necessary, also increased the selling price. The United States was thought to be a net exporter of wollastonite.

Recycling: None.

Import Sources (2006–09): Comprehensive trade data are not available but wollastonite has been imported from Canada, China, Finland, India, and Mexico.

Tariff: Item	Number	Normal Trade Relations <u>12-31-10</u>
Mineral substances not elsewhere specified or included	2530.90.8050	Free.

Depletion Allowance: 10% (Domestic and foreign).

Government Stockpile: None.

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Events, Trends, and Issues: The U.S. wollastonite industry began a slow recovery after a significant downturn in demand in 2009 during the global economic recession. Production and exports of wollastonite increased slightly in 2010, primarily because of a continued growth in markets in Southeast Asia. Imports were likely to have remained unchanged in 2010.

The wollastonite industry is strongly dependent on sales to the ceramics, metallurgical, paints, and plastic industries, all of which declined during the global recession. With global economies slowly recovering, sales of wollastonite should improve during the next 2 to 3 years.

A South African producer planned to mine wollastonite at the Magata wollastonite project near Garies, Namaqualand. Resources were estimated to be 3.2 million tons at an average grade of 52% wollastonite. Production was planned to be about 9,000 tons per year in 2011. The company constructed a mill on-site, with anticipated capacity to be 17,400 tons per year in 2012 and 23,300 tons in April 2014.

World Mine Production and Reserves: World production data for wollastonite is not available for many countries and those that are available frequently are 2 to 3 years old. Estimated world production of crude wollastonite ore was in the range of 530,000 to 550,000 tons in 2010, slightly greater than that of 2009. Sales of refined wollastonite products probably were in the range of 450,000 to 490,000 t in 2010 compared with 430,000 to 470,000 t in 2009.

	Mine production		Reserves¹
	2009	2010^e	
United States	^e 65,000	67,000	World reserves of wollastonite were estimated to exceed 90 million tons, with probable reserves estimated to be 270 million tons. However, many large deposits have not been surveyed, so accurate reserve estimates are not available.
China	^e 290,000	300,000	
Finland	16,000	16,000	
India	110,000	120,000	
Mexico	40,000	30,000	
Other	^e 9,500	<u>9,500</u>	
World total (rounded)	<u>530,000</u>	<u>540,000</u>	

World Resources: World resources have not been estimated for wollastonite. The larger reserves were in China, Finland, India, Mexico, Spain, and the United States, which account for most of the global wollastonite production. Significant wollastonite resources also are in Canada, Chile, Kenya, Namibia, South Africa, 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.

^eEstimated.

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