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2007 Minerals Yearbook

WOLLASTONITE [ADVANCE RELEASE]

U.S. Department of the Interior
U.S. Geological Survey

July 2008

WOLLASTONITE

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Wollastonite was mined by two companies in the United States in 2007. U.S. production declined in 2007. Mine production data collected by the U.S. Geological Survey (USGS) are withheld to avoid revealing company proprietary data but industry experts estimate U.S. production to be about 110,000 metric tons (t). In 2007, exports of wollastonite were estimated to be less than 2,000 t; imports were estimated to be between 1,800 and 2,200 t. World sales of refined wollastonite products were estimated to be in the range of 525,000 to 550,000 t.

Production

In 2007, domestic wollastonite production decreased from that of 2006. Data collected by the USGS were withheld to avoid disclosing proprietary information but U.S. wollastonite production was estimated to be about 110,000 t (Hawley, 2008).

Wollastonite has been mined commercially in California and New York. The California deposits, which are in Inyo, Kern, and Riverside Counties, were mined between 1930 and 1970. These operations were limited in size, and before closing produced only a few thousand metric tons each year for ceramics, decorative stone, paint, and mineral wool production.

Wollastonite deposits in New York have been mined for more than 50 years. Two companies mined wollastonite in 2007—NYCO Minerals, Inc. (a subsidiary of Resource Capital Fund IV L.P. [RCF], Denver, CO), which operated a mine in Essex County, and R.T. Vanderbilt Co., Inc., which operated a mine in Lewis County. The NYCO deposit contains diopside, garnet, and wollastonite. Parts of the deposit contain up to 60% wollastonite. The ore was processed at the Willsboro, NY, plant, where the garnet was removed by using high-intensity magnetic separators. NYCO also chemically modified the surfaces of some of its wollastonite products to improve their performance. The R.T. Vanderbilt deposit consists primarily of wollastonite as well as minor amounts of calcite and prehnite and trace amounts of diopside. The ore was processed at R.T. Vanderbilt's St. Lawrence County plant, where it was milled and air classified. R.T. Vanderbilt also produced some surface-treated products.

Fording Industrial Coal Trust, Calgary, Alberta, Canada, announced the sale of its subsidiary, NYCO, to RCF for $34.5 million. The sale included NYCO's mines and plants in Lewis and Willsboro, NY; mines and a plant operated by Minera Roca Rodando S. de R.L. de C.V. near Hermosillo, Sonora, Mexico; and a tripoli operation operated by American Tripoli, Inc. near Seneca, MO. The combined NYCO wollastonite operations produce about 100,000 metric tons per year. NYCO will be operated by Rolling Rock Minerals Inc., a subsidiary of RCF (O'Driscoll, 2007a, b).

Consumption

The USGS does not collect end use data on wollastonite. However, based on company news releases, general overview articles, U.S. manufacturing trends, and consumption estimates published in 1999, plastics and rubber applications were estimated to account for 25% to 30% of U.S. sales, followed by ceramics (20% to 25%), paint (15% to 20%), metallurgical applications (10% to 15%), friction products (10% to 15%), and miscellaneous (10% to 15%) (Industrial Minerals, 1999). Ceramic applications probably account for 30% to 40% of wollastonite sales worldwide, followed by polymers (plastics and rubber) with 30% to 35% of sales, and paint with 10% to 15% of sales (Kendall, 2001; Robinson, 2006). The remaining sales were for construction, friction products, and metallurgical applications.

In ceramics, wollastonite decreases shrinkage and gas evolution during firing, increases green and fired strength, maintains its 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 to protect 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 its resistance to weathering, reduces gloss, reduces pigment consumption, and acts as a flatting and suspending agent. In plastics, it 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 the 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, inert, stable at high temperatures, and improves flexural and tensile strength (Roskill Information Services Ltd., 1996, p. 58-59, 78-81, 104-107, 119, 123-128).

Prices

Quoted prices for domestically produced acicular wollastonite, ex works, were $205 per metric ton for 200-mesh, $264 per ton for 325-mesh, and $290 per ton for 400-mesh. The price, ex works, for acicular, high-aspect-ratio wollastonite was $373 per ton. Prices for wollastonite from China, free on board, in bulk, were $80 to $100 per ton for 200-mesh and $90 to $110 per ton for 325-mesh (Industrial Minerals, 2007). Quoted prices should be used only as a guideline because actual prices depend on the terms of the contract between the seller and the buyer.

Foreign Trade

Comprehensive trade data were not available for wollastonite. Exports were estimated to be less than 2,000 t in 2007. Imports were estimated to be between 1,800 and 2,200 t in 2007. Imports were received from China, Finland, India, and Japan. China was the leading supplier, followed by India, Finland, and Japan. Data on imports from Mexico were not available.

World Industry Structure

World production of crude wollastonite ore probably exceeded 600,000 t in 2007, but sales of refined wollastonite products probably were in the range of 525,000 to 550,000 t. China was the leading producer of wollastonite with an estimated production of 350,000 t in 2006 (Hetherington and others, 2008, p. 98). The next two leading wollastonite producers were India (129,000 t in 2005-06) and the United States (about 110,000 t) (Ministry of Mines [India], 2006). Wollastonite also was produced in Mexico (44,300 t in 2006), Spain (30,000 t in 2006), Finland (16,200 t in 2006), and Namibia (55 t in 2006) (Hetherington and others, 2008, p. 98). Small amounts of wollastonite probably were produced in other countries. Data for 2007 were not available for most countries.

Outlook

Overall U.S. markets for wollastonite probably will not change significantly in the near future. Sales for traditional markets such as ceramics, friction products, metallurgy, and roof coatings probably will be maintained despite the slow U.S. economy. The decline in new home construction may affect sales for ceramic and paint applications somewhat. As in the past few years, sales of wollastonite for filler and extender applications in plastics will probably continue to be a growth market with continued interest in weight reduction in consumer products and minimizing consumption of petroleum-based products through the manufacture of stronger, yet less bulky, plastic components. Wood and plastic composites also have been suggested by industry experts to be a potential growth field for wollastonite.

With increased demand from a growing Chinese economy, exports of wollastonite from China may be less of a factor in world markets than in the past 15 years. This may result in slightly increased prices with the lessening of the flow of low-cost Chinese wollastonite worldwide. The decline in the U.S. exchange rate of the dollar may provide an advantage for domestic producers in world markets although increased freight rates may offset this advantage somewhat. The declining U.S. dollar also may discourage imports of more expensive foreign-sourced wollastonite. Worldwide consumption probably will continue to expand slowly in the near future.

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