WOLLASTONITE
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Wollastonite was mined by two companies in the United States in 2008. U.S. production declined. Actual U.S. production data are withheld to avoid revealing company proprietary data, but the total was less than 100,000 metric tons (t) in 2008. Exports of wollastonite were estimated to be about 30,000 t. Imports of wollastonite were estimated to be less than 5,000 t. World sales of refined wollastonite products were estimated to be in the range of 480,000 to 520,000 t.

Production

In 2008, domestic wollastonite production decreased from that of 2007. Data collected by the U.S. Geological Survey (USGS) are withheld to avoid disclosing proprietary information, but U.S. wollastonite production was less than 100,000 t.

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, producing only a few thousand metric tons each year for ceramics, decorative stone, paint, and mineral wool production before closing.

Wollastonite deposits in New York have been mined for more than 50 years. Two companies mined wollastonite in 2008—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., Norwalk, CT, 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 Willamette Valley 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 surface-treated products.

Consumption

The USGS does not collect end use data on wollastonite. However, based on company press releases, general overview articles, U.S. manufacturing trends, and consumption estimates published by Industrial Minerals (1999), plastics and rubber applications were estimated to account for 25% to 35% of U.S. sales in 2008, followed by ceramics (20% to 25%), paint (10% to 15%), metallurgical applications (10% to 15%), friction products (10% to 15%), and miscellaneous (10% to 15%). 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 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 flattening 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 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 $90 per ton for 200-mesh and $90 to $100 per ton for 325-mesh (Industrial Minerals, 2008). Hawley (2008) indicated that wollastonite sold for plastics applications was $661 to $1,984 per ton, and prices for ceramic grades of wollastonite were $220 to $496 per ton. 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 about 30,000 t in 2008 (Hawley, 2009). Wollastonite was export to Australia, Belgium, Brazil, Canada, China, Colombia, Costa Rica, the Dominican Republic, Italy, the Netherlands, the Republic of Korea, and the United Kingdom. Imports were estimated to be less than 5,000 t in 2008. Imports transported by ship were received from Canada, China, Finland, France, Germany, India, and Japan. India was the leading supplier of wollastonite imported into the United States, followed by China, Canada, Germany, Finland, Japan, and France, based on data from The Journal of Commerce Port Import Export Reporting Service (2009). Shipments of wollastonite from Canada, Germany, Japan, and France were transshipments...
because no wollastonite production was reported in these countries. Data on wollastonite exported or imported by freight or rail from Canada and Mexico were not available although the Mexican Ministry of the Economy did not report any exports of wollastonite to or imports of wollastonite from the United States in 2007 (Ministry of the Economy [Mexico], 2008). The same may be true for 2008, given the economy at the time.

World Review

World production of crude wollastonite ore probably was about 600,000 t in 2008; sales of refined wollastonite products probably were in the range of 480,000 to 520,000 t. Production and sales probably were slightly less than in 2007 because of the manufacturing slowdown in 2008 associated with the downturn in world economies. China and India were the two leading producers of wollastonite in 2008, accounting for more than 70% of the world production. In 2008, wollastonite production in China was about 325,000 t, and production in India was estimated to be 120,000 t. The United States ranked third in wollastonite production (less than 100,000 t). Production in Mexico was estimated to be 50,000 t in 2008 based on production of 50,800 t in 2007 (Ministry of the Economy [Mexico], 2008). Following Mexico in ranking were Spain (30,000 t in 2007), Finland (16,400 t in 2007), and Namibia (60 t in 2007) (Brown and others, 2009, p. 103). Small amounts of wollastonite probably were produced in other countries. Data for 2008 were not available for most countries.

Outlook

Demand for and production of wollastonite fell as a result of the declining economic situation worldwide in 2008. The U.S. manufacturing industry reduced their output, resulting in reduced demand for wollastonite for such applications as powder coatings for consumer appliances, surface conditioners for steel casting, ingredients for manufacturing technical ceramic bodies, and reinforcements for plastics products. The decline in commercial and residential construction probably affected demand for wollastonite for architectural paints, caulks, ceramic tile glazes and bodies, roof coatings, sanitaryware, sealants, stucco, and wallboard. Use of wollastonite in structural clay products, such as brick and quarry tile, likely declined along with the slowdown of structural clay product markets. The reduced output from the automobile manufacturers probably affected sales of wollastonite for friction products and wollastonite-base plastic automotive components. Although plastic applications remained the most promising growth market for wollastonite, plastics applications also were affected by the economic downturn.

U.S. and world consumption of wollastonite may decline in 2009 and possibly into 2010. The degree of decline depends on how much government aid is provided to industries, the success of the plan to resolve the U.S. housing finance crisis, and the effectiveness of other economic stimulus plans being instituted by governments worldwide.

References Cited

Hawley, G.C., 2009, Wollastonite: Mining Engineering, v. 61, no. 6, June, p. 77–78.

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications


Other

American Ceramic Society.
Ceramic Industry, monthly.
ICIS Chemical Business, weekly.
Mining Engineering, monthly.
Mining Journal, weekly.
Paint and Coatings Industry, monthly.