

QUARTZ CRYSTAL (INDUSTRIAL)

(Data in metric tons, unless otherwise noted)

Domestic Production and Use: Domestic production of cultured quartz crystal in 1999 remained near 1998 levels. Lascas¹ mining and processing in Arkansas was stopped at the end of 1997, but three U.S. firms continued to produce cultured quartz crystals by using imported and stockpiled lascas as feed material. Electronic applications accounted for most industrial uses of quartz crystal; other uses included special optical applications.

Virtually all quartz crystal used for electronics was cultured rather than natural crystal. Electronic-grade quartz crystal was essential for making filters, frequency controls, and timers in electronic circuits employed for a wide range of products, such as communications equipment, computers, and many consumer goods (e.g., television receivers and electronic games).

Salient Statistics—United States: Production of cultured quartz crystals was estimated to be about 200 metric tons. Trade data for cultured quartz crystal and devices with mounted quartz crystal are available but lascas import data are not available. Exports of cultured quartz crystals were about 100 tons and imports were about 23 tons in 1999. The average value of exports and imports was \$267,000 per ton and \$495,000 per ton, respectively. Other salient statistics were not available.

Recycling: None.

Import Sources (1995-98): The United States is 100% import reliance. Brazil, Germany, and Madagascar are reportedly the major sources for lascas. Other possible sources of lascas include China, South Africa, and Venezuela.

Tariff:	Item	Number	Normal Trade Relations <u>12/31/99</u>
	Sands:		
	Other than natural	2506.10.0010	Free.
	Other	2506.10.0050	Free.
	Quartzite	2506.21.0000	Free.
	Piezo-electric quartz	7104.10.0000	3% ad val.

Depletion Allowance: 23% (Domestic), 15% (Foreign).

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Government Stockpile:

Stockpile Status—9-30-99²

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1999	Disposals FY 1999
Quartz crystal	105	(3)	—	—	—

Events, Trends, and Issues: A new producer of lascas was operating in startup mode in Canada. The producer intends to ship lascas to U.S. cultured quartz producers. An Elkhart, IN, crystal fabricator was reconsidering its plan to permanently close its Carlisle, PA, facility.

Trends indicate that demand for quartz crystal devices should continue to grow, and consequently, quartz crystal production should remain strong well into the future. Growth of the consumer electronics market (e.g., personal computers, electronic games, and cellular telephones), particularly in the United States, will continue to promote domestic production. The growing global electronics market may require additional production capacity worldwide.

World Mine Production, Reserves, and Reserve Base: This information is unavailable but the global reserve base for lascas is thought to be large.

World Resources: Limited resources of natural quartz crystal suitable for direct electronic or optical use are available throughout the world. World dependence on these resources will continue to decline because of increased acceptance of cultured quartz crystal as an alternative material; however, use of cultured quartz crystal will mean an increased dependence on lascas for growing cultured quartz.

Substitutes: Quartz crystal is the best material for frequency-control oscillators and frequency filters in electronic circuits. Other materials, such as dipotassium tartrate, are usable only in specific applications as oscillators and filters.

¹Lascas is a nonelectronic-grade quartz used as a feedstock for growing cultured quartz crystal and for production of fused quartz.

²See Appendix B for definitions.

³Less than ½ unit.