

STRONTIUM

(Data in metric tons of strontium content¹ unless otherwise noted)

Domestic Production and Use: No strontium minerals have been produced in the United States since 1959. The most common strontium mineral, celestite, which consists primarily of strontium sulfate, was imported exclusively from Mexico. A company in Georgia was the only major U.S. producer of strontium compounds, and analysis of celestite import data indicates that production at this operation has decreased substantially since 2001. Primary strontium compounds were used in the faceplate glass of color television picture tubes, 55%; pyrotechnics and signals, 22%; ferrite ceramic magnets, 13%; and other applications, 10%.

<u>Salient Statistics—United States:</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006^e</u>
Production	—	—	—	—	—
Imports for consumption:					
Strontium minerals	1,150	1,020	2,760	799	900
Strontium compounds	25,400	23,300	14,500	11,700	9,700
Exports, compounds	340	693	552	255	500
Shipments from Government stockpile excesses	—	—	—	—	—
Consumption, apparent, celestite and compounds	26,200	23,600	16,700	12,200	10,100
Price, average value of mineral imports					
at port of exportation, dollars per ton	60	57	53	57	64
Net import reliance ² as a percentage of apparent consumption	100	100	100	100	100

Recycling: None.

Import Sources (2002-05): Strontium minerals: Mexico, 100%. Strontium compounds: Mexico, 90%; Germany, 6%; and other, 4%. Total imports: Mexico, 91%; Germany, 5%; and other, 4%.

<u>Tariff:</u>	<u>Item</u>	<u>Number</u>	<u>Normal Trade Relations</u>
			<u>12-31-06</u>
	Celestite	2530.90.8010	Free.
	Strontium metal	2805.19.1000	3.7% ad val.
	Compounds:		
	Strontium carbonate	2836.92.0000	4.2% ad val.
	Strontium nitrate	2834.29.2000	4.2% ad val.
	Strontium oxide, hydroxide, peroxide	2816.40.1000	4.2% ad val.

Depletion Allowance: 22% (Domestic), 14% (Foreign).

Government Stockpile: Celestite was held in the National Defense Stockpile for decades. In recent years, its total value was listed as zero because the material that remained in the stockpile was low-quality material that was not stockpile-grade and did not meet the specifications required by strontium compound producers. None had been sold since 1979. In the Strategic and Critical Materials Report to the Congress for October 2004 through September 2005, the Defense Logistics Agency, National Defense Stockpile Center, reported that the remaining 11,600 tons of celestite had been disposed of at the site where it had been stored.

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Events, Trends, and Issues: China is the world's leading producer of strontium carbonate with the plant capacity to produce 200,000 tons per year, followed by Germany and Mexico with 70,000 and 127,000 tons per year, respectively. China uses mostly domestic and some imported celestite to supply its strontium carbonate plants, the German producer uses imported celestite, and Mexican producers use domestic ore to supply their plants. Major markets for Chinese strontium carbonate are in Asia and Europe. Chinese celestite reserves are smaller and of lower quality than the ores in other major producing countries, including Mexico, Spain, and Turkey, raising the question of whether Chinese celestite producers will be able to maintain high enough production levels to meet the demand at strontium carbonate plants for an extended period of time, or if additional imports will be required.

The demand for strontium carbonate for television faceplate glass continues, but appears to be decreasing as the popularity of flat-panel television monitors grows. Domestic consumption of strontium carbonate decreased in the past 5 years as a result of a shift in production facilities for color televisions to other countries that has resulted in the closure of all but one television glass plant in the United States. China, Europe, and North America are the most important markets for televisions. Southeast Asia and Latin America have higher growth rates, potentially representing huge markets for television manufacturers and thus the strontium carbonate industry. Growth continues in flat-panel technology, which requires much smaller quantities of strontium carbonate, resulting in steadily decreasing demand for strontium carbonate for television displays, especially in North America and Europe.

World Mine Production, Reserves, and Reserve Base:³

	Mine production		Reserves ⁴	Reserve base ⁴
	2005	2006 ^e		
United States	—	—	—	1,400,000
Argentina	6,700	7,500	All other:	All other:
China ^e	140,000	160,000	6,800,000	11,000,000
Iran	7,500	7,500		
Mexico	115,214	110,000		
Morocco	2,700	2,700		
Pakistan	2,000	2,000		
Spain	160,000	150,000		
Tajikistan	NA	NA		
Turkey	60,000	60,000		
World total (rounded)	494,000	500,000	6,800,000	12,000,000

World Resources: Resources in the United States are several times the reserve base. Although not thoroughly evaluated, world resources are thought to exceed 1 billion tons.

Substitutes: Although it is possible to substitute other materials for strontium in some of its applications, such a change would adversely affect product performance and/or cost. For example, barium could replace strontium in color television picture tube glass only after extensive circuit redesign to reduce operating voltages that produce harmful secondary X-rays. Barium replacement of strontium in ferrite ceramic magnets would decrease the maximum energy and temperature characteristics of the magnets. Substituting for strontium in pyrotechnics would be impractical because the desired brilliance and visibility are imparted only by strontium and its compounds.

^eEstimated. NA Not available. — Zero.

¹The strontium content of celestite is 43.88%; this factor was used to convert units of celestite.

²Defined as imports – exports + adjustments for Government and industry stock changes.

³Metric tons of strontium minerals.

⁴See Appendix C for definitions.